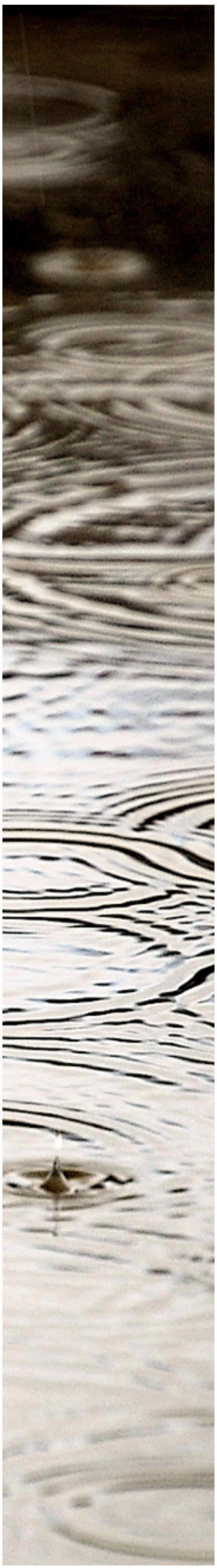
Appendix I

Hydrology and Hydraulics Report



HYDROLOGY AND HYDRAULICS REPORT
For

Rocas Grandes II
Apartments Project
APNs: 486-280-002 and -004

Southeast of Alessandro Blvd & Darwin Dr
Moreno Valley, CA 92553

PREPARED FOR:

SEC Alessandro Darwin, LLC
320 S Cedros Ave., Suite 400
Solana Beach, CA 92075

PREPARED BY:

PLSA Civil Engineering Land Planning Surveying + Mapping

DATE:
February 18, 2025

DRAFT

W. Justin Suiter, CE 68964 DATE

34270 Pacific Coast Highway, Suite B, Dana Point, CA 92629 | ph 858.259.8212
www.plsaengineering.com

This Drainage Study has been prepared under the direction of the following Registered Civil Engineer. The Registered Civil Engineer attests to the technical information contained herein and the engineering data upon which recommendations, conclusions, and decisions are based.

DRAFT

W. Justin Suiter
REGISTERED CIVIL ENGINEER

DATE

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Conclusions	1.4
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Riverside County Flood Control & Water Conservation District Criteria	2.2

Appendix

Appendix A - Soils Map & Hydrologic Soils Properties
Appendix B - Rainfall Data
Appendix C - AES Output: Pre-Dev and Post-Dev (Detained and Undetained)
Appendix D – Detention Analysis
Appendix E – WSPGW Storm Pipe Sizing Output
Appendix F - FHWA Hydraulic Toolbox Inlet Sizing Output
Appendix G - Storage Tank System Details

Hydrologic Maps	**(pocket)**
Rocas Grandes II Drainage Pre-Project Map	Pocket #1
Rocas Grandes II Drainage Post-Project Map	Pocket #2

1.0 EXECUTIVE SUMMARY

1.1 Introduction

This Hydrology Study for the Rocas Grandes II Apartments Project, herein referred to as "the project," has been prepared to analyze the hydrologic characteristics of the existing and proposed site condition of the project. This report presents the methodology and the calculations used for determining the runoff from the project site in both pre-development and post-development conditions produced by the 2-year, 5-year, 10-year and 100-year storm events. Please refer to the Project Specific Water Quality Management Plan prepared under separate cover for more specific discussion on water quality and hydrologic conditions of concern. This report has been prepared using the Riverside County Flood Control District (RFCFD) and Water Conservation District (WCD) Hydrology Manual, dated April 1978.

1.2 Existing Conditions

The property is geographically located at N 33^0 54' 55" W 117^0 12' 12". The site is bordered by bare land on the east and south. A new apartment development and Darwin Drive borders the west edge of the project, while the north edge is bordered by Alessandro Boulevard.

The site exists as a barren parcel with very little existing vegetation. The site naturally drains from the northerly edge to the southern property line where it continues overland to the adjacent property. Currently the site has a natural subtle ridgeline mid property. The drainage basin analyzed is approximately 17.55 acres and composed of soil type "C" in the northern half of the site, and soil type "B" in the southern half of the site. Refer to Appendix A for the Hydrologic Soils Group Map for Sunnymead, Plate C-1.17. The project ultimately is tributary to the Canyon Lake Reservoir which is approximately 15 miles southwest of the project location. AES Rational Method was used to calculate the peak runoff in the pre-project condition for the 2-, 5-, 10-, and 100-year storm events. The results of the pre-project Rational Method peak runoff flows are summarized in the table below.

Table 1: Pre-Project Runoff Summary

	Basin 200		Basin 300	
Area (AC)	**8.64**		**8.91**	
Storm Event	**T_C (MIN)**	**Peak Q (CFS)**	**T_C (MIN)**	**Peak Q (CFS)**
2	28.30	5.27	30.32	5.22
5	26.51	7.10	27.87	7.10
10	25.05	8.36	26.66	8.30
100	22.19	12.84	23.33	12.84

1.3 Developed Conditions

The proposed development is a 460-unit apartment and townhome complex. The site has been designed to mimic the existing drainage characteristics with two site basins and incorporate

treatment and landscape features to mitigate the potential increased runoff. This project will include developing the onsite features typical for an apartment complex along with the required widening improvements to Alessandro Boulevard and Darwin Drive and the extension of Brodiaea Avenue along the edge of the property. The proposed impervious area makes up approximately 90% of the project site.

Post-development runoff is directed to flow to the same point of discharge and in the same manner as in the pre-development condition, with outlet pipes crossing under the Brodiaea Avenue roadway to daylight and dissipate onto the adjacent parcels. Onsite runoff will be conveyed to biofiltration systems for pollutant control treatment compliance, and to a downstream underground detention tank system, before being discharged from the site. All flows leaving the site will be at or below the existing site flowrates and will continue overland south to Cactus Ave. where they will enter Storm drain line "J-9" constructed by RCFCD and adequately sized to accommodate the existing flows.

The proposed flowrates will be mitigated to be at or below existing flowrates by the underground tanks proposed at the southwest and southeast corners of the site.

AES Rational Method software was used to determine the peak runoff values. Hydrographs were developed to model the relationship of flow versus time for the underground tank system. Storm events that were studies were 1-, 3-, 6-, and 24-hour duration events for the 2-, 5-, 10-, and 100-year storms. The RCFCD Hydrology Manual criteria for developing a unit hydrograph was used to create the inflow hydrographs. HydroCAD Stormwater Modeling software was then used to determine the detention benefit gained. The inflow hydrographs are provided, and the detention calculations are provided in Appendix D of this report. See the table below which summarizes the results of the analysis.

Table 2: Post-Project Runoff and Detention Summary

	Basin 200			**Basin 300**		
Area (AC)	**8.64**	**8.94**		**8.91**	**8.75**	
Storm Event	**Pre-dev. Peak Q**	**Post-dev. Undetained**	**Post-dev. Detained**	**Pre-dev. Peak Q**	**Post-dev. Undetained**	**Post-dev. Detained**
2	5.27	11.28	1.72	5.22	11.54	3.56
5	7.10	14.75	2.90	7.10	14.97	4.77
10	8.36	16.87	3.90	8.30	17.08	5.95
100	12.84	24.28	5.63	12.84	24.55	10.56

1.4 Summary Conclusions

The site has been designed to maintain the existing drainage characteristics with two outlet locations at the southwest and southeast edges of the project. Storm drain infrastructure was designed to adequately convey the post-project flows through the project. The pre-development flows for the 2-, 5-, 10- and 100-year storm events were maintained. Please refer to the Preliminary Grading and Plot Plan for Rocas Grandes II Apartment Project for more details on site grading and storm drain locations and refer to the Project Specific Storm Water Management Plan for more detailed discussion on water quality.

1.5 References

"Riverside County Flood Control and Water Conservation District Hydrology Manual", April 1978, John W. Bryant, Riverside County Flood Control and Water Conservation District

"California Regional Water Quality Control Board Order No. R8-2010-0033," California Regional Water Quality Control Board, Riverside County Region (SDRWQCB).

2.0 METHODOLOGY

2.1 Introduction

The hydrologic model used to perform the hydrologic analysis presented in this report utilizes the Rational Method (RM) equation, Q=CIA. The RM formula estimates the peak rate of runoff based on the variables of area, runoff coefficient, and rainfall intensity.

Using the Time of Concentration (Tc), which is the time required for a given element of water that originates at the most remote point of the basin being analyzed to reach the point at which the runoff from the basin is being analyzed, the RM equation determines the storm water runoff rate (Q) for a given basin in terms of flow, typically in cubic feet per second (cfs). The RM equation is as follows:

$$Q = CIA$$

Where:

Q= flow (cfs)
C = runoff coefficient, ratio of rainfall that produces storm water runoff (runoff vs. infiltration/evaporation/absorption/etc)
I = average rainfall intensity for a duration equal to the Tc for the area (in/hr)
A = drainage area contributing to the basin (ac)

The RM equation assumes that the storm event being analyzed delivers precipitation to the entire basin uniformly, and therefore the peak discharge rate will occur when a raindrop that falls at the most remote portion of the basin arrives at the point of analysis.

To be conservative, C type soils are assumed. This assumption was based on comparison of the project site to the soils classification map from NRCS Web Soil Survey soil maps. From the comparison, the majority of the site is located within type C soil and a small portion of the watershed associated with the project is unclassified.

2.2 Riverside County Flood Control and Water Conservation District

As defined by the County Hydrology Manual dated April 1978, the Rational Method is the preferred equation for determining the hydrologic characteristics of basins up to approximately 300 to 500 acres in size. The RCFCD and WCD has developed its own tables, nomographs, and methodologies for analyzing storm water runoff for areas within the County.

One of the variables of the RM equation is the runoff coefficient, C. The runoff coefficient is dependent upon several factors and RCFC and WCD have developed curves for runoff coefficients to be applied to basins located within the County.

2.3 AES Rational Method Computer Model

The Rational Method computer program developed by Advanced Engineering Software (AES 2016) was used for this study because it satisfies the RCFC design criteria.

The AES hydrologic model is developed by creating independent node-link models of each interior drainage basin and linking these sub-models together at confluence points. The AES program has the capability to perform calculations for 15 hydrologic processes. These processes are assigned code numbers that appear in the results. The code numbers and their significance are as follows:

Subarea Hydrologic Processes (Codes)

Code 1:	Confluence analysis at node
Code 2:	Initial subarea analysis
Code 3:	Pipe flow travel time (computer-estimate pipe sizes)
Code 4:	Pipe flow travel time (user-specified pipe size)
Code 5:	Trapezoidal channel travel time
Code 6:	Street flow analysis through a subarea
Code 7:	User-specified information at a node
Code 8:	Addition of the subarea runoff to mainline
Code 9:	V-Gutter flow through subarea
Code 10:	Copy mainstream data onto memory bank
Code 11:	Confluence a memory bank with the mainstream memory
Code 12:	Clear a memory bank
Code 13:	Clear the mainstream memory
Code 14:	Copy a memory bank onto the mainstream memory
Code 15:	Hydrologic data bank storage functions

To perform the hydrologic analysis, base information for the study area is required. This information includes the existing drainage facility locations and sizes, land uses, flow patterns, drainage basin boundaries, and topographic elevations. Drainage basin boundaries, flow patterns, and topographic elevations are shown on the drainage exhibits located in the map pockets.

2.4 Criteria

The hydrologic conditions were analyzed in accordance with the RCFCD and WCD Hydrology Manual design criteria as follows:

Design Storm:	100-year 10-year 5-year 2-year
Soil Type:	B and C
Rainfall Intensity:	Based on time-intensity criteria per RCFCD and WCD Hydrology Manual

Refer to Appendix B for the RCFCD and WCD rainfall data and standard intensity-duration curve data.

2.5 Detention

The detention analysis was performed using HydroCAD Stormwater Modeling software. HydroCAD has the ability to route the storm event inflow hydrograph through the detention storage facility and based on the facility cross sectional geometry, stage storage and outlet structure data, HydroCAD calculates the detained peak flow rate and detained time to peak. Refer to Appendix D for detailed output.

2.5 Water Surface Pressure Gradient (WSPGW)

The County of Los Angeles Water Surface Pressure Gradient (WSPGW) program was used to perform the hydraulic analysis of the proposed storm drain pipes. The WSPGW program computes and plots uniform and non-uniform steady flow water surface profiles and pressure gradients in open channels or closed conduits with irregular or regular sections. The flow in a system may alternate between supercritical, sub-critical, or pressure flow in any sequence. The program uses basic mathematical and hydraulic principles to calculate data such as cross-sectional area, wetted perimeter, normal depth, critical depth, pressure, and momentum. Refer to Appendix E for detailed WSPGW output.

2.6 FHWA Hydraulic Toolbox

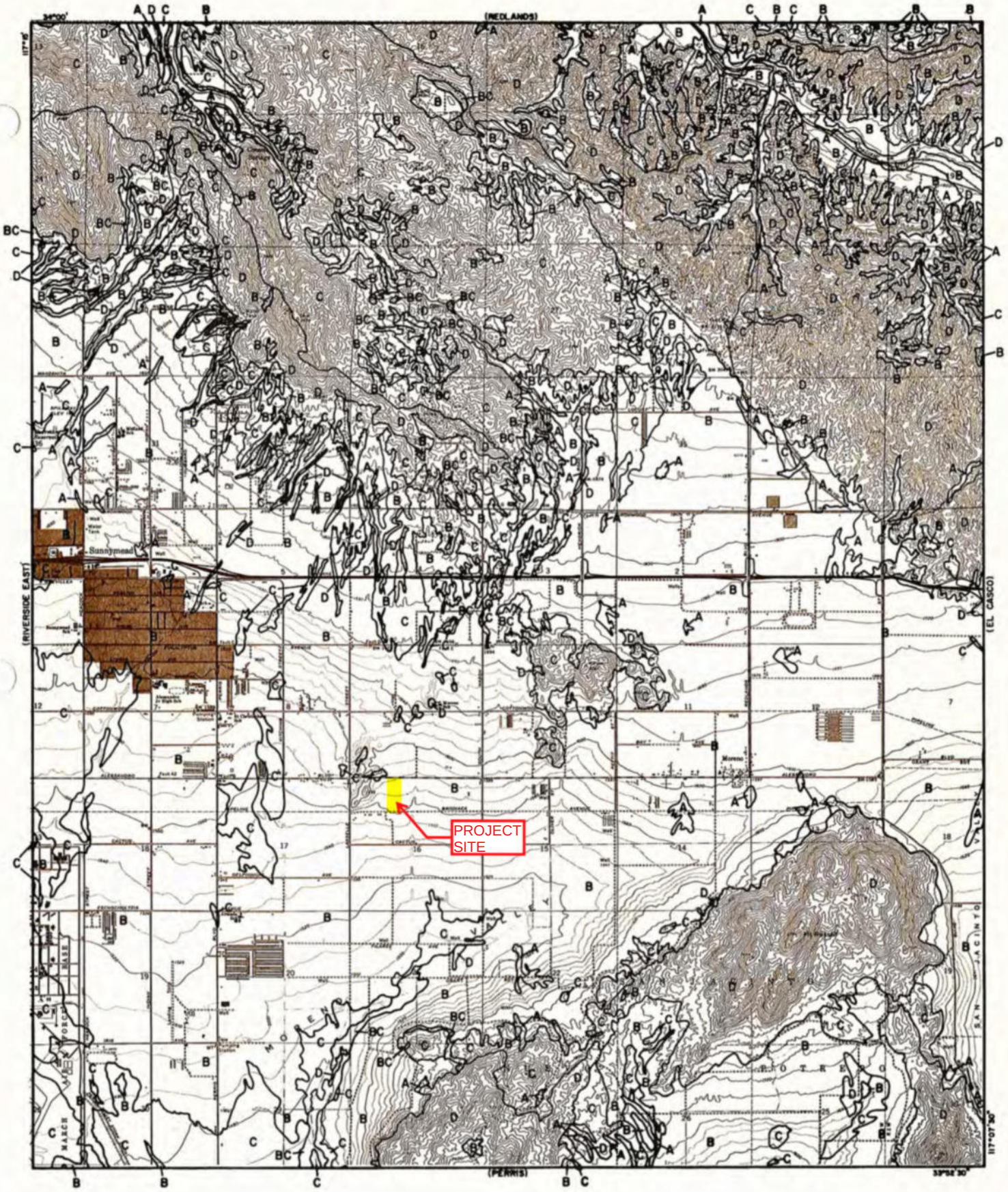
The proposed curb inlets were sized using the FHWA Hydraulic Toolbox, v4.2. Inlets on grade were designed to capture the 100-year peak discharge. Refer to Appendix F for the inlet calculations.

APPENDIX A

SOILS MAPS

&

HYDROLOGIC SOILS PROPERTIES



LEGEND

—— SOILS GROUP BOUNDARY

A SOILS GROUP DESIGNATION

RCFC&WCD

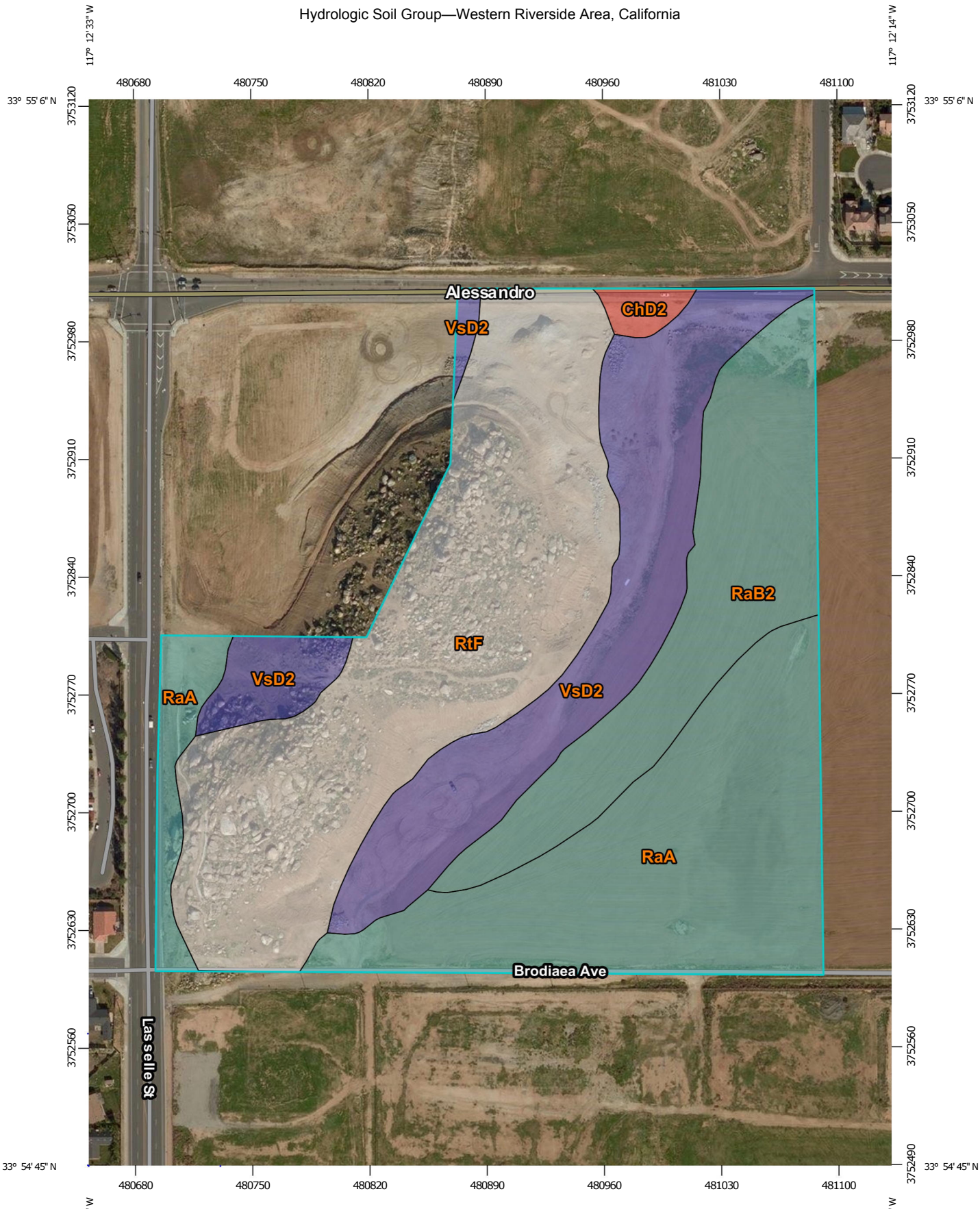
HYDROLOGY MANUAL

N

0 FEET 5000

HYDROLOGIC SOILS GROUP MAP FOR SUNNYMEAD

PLATE C-1.17



Map Scale: 1:3,090 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 45 90 180 270

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A
A/D
B
B/D
C
C/D
D
Not rated or not available

Soil Rating Lines

A
A/D
B
B/D
C
C/D
D
Not rated or not available

Soil Rating Points

A
A/D
B
B/D
C
C/D
D
Not rated or not available

Water Features

Streams and Canals

Transportation

Rails
Interstate Highways
US Routes
Major Roads
Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Western Riverside Area, California
Survey Area Data: Version 8, Sep 22, 2015

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 14, 2015—Jan 21, 2015

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — Western Riverside Area, California (CA679)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
ChD2	Cieneba sandy loam, 8 to 15 percent slopes, eroded	D	0.3	1.0%
RaA	Ramona sandy loam, 0 to 2 percent slopes	C	8.5	26.9%
RaB2	Ramona sandy loam, 2 to 5 percent slopes, eroded	C	5.1	16.3%
RtF	Rockland		11.1	35.2%
VsD2	Vista coarse sandy loam, 8 to 15 percent slopes, eroded	B	6.5	20.6%
Totals for Area of Interest			**31.5**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

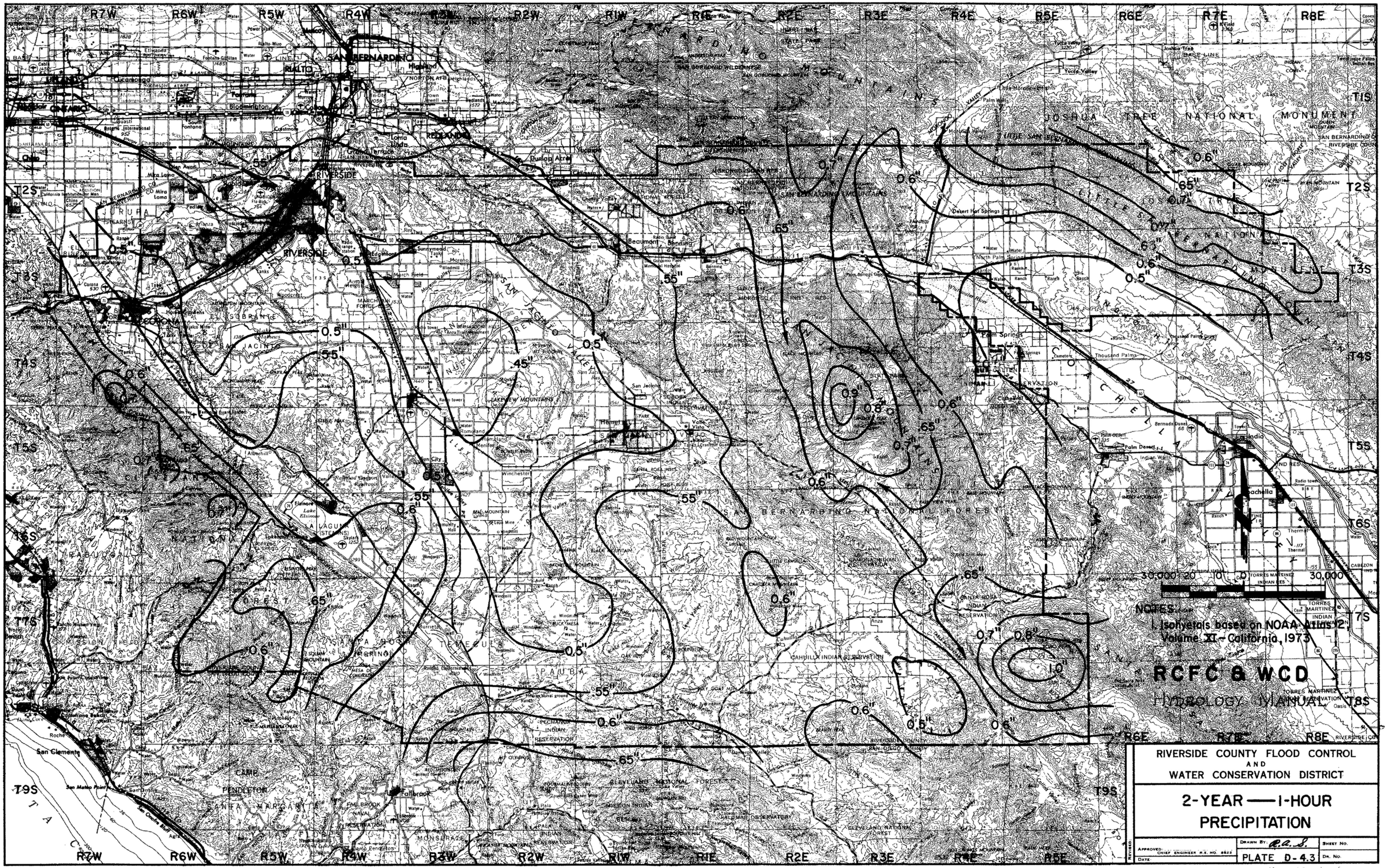
Aggregation Method: Dominant Condition

Component Percent Cutoff: *None Specified*

Tie-break Rule: Higher

APPENDIX B

RAINFALL DATA



NOTES:
1. Isohyetals based on NOAA Atlas 2, Volume XI - California, 1973

RCFC & WCD
HYDROLOGY MANUAL

RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT

2-YEAR — 1-HOUR PRECIPITATION

APPROVED: CHIEF ENGINEER R.E. NO. 6822	DRAWN BY: R.A.S.	SHEET NO.
DATE	PLATE D-4.3	DR. NO.

REVISED

NOTES:
1. Isohyetals based on NOAA Atlas 2, Volume XI - California, 1973.

RCFC & WCD
HYDROLOGY MANUAL

RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT

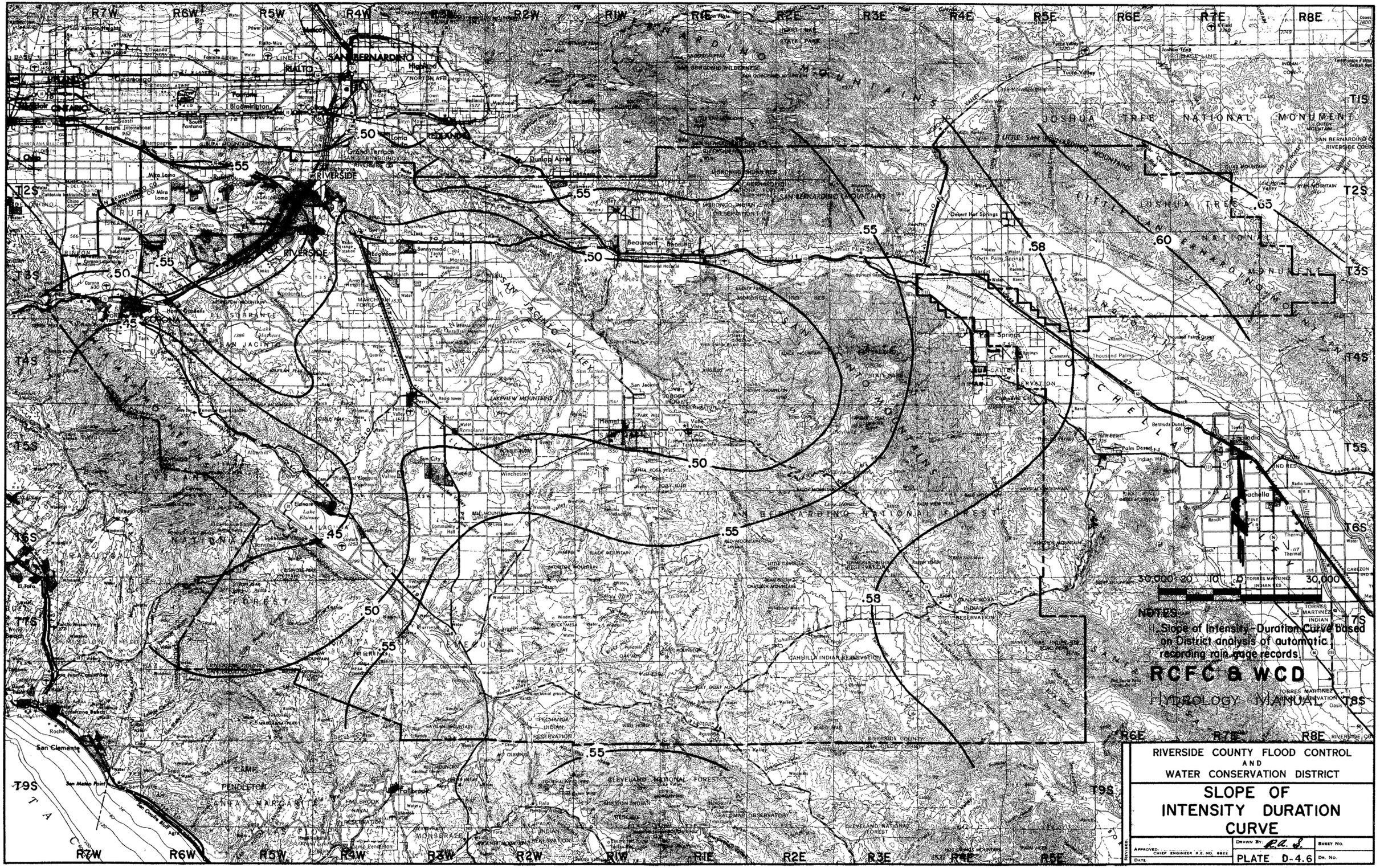
100-YEAR — 1-HOUR
PRECIPITATION

APPROVED CHIEF ENGINEER R.E. NO. 8822	DRAWN BY: A.A.L.	SHEET NO.
DATE	PLATE D-4.4	DR. NO.
REVISED		

RAINFALL INTENSITY—INCHES PER HOUR

SUNNYMEAD - MORENO			WOODCREST		
DURATION MINUTES	FREQUENCY		DURATION MINUTES	FREQUENCY	
	10 YEAR	100 YEAR		10 YEAR	100 YEAR
5	2.84	4.16	5	3.37	5.30
6	2.59	3.79	6	3.05	4.79
7	2.40	3.51	7	2.80	4.40
8	2.25	3.29	8	2.60	4.09
9	2.12	3.10	9	2.44	3.83
10	2.01	2.94	10	2.30	3.62
11	1.92	2.80	11	2.19	3.43
12	1.83	2.68	12	2.08	3.27
13	1.76	2.58	13	1.99	3.13
14	1.70	2.48	14	1.91	3.01
15	1.64	2.40	15	1.84	2.89
16	1.59	2.32	16	1.78	2.79
17	1.54	2.25	17	1.72	2.70
18	1.50	2.19	18	1.67	2.62
19	1.46	2.13	19	1.62	2.54
20	1.42	2.08	20	1.57	2.47
22	1.35	1.98	22	1.49	2.34
24	1.30	1.90	24	1.42	2.23
26	1.25	1.82	26	1.36	2.14
28	1.20	1.76	28	1.31	2.05
30	1.16	1.70	30	1.26	1.98
32	1.12	1.64	32	1.22	1.91
34	1.09	1.59	34	1.18	1.85
36	1.06	1.55	36	1.14	1.79
38	1.03	1.51	38	1.11	1.74
40	1.00	1.47	40	1.07	1.69
45	.95	1.39	45	1.01	1.58
50	.90	1.31	50	.95	1.49
55	.86	1.25	55	.90	1.42
60	.82	1.20	60	.86	1.35
65	.79	1.15	65	.82	1.29
70	.76	1.11	70	.79	1.24
75	.73	1.07	75	.76	1.19
80	.71	1.04	80	.73	1.15
85	.69	1.01	85	.71	1.11
SLOPE = .500			SLOPE = .550		

STANDARD
INTENSITY-DURATION
CURVES DATA


.50
.55
.45
.50
.55
.50
.55
.58
.60
.63
.55
.50
.45
.50
.55
.58
.55
NOTES:
1. Slope of Intensity-Duration Curve based on District analysis of automatic recording rain gage records.
RCFC & WCD
HYDROLOGY MANUAL
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
SLOPE OF INTENSITY DURATION CURVE
APPROVED CHIEF ENGINEER R.E. NO. 6822
DATE
DRAWN BY: R.A.S.
SHEET NO.
PLATE D-4.6
DR. NO.
REVISED

APPENDIX C

AES RATIONAL OUTPUT –

PRE-DEVELOPMENT
POST-DEVELOPMENT - UNDETAINED
POST-DEVELOPMENT - DETAINED

2-YR, 5-YR, 10-YR, AND 100-YR

Rocas Grandes II
3816
2/10/2025

Rocas Grandes II WQMP Calculations

Pre-Project Drainage

Basin ID	Total Area (ac)	Impervious Area (Soil B) (sq-ft)	Impervious Area (Soil C) (sq-ft)	Pervious Area (Soil B) (sq-ft)	Pervious Area (Soil C) (sq-ft)	% Impervious	% Pervious	Weighted Runoff Coef C:
2.0	0.12	0	0	0	5321	0%	100%	0.79
2.1	8.52	0	0	197421	173713	0%	100%	0.74
3.0	0.08	0	0	0	3696	0%	100%	0.79
3.1	8.83	0	0	195747	188897	0%	100%	0.74
Total	17.56	0	0	393168	371627			

Runoff Coefficient Table		
Soil Type	B	C
Impervious	0.9	0.9
Pervious (landscape)	0.69	0.79

Post-Project Drainage

Basin ID	Total Area (ac)	Impervious Area (Soil B) (sq-ft)	Impervious Area (Soil C) (sq-ft)	Pervious Area (Soil B) (sq-ft)	Pervious Area (Soil C) (sq-ft)	% Impervious	% Pervious	Weighted Runoff Coef C:
1.0	0.98		39627		3210	93%	7%	0.89
1.1	0.87	13859	18854	2631	2760	86%	14%	0.88
1.3	0.11	4048		663		86%	14%	0.87
1.4	0.21	5822		3256		64%	36%	0.82
1.5	0.39	11531		5433		68%	32%	0.83
2.0	0.63		20285		7300	74%	26%	0.87
2.1	1.20		46586		5668	89%	11%	0.89
2.2	0.56		19828		4634	81%	19%	0.88
2.3	1.21		46361		6360	88%	12%	0.89
2.4	0.50	7347	6236	1794	6570	62%	38%	0.85
2.5	0.51	61	16147	158	5670	74%	26%	0.87
2.6	1.42	54091	231	7468		88%	12%	0.87
2.7	1.51	56130	1804	8008		88%	12%	0.87
2.8	1.20	43970		8399		84%	16%	0.87
2.9	0.31	10639		2912		79%	21%	0.85
3.0	0.46		16191		3679	81%	19%	0.88
3.1	0.62		22380		4541	83%	17%	0.88
3.2	0.57		20497		4533	82%	18%	0.88
3.3	0.53		20515		2560	89%	11%	0.89
3.4	0.63		22591		4736	83%	17%	0.88
3.5	0.41	840	14347	783	1912	85%	15%	0.88

3.6	0.88		26319		12188	68%	32%	0.87
3.7	0.59	22218	1155	2484	30	90%	10%	0.88
3.8	0.36	12927		2645		83%	17%	0.86
3.9	0.57	23371		1399		94%	6%	0.89
4	1.33	49802		7981		86%	14%	0.87
4.1	0.45	14784		4776		76%	24%	0.85
4.2	0.62	19745		7221		73%	27%	0.84
4.3	0.42	15100		3074		83%	17%	0.86
	0.00					#DIV/0!	#DIV/0!	#DIV/0!
	0.00					#DIV/0!	#DIV/0!	#DIV/0!

PRE-DEVELOPMENT AES

(2-YEAR STORM EVENT)

```
**************************************************************************
          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
        RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                    (RCFC&WCD)  1978 HYDROLOGY MANUAL
         (c) Copyright 1982-2016 Advanced Engineering Software (aes)
                    (Rational Tabling Version 23.0)
                Release Date: 07/01/2016  License ID 1452

                          Analysis prepared by:
```

```
 ************************* DESCRIPTION OF STUDY *************************
* 3816 ROCAS GRANDES II                                                 *
* 2 YEAR STORM EVENT                                                    *
* PRE-PROJECT HYDROLOGY                                                 *
 ************************************************************************

  FILE NAME: 3816E2.DAT
  TIME/DATE OF STUDY: 14:17 03/31/2022
------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =    2.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =   6.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  10-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  2.010
  10-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  0.820
  100-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  2.940
  100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.200
  SLOPE OF 10-YEAR INTENSITY-DURATION CURVE =  0.5003939
  SLOPE OF 100-YEAR INTENSITY-DURATION CURVE =  0.5001161
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =    2.00   1-HOUR INTENSITY(INCH/HOUR) =   0.554
  SLOPE OF INTENSITY DURATION CURVE = 0.5004
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: COMPUTE CONFLUENCE VALUES ACCORDING TO RCFC&WCD HYDROLOGY MANUAL
        AND IGNORE OTHER CONFLUENCE COMBINATIONS FOR DOWNSTREAM ANALYSES
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
```

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

****************************************************************************
  FLOW PROCESS FROM NODE    200.00 TO NODE    201.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS COMMERCIAL
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1583.20
  DOWNSTREAM ELEVATION(FEET) =   1580.00
  ELEVATION DIFFERENCE(FEET) =      3.20
  TC = 0.303*[(  100.00**3)/(     3.20)]**.2 =    3.807
  COMPUTED TIME OF CONCENTRATION INCREASED TO 5 MIN.
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.922
  *USER SPECIFIED(SUBAREA):
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .7900
  SUBAREA RUNOFF(CFS) =      0.18
  TOTAL AREA(ACRES) =      0.12   TOTAL RUNOFF(CFS) =      0.18

****************************************************************************
  FLOW PROCESS FROM NODE    200.00 TO NODE    201.00 IS CODE =  22
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS COMMERCIAL
  USER SPECIFIED Tc(MIN.) =    5.000
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.922
  *USER SPECIFIED(SUBAREA):
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .7900
  SUBAREA RUNOFF(CFS) =      0.18
  TOTAL AREA(ACRES) =      0.12   TOTAL RUNOFF(CFS) =      0.18

****************************************************************************
  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) =   1580.00  DOWNSTREAM(FEET) =   1562.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1113.00   CHANNEL SLOPE =  0.0162
  CHANNEL BASE(FEET) =   50.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =   0.50
```

```
   2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  0.807
  *USER SPECIFIED(SUBAREA):
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .7400
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.05
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   0.80
  AVERAGE FLOW DEPTH(FEET) =   0.07   TRAVEL TIME(MIN.) =  23.30
  Tc(MIN.) =   28.30
  SUBAREA AREA(ACRES) =     8.52       SUBAREA RUNOFF(CFS) =    5.09
  TOTAL AREA(ACRES) =        8.6         PEAK FLOW RATE(CFS) =       5.27

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.10   FLOW VELOCITY(FEET/SEC.) =   0.94
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    202.00 =   11113.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    300.00 TO NODE    301.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS COMMERCIAL
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1582.70
  DOWNSTREAM ELEVATION(FEET) =   1580.80
  ELEVATION DIFFERENCE(FEET) =      1.90
  TC = 0.303*[(  100.00**3)/(     1.90)]**.2 =    4.225
  COMPUTED TIME OF CONCENTRATION INCREASED TO 5 MIN.
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.922
  *USER SPECIFIED(SUBAREA):
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .7900
  SUBAREA RUNOFF(CFS) =      0.12
  TOTAL AREA(ACRES) =      0.08   TOTAL RUNOFF(CFS) =      0.12

****************************************************************************
  FLOW PROCESS FROM NODE    300.00 TO NODE    301.00 IS CODE =  22
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS COMMERCIAL
  USER SPECIFIED Tc(MIN.) =    5.000
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.922
  *USER SPECIFIED(SUBAREA):
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .7900
  SUBAREA RUNOFF(CFS) =      0.12
  TOTAL AREA(ACRES) =      0.08   TOTAL RUNOFF(CFS) =      0.12

****************************************************************************
  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) =   1580.80  DOWNSTREAM(FEET) =   1561.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1185.00   CHANNEL SLOPE =  0.0167
  CHANNEL BASE(FEET) =   50.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =   0.50
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  0.780
  *USER SPECIFIED(SUBAREA):
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .7400
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.99
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   0.78
  AVERAGE FLOW DEPTH(FEET) =   0.07   TRAVEL TIME(MIN.) =  25.32
  Tc(MIN.) =   30.32
  SUBAREA AREA(ACRES) =     8.83       SUBAREA RUNOFF(CFS) =    5.10
  TOTAL AREA(ACRES) =        8.9         PEAK FLOW RATE(CFS) =       5.22

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.10   FLOW VELOCITY(FEET/SEC.) =   0.99
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    302.00 =    1285.00 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        8.9  TC(MIN.) =     30.32
  PEAK FLOW RATE(CFS)   =       5.22
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```



PRE-DEVELOPMENT AES

(5-YEAR STORM EVENT)

```
**************************************************************************
          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
        RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                    (RCFC&WCD)  1978 HYDROLOGY MANUAL
         (c) Copyright 1982-2016 Advanced Engineering Software (aes)
                    (Rational Tabling Version 23.0)
                Release Date: 07/01/2016  License ID 1452

                          Analysis prepared by:
```

```
 ************************* DESCRIPTION OF STUDY *************************
* 3816 ROCAS GRANDES II                                                 *
* 5 YEAR STORM EVENT                                                    *
* PRE-PROJECT HYDROLOGY                                                 *
 ************************************************************************

  FILE NAME: 3816E5.DAT
  TIME/DATE OF STUDY: 14:17 03/31/2022
------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =    5.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =   6.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  10-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  2.010
  10-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  0.820
  100-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  2.940
  100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.200
  SLOPE OF 10-YEAR INTENSITY-DURATION CURVE =  0.5003939
  SLOPE OF 100-YEAR INTENSITY-DURATION CURVE =  0.5001161
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =    5.00   1-HOUR INTENSITY(INCH/HOUR) =   0.724
  SLOPE OF INTENSITY DURATION CURVE = 0.5004
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: COMPUTE CONFLUENCE VALUES ACCORDING TO RCFC&WCD HYDROLOGY MANUAL
        AND IGNORE OTHER CONFLUENCE COMBINATIONS FOR DOWNSTREAM ANALYSES
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
```

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

****************************************************************************
  FLOW PROCESS FROM NODE    200.00 TO NODE    201.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS COMMERCIAL
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1583.20
  DOWNSTREAM ELEVATION(FEET) =   1580.00
  ELEVATION DIFFERENCE(FEET) =      3.20
  TC = 0.303*[(  100.00**3)/(     3.20)]**.2 =    3.807
  COMPUTED TIME OF CONCENTRATION INCREASED TO 5 MIN.
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.509
  *USER SPECIFIED(SUBAREA):
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .7900
  SUBAREA RUNOFF(CFS) =      0.24
  TOTAL AREA(ACRES) =      0.12   TOTAL RUNOFF(CFS) =      0.24

****************************************************************************
  FLOW PROCESS FROM NODE    200.00 TO NODE    201.00 IS CODE =  22
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS COMMERCIAL
  USER SPECIFIED Tc(MIN.) =    5.000
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.509
  *USER SPECIFIED(SUBAREA):
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .7900
  SUBAREA RUNOFF(CFS) =      0.24
  TOTAL AREA(ACRES) =      0.12   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) =   1580.00  DOWNSTREAM(FEET) =   1562.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1113.00   CHANNEL SLOPE =  0.0162
  CHANNEL BASE(FEET) =   50.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =   0.50
```

```
   5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.089
 *USER SPECIFIED(SUBAREA):
 UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .7400
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.07
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   0.86
 AVERAGE FLOW DEPTH(FEET) =   0.09   TRAVEL TIME(MIN.) =  21.51
 Tc(MIN.) =   26.51
 SUBAREA AREA(ACRES) =     8.52       SUBAREA RUNOFF(CFS) =    6.87
 TOTAL AREA(ACRES) =        8.6         PEAK FLOW RATE(CFS) =       7.10

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.12   FLOW VELOCITY(FEET/SEC.) =   1.06
 LONGEST FLOWPATH FROM NODE    200.00 TO NODE    202.00 =   11113.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    300.00 TO NODE    301.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
        ASSUMED INITIAL SUBAREA UNIFORM
        DEVELOPMENT IS COMMERCIAL
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
 UPSTREAM ELEVATION(FEET) =   1582.70
 DOWNSTREAM ELEVATION(FEET) =   1580.80
 ELEVATION DIFFERENCE(FEET) =      1.90
 TC = 0.303*[(  100.00**3)/(     1.90)]**.2 =    4.225
 COMPUTED TIME OF CONCENTRATION INCREASED TO 5 MIN.
   5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.509
 *USER SPECIFIED(SUBAREA):
 COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .7900
 SUBAREA RUNOFF(CFS) =      0.16
 TOTAL AREA(ACRES) =      0.08   TOTAL RUNOFF(CFS) =      0.16

****************************************************************************
 FLOW PROCESS FROM NODE    300.00 TO NODE    301.00 IS CODE =  22
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
        ASSUMED INITIAL SUBAREA UNIFORM
        DEVELOPMENT IS COMMERCIAL
 USER SPECIFIED Tc(MIN.) =    5.000
   5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.509
 *USER SPECIFIED(SUBAREA):
 COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .7900
 SUBAREA RUNOFF(CFS) =      0.16
 TOTAL AREA(ACRES) =      0.08   TOTAL RUNOFF(CFS) =      0.16

****************************************************************************
 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) =   1580.80  DOWNSTREAM(FEET) =   1561.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1185.00   CHANNEL SLOPE =  0.0167
  CHANNEL BASE(FEET) =   50.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =   0.50
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.062
  *USER SPECIFIED(SUBAREA):
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .7400
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.07
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   0.86
  AVERAGE FLOW DEPTH(FEET) =   0.09   TRAVEL TIME(MIN.) =  22.87
  Tc(MIN.) =   27.87
  SUBAREA AREA(ACRES) =     8.83       SUBAREA RUNOFF(CFS) =    6.94
  TOTAL AREA(ACRES) =        8.9         PEAK FLOW RATE(CFS) =       7.10

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.12   FLOW VELOCITY(FEET/SEC.) =   1.08
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    302.00 =    1285.00 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        8.9  TC(MIN.) =     27.87
  PEAK FLOW RATE(CFS)   =       7.10
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```



PRE-DEVELOPMENT AES

(10-YEAR STORM EVENT)

```
**************************************************************************
          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
        RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                    (RCFC&WCD)  1978 HYDROLOGY MANUAL
         (c) Copyright 1982-2016 Advanced Engineering Software (aes)
                    (Rational Tabling Version 23.0)
                Release Date: 07/01/2016  License ID 1452

                          Analysis prepared by:
```

```
 ************************* DESCRIPTION OF STUDY *************************
* 3816 ROCAS GRANDES II                                                 *
* 10 YEAR STORM EVENT                                                   *
* PRE-PROJECT HYDROLOGY                                                 *
 ************************************************************************

  FILE NAME: 3816E10.DAT
  TIME/DATE OF STUDY: 14:10 03/31/2022
------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =   6.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  10-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  2.010
  10-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  0.820
  100-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  2.940
  100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.200
  SLOPE OF 10-YEAR INTENSITY-DURATION CURVE =  0.5003939
  SLOPE OF 100-YEAR INTENSITY-DURATION CURVE =  0.5001161
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =   10.00   1-HOUR INTENSITY(INCH/HOUR) =   0.828
  SLOPE OF INTENSITY DURATION CURVE = 0.5004
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: COMPUTE CONFLUENCE VALUES ACCORDING TO RCFC&WCD HYDROLOGY MANUAL
        AND IGNORE OTHER CONFLUENCE COMBINATIONS FOR DOWNSTREAM ANALYSES
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
```

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

****************************************************************************
  FLOW PROCESS FROM NODE    200.00 TO NODE    201.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS COMMERCIAL
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1583.20
  DOWNSTREAM ELEVATION(FEET) =   1580.00
  ELEVATION DIFFERENCE(FEET) =      3.20
  TC = 0.303*[(  100.00**3)/(     3.20)]**.2 =    3.807
  COMPUTED TIME OF CONCENTRATION INCREASED TO 5 MIN.
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.872
  *USER SPECIFIED(SUBAREA):
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .7900
  SUBAREA RUNOFF(CFS) =      0.27
  TOTAL AREA(ACRES) =      0.12   TOTAL RUNOFF(CFS) =      0.27

****************************************************************************
  FLOW PROCESS FROM NODE    200.00 TO NODE    201.00 IS CODE =  22
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS COMMERCIAL
  USER SPECIFIED Tc(MIN.) =    5.000
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.872
  *USER SPECIFIED(SUBAREA):
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .7900
  SUBAREA RUNOFF(CFS) =      0.27
  TOTAL AREA(ACRES) =      0.12   TOTAL RUNOFF(CFS) =      0.27

****************************************************************************
  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) =   1580.00  DOWNSTREAM(FEET) =   1562.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1113.00   CHANNEL SLOPE =  0.0162
  CHANNEL BASE(FEET) =   50.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =   0.50
```

```
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.282
 *USER SPECIFIED(SUBAREA):
 UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .7400
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.78
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   0.93
 AVERAGE FLOW DEPTH(FEET) =   0.09   TRAVEL TIME(MIN.) =  20.05
 Tc(MIN.) =   25.05
 SUBAREA AREA(ACRES) =     8.52       SUBAREA RUNOFF(CFS) =    8.08
 TOTAL AREA(ACRES) =        8.6         PEAK FLOW RATE(CFS) =       8.36

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.13   FLOW VELOCITY(FEET/SEC.) =   1.11
 LONGEST FLOWPATH FROM NODE    200.00 TO NODE    202.00 =   11113.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    300.00 TO NODE    301.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
        ASSUMED INITIAL SUBAREA UNIFORM
        DEVELOPMENT IS COMMERCIAL
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
 UPSTREAM ELEVATION(FEET) =   1582.70
 DOWNSTREAM ELEVATION(FEET) =   1580.80
 ELEVATION DIFFERENCE(FEET) =      1.90
 TC = 0.303*[(  100.00**3)/(     1.90)]**.2 =    4.225
 COMPUTED TIME OF CONCENTRATION INCREASED TO 5 MIN.
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.872
 *USER SPECIFIED(SUBAREA):
 COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .7900
 SUBAREA RUNOFF(CFS) =      0.18
 TOTAL AREA(ACRES) =      0.08   TOTAL RUNOFF(CFS) =      0.18

****************************************************************************
 FLOW PROCESS FROM NODE    300.00 TO NODE    301.00 IS CODE =  22
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
        ASSUMED INITIAL SUBAREA UNIFORM
        DEVELOPMENT IS COMMERCIAL
 USER SPECIFIED Tc(MIN.) =    5.000
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.872
 *USER SPECIFIED(SUBAREA):
 COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .7900
 SUBAREA RUNOFF(CFS) =      0.18
 TOTAL AREA(ACRES) =      0.08   TOTAL RUNOFF(CFS) =      0.18

****************************************************************************
 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) =   1580.80  DOWNSTREAM(FEET) =   1561.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1185.00   CHANNEL SLOPE =  0.0167
  CHANNEL BASE(FEET) =   50.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =   0.50
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.243
  *USER SPECIFIED(SUBAREA):
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .7400
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.71
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   0.91
  AVERAGE FLOW DEPTH(FEET) =   0.09   TRAVEL TIME(MIN.) =  21.66
  Tc(MIN.) =   26.66
  SUBAREA AREA(ACRES) =     8.83       SUBAREA RUNOFF(CFS) =    8.12
  TOTAL AREA(ACRES) =        8.9         PEAK FLOW RATE(CFS) =       8.30

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.13   FLOW VELOCITY(FEET/SEC.) =   1.16
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    302.00 =    1285.00 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        8.9  TC(MIN.) =     26.66
  PEAK FLOW RATE(CFS)   =       8.30
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```



PRE-DEVELOPMENT AES

(100-YEAR STORM EVENT)

```
**************************************************************************
          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
        RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                    (RCFC&WCD)  1978 HYDROLOGY MANUAL
         (c) Copyright 1982-2016 Advanced Engineering Software (aes)
                    (Rational Tabling Version 23.0)
                Release Date: 07/01/2016  License ID 1452

                          Analysis prepared by:
```

```
 ************************* DESCRIPTION OF STUDY *************************
* 3816 ROCAS GRANDES II                                                 *
* 100 YEAR STORM EVENT                                                  *
* PRE-PROJECT HYDROLOGY                                                 *
 ************************************************************************

  FILE NAME: 3816E100.DAT
  TIME/DATE OF STUDY: 14:10 03/31/2022
------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =   6.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  10-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  2.010
  10-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  0.820
  100-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  2.940
  100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.200
  SLOPE OF 10-YEAR INTENSITY-DURATION CURVE =  0.5003939
  SLOPE OF 100-YEAR INTENSITY-DURATION CURVE =  0.5001161
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =  100.00   1-HOUR INTENSITY(INCH/HOUR) =   1.200
  SLOPE OF INTENSITY DURATION CURVE = 0.5001
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: COMPUTE CONFLUENCE VALUES ACCORDING TO RCFC&WCD HYDROLOGY MANUAL
        AND IGNORE OTHER CONFLUENCE COMBINATIONS FOR DOWNSTREAM ANALYSES
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
```

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

****************************************************************************
  FLOW PROCESS FROM NODE    200.00 TO NODE    201.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS COMMERCIAL
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1583.20
  DOWNSTREAM ELEVATION(FEET) =   1580.00
  ELEVATION DIFFERENCE(FEET) =      3.20
  TC = 0.303*[(  100.00**3)/(     3.20)]**.2 =    3.807
  COMPUTED TIME OF CONCENTRATION INCREASED TO 5 MIN.
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.158
  *USER SPECIFIED(SUBAREA):
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .7900
  SUBAREA RUNOFF(CFS) =      0.39
  TOTAL AREA(ACRES) =      0.12   TOTAL RUNOFF(CFS) =      0.39

****************************************************************************
  FLOW PROCESS FROM NODE    200.00 TO NODE    201.00 IS CODE =  22
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS COMMERCIAL
  USER SPECIFIED Tc(MIN.) =    5.000
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.158
  *USER SPECIFIED(SUBAREA):
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .7900
  SUBAREA RUNOFF(CFS) =      0.39
  TOTAL AREA(ACRES) =      0.12   TOTAL RUNOFF(CFS) =      0.39

****************************************************************************
  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) =   1580.00  DOWNSTREAM(FEET) =   1562.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1113.00   CHANNEL SLOPE =  0.0162
  CHANNEL BASE(FEET) =   50.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =   0.50
```

```
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.974
 *USER SPECIFIED(SUBAREA):
 UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .7400
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       7.20
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   1.08
 AVERAGE FLOW DEPTH(FEET) =   0.12   TRAVEL TIME(MIN.) =  17.19
 Tc(MIN.) =   22.19
 SUBAREA AREA(ACRES) =     8.52       SUBAREA RUNOFF(CFS) =   12.44
 TOTAL AREA(ACRES) =        8.6         PEAK FLOW RATE(CFS) =      12.84

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.16   FLOW VELOCITY(FEET/SEC.) =   1.34
 LONGEST FLOWPATH FROM NODE    200.00 TO NODE    202.00 =   11113.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    300.00 TO NODE    301.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
        ASSUMED INITIAL SUBAREA UNIFORM
        DEVELOPMENT IS COMMERCIAL
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
 UPSTREAM ELEVATION(FEET) =   1582.70
 DOWNSTREAM ELEVATION(FEET) =   1580.80
 ELEVATION DIFFERENCE(FEET) =      1.90
 TC = 0.303*[(  100.00**3)/(     1.90)]**.2 =    4.225
 COMPUTED TIME OF CONCENTRATION INCREASED TO 5 MIN.
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.158
 *USER SPECIFIED(SUBAREA):
 COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .7900
 SUBAREA RUNOFF(CFS) =      0.26
 TOTAL AREA(ACRES) =      0.08   TOTAL RUNOFF(CFS) =      0.26

****************************************************************************
 FLOW PROCESS FROM NODE    300.00 TO NODE    301.00 IS CODE =  22
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
        ASSUMED INITIAL SUBAREA UNIFORM
        DEVELOPMENT IS COMMERCIAL
 USER SPECIFIED Tc(MIN.) =    5.000
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.158
 *USER SPECIFIED(SUBAREA):
 COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .7900
 SUBAREA RUNOFF(CFS) =      0.26
 TOTAL AREA(ACRES) =      0.08   TOTAL RUNOFF(CFS) =      0.26

****************************************************************************
 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) =   1580.80  DOWNSTREAM(FEET) =   1561.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1185.00   CHANNEL SLOPE =  0.0167
  CHANNEL BASE(FEET) =   50.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =   0.50
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.925
  *USER SPECIFIED(SUBAREA):
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .7400
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       7.19
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   1.08
  AVERAGE FLOW DEPTH(FEET) =   0.12   TRAVEL TIME(MIN.) =  18.33
  Tc(MIN.) =   23.33
  SUBAREA AREA(ACRES) =     8.83       SUBAREA RUNOFF(CFS) =   12.58
  TOTAL AREA(ACRES) =        8.9         PEAK FLOW RATE(CFS) =      12.84

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.16   FLOW VELOCITY(FEET/SEC.) =   1.34
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    302.00 =    1285.00 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        8.9  TC(MIN.) =     23.33
  PEAK FLOW RATE(CFS)   =      12.84
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```



POST-DEVELOPMENT AES

UN-DETAINED

(2-YEAR STORM EVENT)

```
**************************************************************************
          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
       RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                  (RCFC&WCD)  1978 HYDROLOGY MANUAL
        (c) Copyright 1982-2016 Advanced Engineering Software (aes)
                  (Rational Tabling Version 23.0)
              Release Date: 07/01/2016  License ID 1452

                        Analysis prepared by:

    ************************ DESCRIPTION OF STUDY *************************
* 3816 ROCAS GRANDES II                                                  *
* 2 YEAR STORM EVENT                                                     *
* POST-PROJECT UNDETAINED HYDROLOGY                                      *
 **************************************************************************



--------------------------------------------------------------------------
  FILE NAME: 3816P2.DAT
  TIME/DATE OF STUDY: 07:25 02/11/2025
--------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
--------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =    2.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =   6.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  10-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  2.010
  10-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  0.820
  100-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  2.940
  100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.200
  SLOPE OF 10-YEAR INTENSITY-DURATION CURVE =  0.5003939
  SLOPE OF 100-YEAR INTENSITY-DURATION CURVE =  0.5001161
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =    2.00   1-HOUR INTENSITY(INCH/HOUR) =   0.554
  SLOPE OF INTENSITY DURATION CURVE = 0.5004
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: COMPUTE CONFLUENCE VALUES ACCORDING TO RCFC&WCD HYDROLOGY MANUAL
        AND IGNORE OTHER CONFLUENCE COMBINATIONS FOR DOWNSTREAM ANALYSES
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  ===== ====== ===== =======
  1   22.0     14.0    0.020/0.020/0.018   0.50    2.00 0.0312 0.167 0.0150
  2   46.0     38.0    0.020/0.020/0.020   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    201.00 TO NODE    202.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   341.00
  UPSTREAM ELEVATION(FEET) =   1582.50
  DOWNSTREAM ELEVATION(FEET) =   1579.60
  ELEVATION DIFFERENCE(FEET) =      2.90
  TC = 0.323*[(  341.00**3)/(     2.90)]**.2 =    8.629
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.463
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      0.80
  TOTAL AREA(ACRES) =      0.63   TOTAL RUNOFF(CFS) =      0.80

****************************************************************************
  FLOW PROCESS FROM NODE    202.00 TO NODE    500.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1579.60  DOWNSTREAM(FEET) =  1574.55
  FLOW LENGTH(FEET) =   122.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   6.0 INCH PIPE IS   3.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.03
  ESTIMATED PIPE DIAMETER(INCH) =   6.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.80
  PIPE TRAVEL TIME(MIN.) =   0.34    Tc(MIN.) =    8.97
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    500.00 =     463.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    500.00 TO NODE    500.00 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.) =    8.97
  RAINFALL INTENSITY(INCH/HR) =   1.44
```

```
  TOTAL STREAM AREA(ACRES) =     0.63
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.80

****************************************************************************
  FLOW PROCESS FROM NODE    211.00 TO NODE    212.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   154.00
  UPSTREAM ELEVATION(FEET) =   1580.40
  DOWNSTREAM ELEVATION(FEET) =   1577.65
  ELEVATION DIFFERENCE(FEET) =      2.75
  TC = 0.323*[(  154.00**3)/(     2.75)]**.2 =    5.413
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.847
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8900
  SUBAREA RUNOFF(CFS) =      1.97
  TOTAL AREA(ACRES) =      1.20   TOTAL RUNOFF(CFS) =      1.97

****************************************************************************
  FLOW PROCESS FROM NODE    212.00 TO NODE    500.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1575.65  DOWNSTREAM(FEET) =  1574.55
  FLOW LENGTH(FEET) =   165.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   7.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.83
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.97
  PIPE TRAVEL TIME(MIN.) =   0.72    Tc(MIN.) =    6.13
  LONGEST FLOWPATH FROM NODE    211.00 TO NODE    500.00 =     319.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    500.00 TO NODE    500.00 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.) =    6.13
  RAINFALL INTENSITY(INCH/HR) =   1.74
  TOTAL STREAM AREA(ACRES) =     1.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.97
```

```
 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        0.80     8.97        1.435          0.63
     2        1.97     6.13        1.736          1.20

 ********************************WARNING*********************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

 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        2.52     6.13       1.736
     2        2.43     8.97       1.435

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       2.52   Tc(MIN.) =    6.13
 TOTAL AREA(ACRES) =        1.8
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE    500.00 =     463.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    500.00 TO NODE    505.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1574.45  DOWNSTREAM(FEET) =  1573.90
 FLOW LENGTH(FEET) =   106.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  15.0 INCH PIPE IS   8.1 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   3.72
 ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       2.52
 PIPE TRAVEL TIME(MIN.) =   0.48    Tc(MIN.) =    6.61
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE    505.00 =     569.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    505.00 TO NODE    505.00 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.) =    6.61
 RAINFALL INTENSITY(INCH/HR) =   1.67
```

```
  TOTAL STREAM AREA(ACRES) =     1.83
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.52

****************************************************************************
  FLOW PROCESS FROM NODE    221.00 TO NODE    222.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   328.00
  UPSTREAM ELEVATION(FEET) =   1577.80
  DOWNSTREAM ELEVATION(FEET) =   1574.90
  ELEVATION DIFFERENCE(FEET) =      2.90
  TC = 0.323*[(  328.00**3)/(     2.90)]**.2 =    8.430
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.480
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      0.73
  TOTAL AREA(ACRES) =      0.56   TOTAL RUNOFF(CFS) =      0.73

****************************************************************************
  FLOW PROCESS FROM NODE    222.00 TO NODE    505.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1574.90  DOWNSTREAM(FEET) =  1573.90
  FLOW LENGTH(FEET) =    44.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   6.0 INCH PIPE IS   4.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.64
  ESTIMATED PIPE DIAMETER(INCH) =   6.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.73
  PIPE TRAVEL TIME(MIN.) =   0.16    Tc(MIN.) =    8.59
  LONGEST FLOWPATH FROM NODE    221.00 TO NODE    505.00 =     372.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    505.00 TO NODE    505.00 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.) =    8.59
  RAINFALL INTENSITY(INCH/HR) =   1.47
  TOTAL STREAM AREA(ACRES) =     0.56
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.73
```

```
 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        2.52     6.61        1.672          1.83
     2        0.73     8.59        1.466          0.56

 ********************************WARNING*********************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

 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        3.08     6.61       1.672
     2        2.94     8.59       1.466

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       3.08   Tc(MIN.) =    6.61
 TOTAL AREA(ACRES) =        2.4
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE    505.00 =     569.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    505.00 TO NODE    510.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1573.80  DOWNSTREAM(FEET) =  1572.85
 FLOW LENGTH(FEET) =   159.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  15.0 INCH PIPE IS   8.8 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   4.11
 ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       3.08
 PIPE TRAVEL TIME(MIN.) =   0.64    Tc(MIN.) =    7.25
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE    510.00 =     728.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    510.00 TO NODE    510.00 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.) =    7.25
 RAINFALL INTENSITY(INCH/HR) =   1.60
```

```
  TOTAL STREAM AREA(ACRES) =     2.39
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.08

****************************************************************************
  FLOW PROCESS FROM NODE    231.00 TO NODE    233.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   327.00
  UPSTREAM ELEVATION(FEET) =   1577.00
  DOWNSTREAM ELEVATION(FEET) =   1573.75
  ELEVATION DIFFERENCE(FEET) =      3.25
  TC = 0.323*[(  327.00**3)/(     3.25)]**.2 =    8.225
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.498
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8900
  SUBAREA RUNOFF(CFS) =      1.61
  TOTAL AREA(ACRES) =      1.21   TOTAL RUNOFF(CFS) =      1.61

****************************************************************************
  FLOW PROCESS FROM NODE    233.00 TO NODE    510.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1573.75  DOWNSTREAM(FEET) =  1572.85
  FLOW LENGTH(FEET) =    44.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   5.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.52
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.61
  PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =    8.36
  LONGEST FLOWPATH FROM NODE    231.00 TO NODE    510.00 =     371.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    510.00 TO NODE    510.00 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.) =    8.36
  RAINFALL INTENSITY(INCH/HR) =   1.49
  TOTAL STREAM AREA(ACRES) =     1.21
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.61
```

```
 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        3.08     7.25        1.596          2.39
     2        1.61     8.36        1.487          1.21

 ********************************WARNING*********************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

 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        4.48     7.25       1.596
     2        4.48     8.36       1.487

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       4.48   Tc(MIN.) =    7.25
 TOTAL AREA(ACRES) =        3.6
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE    510.00 =     728.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    510.00 TO NODE    515.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1572.75  DOWNSTREAM(FEET) =  1572.25
 FLOW LENGTH(FEET) =    92.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  15.0 INCH PIPE IS  12.2 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   4.20
 ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       4.48
 PIPE TRAVEL TIME(MIN.) =   0.37    Tc(MIN.) =    7.62
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE    515.00 =     820.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    515.00 TO NODE    515.00 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.) =    7.62
 RAINFALL INTENSITY(INCH/HR) =   1.56
```

```
  TOTAL STREAM AREA(ACRES) =     3.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.48

****************************************************************************
  FLOW PROCESS FROM NODE    251.00 TO NODE    252.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   115.00
  UPSTREAM ELEVATION(FEET) =   1575.70
  DOWNSTREAM ELEVATION(FEET) =   1573.95
  ELEVATION DIFFERENCE(FEET) =      1.75
  TC = 0.323*[(  115.00**3)/(     1.75)]**.2 =    4.973
  COMPUTED TIME OF CONCENTRATION INCREASED TO 5 MIN.
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.922
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      0.85
  TOTAL AREA(ACRES) =      0.51   TOTAL RUNOFF(CFS) =      0.85

****************************************************************************
  FLOW PROCESS FROM NODE    252.00 TO NODE    515.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1573.95  DOWNSTREAM(FEET) =  1572.25
  FLOW LENGTH(FEET) =    41.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   6.0 INCH PIPE IS   4.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.13
  ESTIMATED PIPE DIAMETER(INCH) =   6.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.85
  PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =    5.11
  LONGEST FLOWPATH FROM NODE    251.00 TO NODE    515.00 =     156.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    515.00 TO NODE    515.00 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.) =    5.11
  RAINFALL INTENSITY(INCH/HR) =   1.90
  TOTAL STREAM AREA(ACRES) =     0.51
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.85
```

```
  ** CONFLUENCE DATA **
  STREAM     RUNOFF        Tc       INTENSITY      AREA
  NUMBER      (CFS)      (MIN.)   (INCH/HOUR)    (ACRE)
      1        4.48      7.62        1.557          3.60
      2        0.85      5.11        1.901          0.51

 ********************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

  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        3.86      5.11        1.901
      2        5.18      7.62        1.557

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       5.18   Tc(MIN.) =    7.62
  TOTAL AREA(ACRES) =        4.1
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    515.00 =     820.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    515.00 TO NODE    520.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1572.15  DOWNSTREAM(FEET) =  1569.15
  FLOW LENGTH(FEET) =   323.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS  10.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.43
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.18
  PIPE TRAVEL TIME(MIN.) =   0.99    Tc(MIN.) =    8.61
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    520.00 =    1143.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    520.00 TO NODE    520.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    271.00 TO NODE    272.00 IS CODE =  21
```

```
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   246.00
  UPSTREAM ELEVATION(FEET) =   1573.50
  DOWNSTREAM ELEVATION(FEET) =   1569.85
  ELEVATION DIFFERENCE(FEET) =      3.65
  TC = 0.323*[(  246.00**3)/(     3.65)]**.2 =    6.775
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.651
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      2.17
  TOTAL AREA(ACRES) =      1.51   TOTAL RUNOFF(CFS) =      2.17

****************************************************************************
  FLOW PROCESS FROM NODE    272.00 TO NODE    272.00 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.) =    6.77
  RAINFALL INTENSITY(INCH/HR) =   1.65
  TOTAL STREAM AREA(ACRES) =     1.51
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.17

****************************************************************************
  FLOW PROCESS FROM NODE    241.00 TO NODE    242.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   169.00
  UPSTREAM ELEVATION(FEET) =   1575.80
  DOWNSTREAM ELEVATION(FEET) =   1573.30
  ELEVATION DIFFERENCE(FEET) =      2.50
  TC = 0.323*[(  169.00**3)/(     2.50)]**.2 =    5.834
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.780
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8500
  SUBAREA RUNOFF(CFS) =      0.76
  TOTAL AREA(ACRES) =      0.50   TOTAL RUNOFF(CFS) =      0.76

****************************************************************************
  FLOW PROCESS FROM NODE    242.00 TO NODE    272.00 IS CODE =  31
```

```
------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1571.30  DOWNSTREAM(FEET) =  1569.85
  FLOW LENGTH(FEET) =   290.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   5.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   2.69
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.76
  PIPE TRAVEL TIME(MIN.) =   1.79    Tc(MIN.) =    7.63
  LONGEST FLOWPATH FROM NODE    241.00 TO NODE    272.00 =     459.00 FEET.

************************************************************************
  FLOW PROCESS FROM NODE    272.00 TO NODE    272.00 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.) =    7.63
  RAINFALL INTENSITY(INCH/HR) =   1.56
  TOTAL STREAM AREA(ACRES) =     0.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.76

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        2.17     6.77        1.651          1.51
      2        0.76     7.63        1.556          0.50

 ********************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

  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        2.84     6.77       1.651
      2        2.80     7.63       1.556

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       2.84   Tc(MIN.) =    6.77
  TOTAL AREA(ACRES) =        2.0
```

```
 LONGEST FLOWPATH FROM NODE    241.00 TO NODE    272.00 =     459.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    272.00 TO NODE    520.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1569.85  DOWNSTREAM(FEET) =  1569.15
 FLOW LENGTH(FEET) =   141.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  15.0 INCH PIPE IS   8.9 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   3.76
 ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       2.84
 PIPE TRAVEL TIME(MIN.) =   0.63    Tc(MIN.) =    7.40
 LONGEST FLOWPATH FROM NODE    241.00 TO NODE    520.00 =     600.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    520.00 TO NODE    520.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
 STREAM     RUNOFF       Tc       INTENSITY     AREA
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
     1        2.84     7.40       1.580        2.01
 LONGEST FLOWPATH FROM NODE    241.00 TO NODE    520.00 =     600.00 FEET.

 ** MEMORY BANK #  3 CONFLUENCE DATA **
 STREAM     RUNOFF       Tc       INTENSITY     AREA
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
     1        5.18     8.61       1.465        4.11
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE    520.00 =    1143.00 FEET.

 ****************************WARNING*************************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

 ** PEAK FLOW RATE TABLE **
 STREAM    RUNOFF       Tc       INTENSITY
 NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
     1       7.29       7.40        1.580
     2       7.82       8.61        1.465

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       7.82   Tc(MIN.) =    8.61
 TOTAL AREA(ACRES) =        6.1
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    520.00 TO NODE    262.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1569.85  DOWNSTREAM(FEET) =  1568.95
  FLOW LENGTH(FEET) =   180.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.83
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.82
  PIPE TRAVEL TIME(MIN.) =   0.62    Tc(MIN.) =    9.23
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    262.00 =    1323.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    262.00 TO NODE    262.00 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.) =    9.23
  RAINFALL INTENSITY(INCH/HR) =   1.41
  TOTAL STREAM AREA(ACRES) =     6.12
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.82

****************************************************************************
  FLOW PROCESS FROM NODE    261.00 TO NODE    262.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   478.00
  UPSTREAM ELEVATION(FEET) =   1575.50
  DOWNSTREAM ELEVATION(FEET) =   1569.45
  ELEVATION DIFFERENCE(FEET) =      6.05
  TC = 0.323*[(  478.00**3)/(     6.05)]**.2 =    9.122
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.423
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      1.76
  TOTAL AREA(ACRES) =      1.42   TOTAL RUNOFF(CFS) =      1.76

****************************************************************************
  FLOW PROCESS FROM NODE    262.00 TO NODE    262.00 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.) =    9.12
  RAINFALL INTENSITY(INCH/HR) =   1.42
  TOTAL STREAM AREA(ACRES) =     1.42
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.76

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        7.82     9.23        1.415          6.12
      2        1.76     9.12        1.423          1.42

 ********************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

  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        9.48     9.12       1.423
      2        9.56     9.23       1.415

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       9.56   Tc(MIN.) =    9.23
  TOTAL AREA(ACRES) =        7.5
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    262.00 =    1323.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    262.00 TO NODE    530.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1566.28  DOWNSTREAM(FEET) =  1565.40
  FLOW LENGTH(FEET) =    13.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS   8.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.58
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       9.56
  PIPE TRAVEL TIME(MIN.) =   0.02    Tc(MIN.) =    9.25
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    530.00 =    1336.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    530.00 TO NODE    530.00 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.) =    9.25
  RAINFALL INTENSITY(INCH/HR) =   1.41
  TOTAL STREAM AREA(ACRES) =     7.54
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.56

****************************************************************************
  FLOW PROCESS FROM NODE    281.00 TO NODE    282.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   344.00
  UPSTREAM ELEVATION(FEET) =   1571.00
  DOWNSTREAM ELEVATION(FEET) =   1568.18
  ELEVATION DIFFERENCE(FEET) =      2.82
  TC = 0.323*[(  344.00**3)/(     2.82)]**.2 =    8.723
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.455
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      1.52
  TOTAL AREA(ACRES) =      1.20   TOTAL RUNOFF(CFS) =      1.52

****************************************************************************
  FLOW PROCESS FROM NODE    282.00 TO NODE    530.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1565.51  DOWNSTREAM(FEET) =  1565.40
  FLOW LENGTH(FEET) =    20.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   6.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.35
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.52
  PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =    8.82
  LONGEST FLOWPATH FROM NODE    281.00 TO NODE    530.00 =     364.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    530.00 TO NODE    530.00 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.) =    8.82
  RAINFALL INTENSITY(INCH/HR) =   1.45
  TOTAL STREAM AREA(ACRES) =     1.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.52

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        9.56     9.25        1.413          7.54
      2        1.52     8.82        1.447          1.20

 **********************************WARNING**********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ********************************************************************************

  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       10.64     8.82       1.447
      2       11.05     9.25       1.413

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      11.05   Tc(MIN.) =    9.25
  TOTAL AREA(ACRES) =        8.7
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    530.00 =    1336.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    535.00 TO NODE    540.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1563.70  DOWNSTREAM(FEET) =  1563.44
  FLOW LENGTH(FEET) =    34.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  14.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.12
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      11.05
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =    9.34
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    540.00 =    1370.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    540.00 TO NODE    541.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1563.40  DOWNSTREAM(FEET) =   1561.53
  CHANNEL LENGTH THRU SUBAREA(FEET) =   133.00   CHANNEL SLOPE =  0.0141
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   0.018
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   0.07

         ==>>WARNING: FLOW IN CHANNEL EXCEEDS CHANNEL
             CAPACITY( NORMAL DEPTH EQUAL TO SPECIFIED MAXIMUM
             ALLOWABLE DEPTH).
             AS AN APPROXIMATION, FLOWDEPTH IS SET AT MAXIMUM
             ALLOWABLE DEPTH AND IS USED FOR TRAVELTIME CALCULATIONS.

  CHANNEL FLOW THRU SUBAREA(CFS) =      11.05
  FLOW VELOCITY(FEET/SEC.) =  19.72   FLOW DEPTH(FEET) =   0.07
  TRAVEL TIME(MIN.) =   0.11   Tc(MIN.) =    9.45
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    541.00 =    1503.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    541.00 TO NODE    541.00 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.) =    9.45
  RAINFALL INTENSITY(INCH/HR) =   1.40
  TOTAL STREAM AREA(ACRES) =     8.74
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.05

****************************************************************************
  FLOW PROCESS FROM NODE    110.00 TO NODE    541.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   252.00
  UPSTREAM ELEVATION(FEET) =   1566.10
  DOWNSTREAM ELEVATION(FEET) =   1561.53
  ELEVATION DIFFERENCE(FEET) =      4.57
  TC = 0.323*[(  252.00**3)/(     4.57)]**.2 =    6.571
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.677
  *USER SPECIFIED(SUBAREA):
```

```
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8200
  SUBAREA RUNOFF(CFS) =      0.27
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.27

****************************************************************************
  FLOW PROCESS FROM NODE    541.00 TO NODE    541.00 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.) =    6.57
  RAINFALL INTENSITY(INCH/HR) =   1.68
  TOTAL STREAM AREA(ACRES) =     0.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.27

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       11.05     9.45        1.398          8.74
      2        0.27     6.57        1.677          0.20

 ********************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

  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        7.96     6.57       1.677
      2       11.28     9.45       1.398

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      11.28   Tc(MIN.) =    9.45
  TOTAL AREA(ACRES) =        8.9
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    541.00 =    1503.00 FEET.

****************************************************************************
  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) =   1561.53  DOWNSTREAM(FEET) =   1561.10
```

```
  CHANNEL LENGTH THRU SUBAREA(FEET) =    61.00   CHANNEL SLOPE =  0.0071
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   0.018
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   0.07

         ==>>WARNING: FLOW IN CHANNEL EXCEEDS CHANNEL
             CAPACITY( NORMAL DEPTH EQUAL TO SPECIFIED MAXIMUM
             ALLOWABLE DEPTH).
             AS AN APPROXIMATION, FLOWDEPTH IS SET AT MAXIMUM
             ALLOWABLE DEPTH AND IS USED FOR TRAVELTIME CALCULATIONS.

  CHANNEL FLOW THRU SUBAREA(CFS) =      11.28
  FLOW VELOCITY(FEET/SEC.) =  20.13   FLOW DEPTH(FEET) =   0.07
  TRAVEL TIME(MIN.) =   0.05   Tc(MIN.) =    9.50
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    542.00 =    1564.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    301.00 TO NODE    302.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   176.00
  UPSTREAM ELEVATION(FEET) =   1581.00
  DOWNSTREAM ELEVATION(FEET) =   1580.00
  ELEVATION DIFFERENCE(FEET) =      1.00
  TC = 0.323*[(  176.00**3)/(     1.00)]**.2 =    7.180
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.604
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      0.65
  TOTAL AREA(ACRES) =      0.46   TOTAL RUNOFF(CFS) =      0.65

****************************************************************************
  FLOW PROCESS FROM NODE    302.00 TO NODE    600.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1578.40  DOWNSTREAM(FEET) =  1574.45
  FLOW LENGTH(FEET) =   187.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   6.0 INCH PIPE IS   4.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.43
  ESTIMATED PIPE DIAMETER(INCH) =   6.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.65
  PIPE TRAVEL TIME(MIN.) =   0.70    Tc(MIN.) =    7.88
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    600.00 =     363.00 FEET.

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

```
  FLOW PROCESS FROM NODE    600.00 TO NODE    600.00 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.) =    7.88
  RAINFALL INTENSITY(INCH/HR) =   1.53
  TOTAL STREAM AREA(ACRES) =     0.46
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.65

****************************************************************************
  FLOW PROCESS FROM NODE    311.00 TO NODE    312.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   157.00
  UPSTREAM ELEVATION(FEET) =   1580.80
  DOWNSTREAM ELEVATION(FEET) =   1577.70
  ELEVATION DIFFERENCE(FEET) =      3.10
  TC = 0.323*[(  157.00**3)/(     3.10)]**.2 =    5.346
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.859
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      1.01
  TOTAL AREA(ACRES) =      0.62   TOTAL RUNOFF(CFS) =      1.01

****************************************************************************
  FLOW PROCESS FROM NODE    312.00 TO NODE    600.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1575.70  DOWNSTREAM(FEET) =  1574.45
  FLOW LENGTH(FEET) =    89.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   4.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.31
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.01
  PIPE TRAVEL TIME(MIN.) =   0.34    Tc(MIN.) =    5.69
  LONGEST FLOWPATH FROM NODE    311.00 TO NODE    600.00 =     246.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    600.00 TO NODE    600.00 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.) =    5.69
  RAINFALL INTENSITY(INCH/HR) =   1.80
  TOTAL STREAM AREA(ACRES) =     0.62
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.01

****************************************************************************
  FLOW PROCESS FROM NODE    321.00 TO NODE    322.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   190.00
  UPSTREAM ELEVATION(FEET) =   1578.50
  DOWNSTREAM ELEVATION(FEET) =   1576.10
  ELEVATION DIFFERENCE(FEET) =      2.40
  TC = 0.323*[(  190.00**3)/(     2.40)]**.2 =    6.310
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.711
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      0.86
  TOTAL AREA(ACRES) =      0.57   TOTAL RUNOFF(CFS) =      0.86

****************************************************************************
  FLOW PROCESS FROM NODE    322.00 TO NODE    600.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1576.10  DOWNSTREAM(FEET) =  1574.45
  FLOW LENGTH(FEET) =    21.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   6.0 INCH PIPE IS   3.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.87
  ESTIMATED PIPE DIAMETER(INCH) =   6.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.86
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =    6.35
  LONGEST FLOWPATH FROM NODE    321.00 TO NODE    600.00 =     211.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    600.00 TO NODE    600.00 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.) =    6.35
```

```
 RAINFALL INTENSITY(INCH/HR) =   1.71
 TOTAL STREAM AREA(ACRES) =     0.57
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.86

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        0.65     7.88        1.531          0.46
     2        1.01     5.69        1.802          0.62
     3        0.86     6.35        1.705          0.57

 ********************************WARNING*************************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

 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        2.25     5.69       1.802
     2        2.34     6.35       1.705
     3        2.28     7.88       1.531

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       2.25   Tc(MIN.) =    5.69
 TOTAL AREA(ACRES) =        1.7
 LONGEST FLOWPATH FROM NODE    301.00 TO NODE    600.00 =     363.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    600.00 TO NODE    605.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1574.45  DOWNSTREAM(FEET) =  1573.65
 FLOW LENGTH(FEET) =   137.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  12.0 INCH PIPE IS   8.7 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   3.70
 ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       2.25
 PIPE TRAVEL TIME(MIN.) =   0.62    Tc(MIN.) =    6.31
 LONGEST FLOWPATH FROM NODE    301.00 TO NODE    605.00 =     500.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    605.00 TO NODE    605.00 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.) =    6.31
  RAINFALL INTENSITY(INCH/HR) =   1.71
  TOTAL STREAM AREA(ACRES) =     1.65
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.25

****************************************************************************
  FLOW PROCESS FROM NODE    341.00 TO NODE    342.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   176.00
  UPSTREAM ELEVATION(FEET) =   1581.00
  DOWNSTREAM ELEVATION(FEET) =   1576.80
  ELEVATION DIFFERENCE(FEET) =      4.20
  TC = 0.323*[(  176.00**3)/(     4.20)]**.2 =    5.388
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.852
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      1.03
  TOTAL AREA(ACRES) =      0.63   TOTAL RUNOFF(CFS) =      1.03

****************************************************************************
  FLOW PROCESS FROM NODE    342.00 TO NODE    605.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1575.30  DOWNSTREAM(FEET) =  1573.65
  FLOW LENGTH(FEET) =    45.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   3.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.16
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.03
  PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =    5.51
  LONGEST FLOWPATH FROM NODE    341.00 TO NODE    605.00 =     221.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    605.00 TO NODE    605.00 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.) =    5.51
 RAINFALL INTENSITY(INCH/HR) =   1.83
 TOTAL STREAM AREA(ACRES) =     0.63
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.03

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        2.25     6.31        1.711          1.65
     2        1.03     5.51        1.831          0.63

**********************************WARNING**********************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
*****************************************************************************

 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        2.99     5.51       1.831
     2        3.21     6.31       1.711

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       3.21   Tc(MIN.) =    6.31
 TOTAL AREA(ACRES) =        2.3
 LONGEST FLOWPATH FROM NODE    301.00 TO NODE    605.00 =     500.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    605.00 TO NODE    615.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1573.55  DOWNSTREAM(FEET) =  1573.20
 FLOW LENGTH(FEET) =    62.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  15.0 INCH PIPE IS   9.2 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   4.06
 ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       3.21
 PIPE TRAVEL TIME(MIN.) =   0.25    Tc(MIN.) =    6.56
 LONGEST FLOWPATH FROM NODE    301.00 TO NODE    615.00 =     562.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    615.00 TO NODE    615.00 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) =   1.68
  TOTAL STREAM AREA(ACRES) =     2.28
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.21

****************************************************************************
  FLOW PROCESS FROM NODE    331.00 TO NODE    332.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
================================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   185.00
  UPSTREAM ELEVATION(FEET) =   1576.30
  DOWNSTREAM ELEVATION(FEET) =   1573.90
  ELEVATION DIFFERENCE(FEET) =      2.40
  TC = 0.323*[(  185.00**3)/(     2.40)]**.2 =    6.210
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.725
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8900
  SUBAREA RUNOFF(CFS) =      0.81
  TOTAL AREA(ACRES) =      0.53   TOTAL RUNOFF(CFS) =      0.81

****************************************************************************
  FLOW PROCESS FROM NODE    332.00 TO NODE    615.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1573.90  DOWNSTREAM(FEET) =  1573.20
  FLOW LENGTH(FEET) =    15.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   6.0 INCH PIPE IS   3.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.36
  ESTIMATED PIPE DIAMETER(INCH) =   6.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.81
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =    6.25
  LONGEST FLOWPATH FROM NODE    331.00 TO NODE    615.00 =     200.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    615.00 TO NODE    615.00 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.) =    6.25
 RAINFALL INTENSITY(INCH/HR) =   1.72
 TOTAL STREAM AREA(ACRES) =     0.53
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.81

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        3.21     6.56        1.678          2.28
     2        0.81     6.25        1.719          0.53

**********************************WARNING**********************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
*****************************************************************************

 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        3.87     6.25       1.719
     2        4.00     6.56       1.678

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       4.00   Tc(MIN.) =    6.56
 TOTAL AREA(ACRES) =        2.8
 LONGEST FLOWPATH FROM NODE    301.00 TO NODE    615.00 =     562.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    615.00 TO NODE    620.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1573.10  DOWNSTREAM(FEET) =  1572.30
 FLOW LENGTH(FEET) =   153.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  15.0 INCH PIPE IS  11.2 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   4.08
 ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       4.00
 PIPE TRAVEL TIME(MIN.) =   0.62    Tc(MIN.) =    7.19
 LONGEST FLOWPATH FROM NODE    301.00 TO NODE    620.00 =     715.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    620.00 TO NODE    620.00 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.) =    7.19
  RAINFALL INTENSITY(INCH/HR) =   1.60
  TOTAL STREAM AREA(ACRES) =     2.81
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.00

****************************************************************************
  FLOW PROCESS FROM NODE    361.00 TO NODE    362.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   242.00
  UPSTREAM ELEVATION(FEET) =   1577.00
  DOWNSTREAM ELEVATION(FEET) =   1572.55
  ELEVATION DIFFERENCE(FEET) =      4.45
  TC = 0.323*[(  242.00**3)/(     4.45)]**.2 =    6.448
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.693
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      1.30
  TOTAL AREA(ACRES) =      0.88   TOTAL RUNOFF(CFS) =      1.30

****************************************************************************
  FLOW PROCESS FROM NODE    362.00 TO NODE    620.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1572.55  DOWNSTREAM(FEET) =  1572.30
  FLOW LENGTH(FEET) =    44.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   6.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.27
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.30
  PIPE TRAVEL TIME(MIN.) =   0.22    Tc(MIN.) =    6.67
  LONGEST FLOWPATH FROM NODE    361.00 TO NODE    620.00 =     286.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    620.00 TO NODE    620.00 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.) =    6.67
 RAINFALL INTENSITY(INCH/HR) =   1.66
 TOTAL STREAM AREA(ACRES) =     0.88
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.30

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        4.00     7.19        1.603          2.81
     2        1.30     6.67        1.664          0.88

**********************************WARNING**********************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
*****************************************************************************

 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        5.01     6.67       1.664
     2        5.25     7.19       1.603

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       5.25   Tc(MIN.) =    7.19
 TOTAL AREA(ACRES) =        3.7
 LONGEST FLOWPATH FROM NODE    301.00 TO NODE    620.00 =     715.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    620.00 TO NODE    352.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1572.20  DOWNSTREAM(FEET) =  1572.01
 FLOW LENGTH(FEET) =    36.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.4 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   4.46
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       5.25
 PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =    7.32
 LONGEST FLOWPATH FROM NODE    301.00 TO NODE    352.00 =     751.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    352.00 TO NODE    352.00 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.) =    7.32
  RAINFALL INTENSITY(INCH/HR) =   1.59
  TOTAL STREAM AREA(ACRES) =     3.69
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.25

****************************************************************************
  FLOW PROCESS FROM NODE    351.00 TO NODE    352.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
================================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   158.00
  UPSTREAM ELEVATION(FEET) =   1575.50
  DOWNSTREAM ELEVATION(FEET) =   1572.01
  ELEVATION DIFFERENCE(FEET) =      3.49
  TC = 0.323*[(  158.00**3)/(     3.49)]**.2 =    5.241
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.878
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      0.68
  TOTAL AREA(ACRES) =      0.41   TOTAL RUNOFF(CFS) =      0.68

****************************************************************************
  FLOW PROCESS FROM NODE    352.00 TO NODE    352.00 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.) =    5.24
  RAINFALL INTENSITY(INCH/HR) =   1.88
  TOTAL STREAM AREA(ACRES) =     0.41
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.68

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        5.25     7.32        1.588          3.69
      2        0.68     5.24        1.878          0.41

 ********************************WARNING**********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
```

```
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

  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        4.44     5.24       1.878
      2        5.83     7.32       1.588

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       5.83   Tc(MIN.) =    7.32
  TOTAL AREA(ACRES) =        4.1
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    352.00 =     751.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    352.00 TO NODE    625.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1569.34  DOWNSTREAM(FEET) =  1569.00
  FLOW LENGTH(FEET) =    63.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.60
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.83
  PIPE TRAVEL TIME(MIN.) =   0.23    Tc(MIN.) =    7.55
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    625.00 =     814.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    625.00 TO NODE    625.00 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.) =    7.55
  RAINFALL INTENSITY(INCH/HR) =   1.56
  TOTAL STREAM AREA(ACRES) =     4.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.83

****************************************************************************
  FLOW PROCESS FROM NODE    371.00 TO NODE    373.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
          ASSUMED INITIAL SUBAREA UNIFORM
```

```
        DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   301.00
  UPSTREAM ELEVATION(FEET) =   1575.20
  DOWNSTREAM ELEVATION(FEET) =   1572.50
  ELEVATION DIFFERENCE(FEET) =      2.70
  TC = 0.323*[(  301.00**3)/(     2.70)]**.2 =    8.122
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.508
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      0.78
  TOTAL AREA(ACRES) =      0.59   TOTAL RUNOFF(CFS) =      0.78

****************************************************************************
  FLOW PROCESS FROM NODE    373.00 TO NODE    625.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1572.50  DOWNSTREAM(FEET) =  1569.00
  FLOW LENGTH(FEET) =    31.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   6.0 INCH PIPE IS   2.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.83
  ESTIMATED PIPE DIAMETER(INCH) =   6.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.78
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =    8.18
  LONGEST FLOWPATH FROM NODE    371.00 TO NODE    625.00 =     332.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    625.00 TO NODE    625.00 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.) =    8.18
  RAINFALL INTENSITY(INCH/HR) =   1.50
  TOTAL STREAM AREA(ACRES) =     0.59
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.78

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        5.83     7.55        1.564          4.10
      2        0.78     8.18        1.503          0.59

 ********************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
```

```
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

  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        6.55     7.55       1.564
      2        6.38     8.18       1.503

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       6.55   Tc(MIN.) =    7.55
  TOTAL AREA(ACRES) =        4.7
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    625.00 =     814.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    625.00 TO NODE    630.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1568.90  DOWNSTREAM(FEET) =  1567.75
  FLOW LENGTH(FEET) =   121.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.90
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.55
  PIPE TRAVEL TIME(MIN.) =   0.34    Tc(MIN.) =    7.89
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    630.00 =     935.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    630.00 TO NODE    630.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    381.00 TO NODE    382.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
          ASSUMED INITIAL SUBAREA UNIFORM
          DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   189.00
  UPSTREAM ELEVATION(FEET) =   1574.70
  DOWNSTREAM ELEVATION(FEET) =   1570.85
  ELEVATION DIFFERENCE(FEET) =      3.85
```

```
  TC = 0.323*[(  189.00**3)/(     3.85)]**.2 =    5.722
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.797
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8600
  SUBAREA RUNOFF(CFS) =      0.56
  TOTAL AREA(ACRES) =      0.36   TOTAL RUNOFF(CFS) =      0.56

****************************************************************************
  FLOW PROCESS FROM NODE    382.00 TO NODE    392.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1570.85  DOWNSTREAM(FEET) =  1570.55
  FLOW LENGTH(FEET) =    53.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   4.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   2.62
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.56
  PIPE TRAVEL TIME(MIN.) =   0.34    Tc(MIN.) =    6.06
  LONGEST FLOWPATH FROM NODE    381.00 TO NODE    392.00 =     242.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    392.00 TO NODE    392.00 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.) =    6.06
  RAINFALL INTENSITY(INCH/HR) =   1.75
  TOTAL STREAM AREA(ACRES) =     0.36
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.56

****************************************************************************
  FLOW PROCESS FROM NODE    391.00 TO NODE    392.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   337.00
  UPSTREAM ELEVATION(FEET) =   1574.60
  DOWNSTREAM ELEVATION(FEET) =   1571.30
  ELEVATION DIFFERENCE(FEET) =      3.30
  TC = 0.323*[(  337.00**3)/(     3.30)]**.2 =    8.350
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.487
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8900
```

```
  SUBAREA RUNOFF(CFS) =      0.75
  TOTAL AREA(ACRES) =      0.57   TOTAL RUNOFF(CFS) =      0.75

****************************************************************************
  FLOW PROCESS FROM NODE    392.00 TO NODE    392.00 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.) =    8.35
  RAINFALL INTENSITY(INCH/HR) =   1.49
  TOTAL STREAM AREA(ACRES) =     0.57
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.75

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        0.56     6.06        1.746          0.36
      2        0.75     8.35        1.487          0.57

 ********************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

  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        1.10     6.06       1.746
      2        1.23     8.35       1.487

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       1.23   Tc(MIN.) =    8.35
  TOTAL AREA(ACRES) =        0.9
  LONGEST FLOWPATH FROM NODE    391.00 TO NODE    392.00 =     337.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    392.00 TO NODE    630.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1567.88  DOWNSTREAM(FEET) =  1567.75
  FLOW LENGTH(FEET) =    14.00   MANNING'S N =  0.013
```

```
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   6.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.82
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.23
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =    8.41
  LONGEST FLOWPATH FROM NODE    391.00 TO NODE    630.00 =     351.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    630.00 TO NODE    630.00 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        1.23     8.41       1.482        0.93
  LONGEST FLOWPATH FROM NODE    391.00 TO NODE    630.00 =     351.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1        6.55     7.89       1.530        4.69
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    630.00 =     935.00 FEET.

 ****************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ********************************************************************

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1       7.70       7.89        1.530
      2       7.57       8.41        1.482

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       7.70   Tc(MIN.) =    7.89
  TOTAL AREA(ACRES) =        5.6

****************************************************************************
  FLOW PROCESS FROM NODE    630.00 TO NODE    640.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1567.65  DOWNSTREAM(FEET) =  1563.55
  FLOW LENGTH(FEET) =   288.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.5 INCHES
```

```
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.16
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.70
  PIPE TRAVEL TIME(MIN.) =   0.67    Tc(MIN.) =    8.56
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    640.00 =    1223.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    640.00 TO NODE    640.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    401.00 TO NODE    402.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   296.00
  UPSTREAM ELEVATION(FEET) =   1573.00
  DOWNSTREAM ELEVATION(FEET) =   1570.45
  ELEVATION DIFFERENCE(FEET) =      2.55
  TC = 0.323*[(  296.00**3)/(     2.55)]**.2 =    8.133
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.507
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      1.74
  TOTAL AREA(ACRES) =      1.33   TOTAL RUNOFF(CFS) =      1.74

****************************************************************************
  FLOW PROCESS FROM NODE    402.00 TO NODE    635.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1568.45  DOWNSTREAM(FEET) =  1567.85
  FLOW LENGTH(FEET) =    86.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   6.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.79
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.74
  PIPE TRAVEL TIME(MIN.) =   0.38    Tc(MIN.) =    8.51
  LONGEST FLOWPATH FROM NODE    401.00 TO NODE    635.00 =     382.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    635.00 TO NODE    635.00 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.) =    8.51
  RAINFALL INTENSITY(INCH/HR) =   1.47
  TOTAL STREAM AREA(ACRES) =     1.33
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.74

**************************************************************************
  FLOW PROCESS FROM NODE    411.00 TO NODE    412.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   288.00
  UPSTREAM ELEVATION(FEET) =   1572.40
  DOWNSTREAM ELEVATION(FEET) =   1570.65
  ELEVATION DIFFERENCE(FEET) =      1.75
  TC = 0.323*[(  288.00**3)/(     1.75)]**.2 =    8.626
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.463
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8500
  SUBAREA RUNOFF(CFS) =      0.56
  TOTAL AREA(ACRES) =      0.45   TOTAL RUNOFF(CFS) =      0.56

**************************************************************************
  FLOW PROCESS FROM NODE    412.00 TO NODE    635.00 IS CODE =  31
--------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1568.65  DOWNSTREAM(FEET) =  1567.75
  FLOW LENGTH(FEET) =    19.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   6.0 INCH PIPE IS   2.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.87
  ESTIMATED PIPE DIAMETER(INCH) =   6.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.56
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =    8.68
  LONGEST FLOWPATH FROM NODE    411.00 TO NODE    635.00 =     307.00 FEET.

**************************************************************************
  FLOW PROCESS FROM NODE    635.00 TO NODE    635.00 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.) =    8.68
 RAINFALL INTENSITY(INCH/HR) =   1.46
 TOTAL STREAM AREA(ACRES) =     0.45
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.56

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        1.74     8.51        1.473          1.33
     2        0.56     8.68        1.459          0.45

 ********************************WARNING*********************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

 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        2.29     8.51       1.473
     2        2.29     8.68       1.459

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       2.29   Tc(MIN.) =    8.51
 TOTAL AREA(ACRES) =        1.8
 LONGEST FLOWPATH FROM NODE    401.00 TO NODE    635.00 =     382.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    635.00 TO NODE    422.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1567.75  DOWNSTREAM(FEET) =  1567.30
 FLOW LENGTH(FEET) =    89.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  12.0 INCH PIPE IS   9.4 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   3.48
 ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       2.29
 PIPE TRAVEL TIME(MIN.) =   0.43    Tc(MIN.) =    8.94
 LONGEST FLOWPATH FROM NODE    401.00 TO NODE    422.00 =     471.00 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.) =    8.94
  RAINFALL INTENSITY(INCH/HR) =   1.44
  TOTAL STREAM AREA(ACRES) =     1.78
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.29

**************************************************************************
  FLOW PROCESS FROM NODE    421.00 TO NODE    422.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   285.00
  UPSTREAM ELEVATION(FEET) =   1572.60
  DOWNSTREAM ELEVATION(FEET) =   1570.00
  ELEVATION DIFFERENCE(FEET) =      2.60
  TC = 0.323*[(  285.00**3)/(     2.60)]**.2 =    7.920
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.527
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8400
  SUBAREA RUNOFF(CFS) =      0.80
  TOTAL AREA(ACRES) =      0.62   TOTAL RUNOFF(CFS) =      0.80

**************************************************************************
  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.) =    7.92
  RAINFALL INTENSITY(INCH/HR) =   1.53
  TOTAL STREAM AREA(ACRES) =     0.62
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.80

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        2.29     8.94        1.438          1.78
      2        0.80     7.92        1.527          0.62

 ********************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
```

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

  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        2.83     7.92       1.527
      2        3.04     8.94       1.438

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       3.04   Tc(MIN.) =    8.94
  TOTAL AREA(ACRES) =        2.4
  LONGEST FLOWPATH FROM NODE    401.00 TO NODE    422.00 =     471.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    422.00 TO NODE    640.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1563.63  DOWNSTREAM(FEET) =  1563.55
  FLOW LENGTH(FEET) =    18.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS   9.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.64
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.04
  PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =    9.02
  LONGEST FLOWPATH FROM NODE    401.00 TO NODE    640.00 =     489.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    640.00 TO NODE    640.00 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.) =    9.02
  RAINFALL INTENSITY(INCH/HR) =   1.43
  TOTAL STREAM AREA(ACRES) =     2.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.04

****************************************************************************
  FLOW PROCESS FROM NODE    431.00 TO NODE    432.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
          ASSUMED INITIAL SUBAREA UNIFORM
          DEVELOPMENT IS APARTMENT
```

```
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   265.00
  UPSTREAM ELEVATION(FEET) =   1570.30
  DOWNSTREAM ELEVATION(FEET) =   1567.95
  ELEVATION DIFFERENCE(FEET) =      2.35
  TC = 0.323*[(  265.00**3)/(     2.35)]**.2 =    7.736
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.545
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8600
  SUBAREA RUNOFF(CFS) =      0.56
  TOTAL AREA(ACRES) =      0.42   TOTAL RUNOFF(CFS) =      0.56

****************************************************************************
  FLOW PROCESS FROM NODE    432.00 TO NODE    640.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1565.37  DOWNSTREAM(FEET) =  1564.40
  FLOW LENGTH(FEET) =    19.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   6.0 INCH PIPE IS   2.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.99
  ESTIMATED PIPE DIAMETER(INCH) =   6.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.56
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =    7.79
  LONGEST FLOWPATH FROM NODE    431.00 TO NODE    640.00 =     284.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    640.00 TO NODE    640.00 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.) =    7.79
  RAINFALL INTENSITY(INCH/HR) =   1.54
  TOTAL STREAM AREA(ACRES) =     0.42
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.56

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        3.04     9.02        1.431          2.40
      2        0.56     7.79        1.540          0.42

 ********************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
```

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

  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        3.18     7.79       1.540
      2        3.56     9.02       1.431

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       3.56   Tc(MIN.) =    9.02
  TOTAL AREA(ACRES) =        2.8
  LONGEST FLOWPATH FROM NODE    401.00 TO NODE    640.00 =     489.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    640.00 TO NODE    640.00 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        3.56     9.02       1.431        2.82
  LONGEST FLOWPATH FROM NODE    401.00 TO NODE    640.00 =     489.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     RUNOFF       Tc       INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1        7.70     8.56       1.469        5.62
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    640.00 =    1223.00 FEET.

 ****************************WARNING*************************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc       INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1      11.08       8.56        1.469
      2      11.06       9.02        1.431

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      11.08   Tc(MIN.) =    8.56
  TOTAL AREA(ACRES) =        8.4
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    640.00 TO NODE    642.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1560.20  DOWNSTREAM(FEET) =  1560.16
  FLOW LENGTH(FEET) =     3.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  14.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.41
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      11.08
  PIPE TRAVEL TIME(MIN.) =   0.01    Tc(MIN.) =    8.57
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    642.00 =    1226.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    642.00 TO NODE    642.00 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.) =    8.57
  RAINFALL INTENSITY(INCH/HR) =   1.47
  TOTAL STREAM AREA(ACRES) =     8.44
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.08

****************************************************************************
  FLOW PROCESS FROM NODE    291.00 TO NODE    292.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   146.00
  UPSTREAM ELEVATION(FEET) =   1572.50
  DOWNSTREAM ELEVATION(FEET) =   1565.20
  ELEVATION DIFFERENCE(FEET) =      7.30
  TC = 0.323*[(  146.00**3)/(     7.30)]**.2 =    4.313
  COMPUTED TIME OF CONCENTRATION INCREASED TO 5 MIN.
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.922
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8500
  SUBAREA RUNOFF(CFS) =      0.51
  TOTAL AREA(ACRES) =      0.31   TOTAL RUNOFF(CFS) =      0.51

****************************************************************************
  FLOW PROCESS FROM NODE    292.00 TO NODE    642.00 IS CODE =  31
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1561.66  DOWNSTREAM(FEET) =  1560.16
  FLOW LENGTH(FEET) =   297.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   4.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   2.45
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.51
  PIPE TRAVEL TIME(MIN.) =   2.02    Tc(MIN.) =    7.02
  LONGEST FLOWPATH FROM NODE    291.00 TO NODE    642.00 =     443.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    642.00 TO NODE    642.00 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.) =    7.02
  RAINFALL INTENSITY(INCH/HR) =   1.62
  TOTAL STREAM AREA(ACRES) =     0.31
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.51

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       11.08     8.57        1.468          8.44
      2        0.51     7.02        1.622          0.31

 **********************************WARNING***********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

  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        9.59     7.02       1.622
      2       11.54     8.57       1.468

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      11.54   Tc(MIN.) =    8.57
  TOTAL AREA(ACRES) =        8.8
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    642.00 =    1226.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    642.00 TO NODE    645.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1560.16  DOWNSTREAM(FEET) =  1559.75
  FLOW LENGTH(FEET) =    70.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  14.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.66
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      11.54
  PIPE TRAVEL TIME(MIN.) =   0.21    Tc(MIN.) =    8.77
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    645.00 =    1296.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    102.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   655.00
  UPSTREAM ELEVATION(FEET) =   1586.50
  DOWNSTREAM ELEVATION(FEET) =   1581.24
  ELEVATION DIFFERENCE(FEET) =      5.26
  TC = 0.323*[(  655.00**3)/(     5.26)]**.2 =   11.333
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.276
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8900
  SUBAREA RUNOFF(CFS) =      1.11
  TOTAL AREA(ACRES) =      0.98   TOTAL RUNOFF(CFS) =      1.11

****************************************************************************
  FLOW PROCESS FROM NODE    102.00 TO NODE    103.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1577.74  DOWNSTREAM(FEET) =  1571.94
  FLOW LENGTH(FEET) =    66.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   6.0 INCH PIPE IS   3.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.70
  ESTIMATED PIPE DIAMETER(INCH) =   6.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.11
  PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =   11.46
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    103.00 =     721.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    110.00 TO NODE    111.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   410.00
  UPSTREAM ELEVATION(FEET) =   1566.10
  DOWNSTREAM ELEVATION(FEET) =   1562.10
  ELEVATION DIFFERENCE(FEET) =      4.00
  TC = 0.323*[(  410.00**3)/(     4.00)]**.2 =    9.038
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.430
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      0.39
  TOTAL AREA(ACRES) =      0.31   TOTAL RUNOFF(CFS) =      0.39

****************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    106.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1125.00
  UPSTREAM ELEVATION(FEET) =   1586.50
  DOWNSTREAM ELEVATION(FEET) =   1564.87
  ELEVATION DIFFERENCE(FEET) =     21.63
  TC = 0.323*[( 1125.00**3)/(    21.63)]**.2 =   11.816
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.250
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      0.96
  TOTAL AREA(ACRES) =      0.87   TOTAL RUNOFF(CFS) =      0.96

****************************************************************************
  FLOW PROCESS FROM NODE    106.00 TO NODE    107.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1562.20  DOWNSTREAM(FEET) =  1560.00
  FLOW LENGTH(FEET) =   232.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   5.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.66
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.96
```

```
  PIPE TRAVEL TIME(MIN.) =   1.06    Tc(MIN.) =   12.87
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    107.00 =    1357.00 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        0.9  TC(MIN.) =     12.87
  PEAK FLOW RATE(CFS)   =       0.96
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

POST-DEVELOPMENT AES

UN-DETAINED

(5-YEAR STORM EVENT)

```
**************************************************************************
          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
       RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                  (RCFC&WCD)  1978 HYDROLOGY MANUAL
        (c) Copyright 1982-2016 Advanced Engineering Software (aes)
                  (Rational Tabling Version 23.0)
              Release Date: 07/01/2016  License ID 1452

                        Analysis prepared by:

   ************************ DESCRIPTION OF STUDY *************************
* 3816 ROCAS GRANDES II                                                  *
* 5 YEAR STORM EVENT                                                     *
* POST-PROJECT UNDETAINED HYDROLOGY                                      *
 **************************************************************************



--------------------------------------------------------------------------
  FILE NAME: 3816P5.DAT
  TIME/DATE OF STUDY: 07:24 02/11/2025
--------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
--------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =    5.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =   6.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  10-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  2.010
  10-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  0.820
  100-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  2.940
  100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.200
  SLOPE OF 10-YEAR INTENSITY-DURATION CURVE =  0.5003939
  SLOPE OF 100-YEAR INTENSITY-DURATION CURVE =  0.5001161
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =    5.00   1-HOUR INTENSITY(INCH/HOUR) =   0.724
  SLOPE OF INTENSITY DURATION CURVE = 0.5004
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: COMPUTE CONFLUENCE VALUES ACCORDING TO RCFC&WCD HYDROLOGY MANUAL
        AND IGNORE OTHER CONFLUENCE COMBINATIONS FOR DOWNSTREAM ANALYSES
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  ===== ====== ===== =======
  1   22.0     14.0    0.020/0.020/0.018   0.50    2.00 0.0312 0.167 0.0150
  2   46.0     38.0    0.020/0.020/0.020   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    201.00 TO NODE    202.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   341.00
  UPSTREAM ELEVATION(FEET) =   1582.50
  DOWNSTREAM ELEVATION(FEET) =   1579.60
  ELEVATION DIFFERENCE(FEET) =      2.90
  TC = 0.323*[(  341.00**3)/(     2.90)]**.2 =    8.629
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.909
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      1.05
  TOTAL AREA(ACRES) =      0.63   TOTAL RUNOFF(CFS) =      1.05

****************************************************************************
  FLOW PROCESS FROM NODE    202.00 TO NODE    500.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1579.60  DOWNSTREAM(FEET) =  1574.55
  FLOW LENGTH(FEET) =   122.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   6.0 INCH PIPE IS   4.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.28
  ESTIMATED PIPE DIAMETER(INCH) =   6.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.05
  PIPE TRAVEL TIME(MIN.) =   0.32    Tc(MIN.) =    8.95
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    500.00 =     463.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    500.00 TO NODE    500.00 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.) =    8.95
  RAINFALL INTENSITY(INCH/HR) =   1.87
  TOTAL STREAM AREA(ACRES) =     0.63
```

```
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.05

****************************************************************************
  FLOW PROCESS FROM NODE    211.00 TO NODE    212.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   154.00
  UPSTREAM ELEVATION(FEET) =   1580.40
  DOWNSTREAM ELEVATION(FEET) =   1577.65
  ELEVATION DIFFERENCE(FEET) =      2.75
  TC = 0.323*[(  154.00**3)/(     2.75)]**.2 =    5.413
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.411
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8900
  SUBAREA RUNOFF(CFS) =      2.58
  TOTAL AREA(ACRES) =      1.20   TOTAL RUNOFF(CFS) =      2.58

****************************************************************************
  FLOW PROCESS FROM NODE    212.00 TO NODE    500.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1575.65  DOWNSTREAM(FEET) =  1574.55
  FLOW LENGTH(FEET) =   165.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   9.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.99
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.58
  PIPE TRAVEL TIME(MIN.) =   0.69    Tc(MIN.) =    6.10
  LONGEST FLOWPATH FROM NODE    211.00 TO NODE    500.00 =     319.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    500.00 TO NODE    500.00 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.) =    6.10
  RAINFALL INTENSITY(INCH/HR) =   2.27
  TOTAL STREAM AREA(ACRES) =     1.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.58

  ** CONFLUENCE DATA **
```

```
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        1.05     8.95        1.874          0.63
      2        2.58     6.10        2.271          1.20

 ********************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

  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        3.29     6.10       2.271
      2        3.17     8.95       1.874

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       3.29   Tc(MIN.) =    6.10
  TOTAL AREA(ACRES) =        1.8
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    500.00 =     463.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    500.00 TO NODE    505.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1574.45  DOWNSTREAM(FEET) =  1573.90
  FLOW LENGTH(FEET) =   106.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS   9.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.94
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.29
  PIPE TRAVEL TIME(MIN.) =   0.45    Tc(MIN.) =    6.55
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    505.00 =     569.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    505.00 TO NODE    505.00 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.) =    6.55
  RAINFALL INTENSITY(INCH/HR) =   2.19
  TOTAL STREAM AREA(ACRES) =     1.83
```

```
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.29

****************************************************************************
  FLOW PROCESS FROM NODE    221.00 TO NODE    222.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   328.00
  UPSTREAM ELEVATION(FEET) =   1577.80
  DOWNSTREAM ELEVATION(FEET) =   1574.90
  ELEVATION DIFFERENCE(FEET) =      2.90
  TC = 0.323*[(  328.00**3)/(     2.90)]**.2 =    8.430
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.932
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      0.95
  TOTAL AREA(ACRES) =      0.56   TOTAL RUNOFF(CFS) =      0.95

****************************************************************************
  FLOW PROCESS FROM NODE    222.00 TO NODE    505.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1574.90  DOWNSTREAM(FEET) =  1573.90
  FLOW LENGTH(FEET) =    44.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   4.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.08
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.95
  PIPE TRAVEL TIME(MIN.) =   0.14    Tc(MIN.) =    8.57
  LONGEST FLOWPATH FROM NODE    221.00 TO NODE    505.00 =     372.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    505.00 TO NODE    505.00 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.) =    8.57
  RAINFALL INTENSITY(INCH/HR) =   1.92
  TOTAL STREAM AREA(ACRES) =     0.56
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.95

  ** CONFLUENCE DATA **
```

```
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        3.29     6.55        2.192          1.83
     2        0.95     8.57        1.915          0.56

 ********************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

  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        4.02     6.55       2.192
      2        3.83     8.57       1.915

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       4.02   Tc(MIN.) =    6.55
  TOTAL AREA(ACRES) =        2.4
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    505.00 =     569.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    505.00 TO NODE    510.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1573.80  DOWNSTREAM(FEET) =  1572.85
  FLOW LENGTH(FEET) =   159.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS  10.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.33
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.02
  PIPE TRAVEL TIME(MIN.) =   0.61    Tc(MIN.) =    7.16
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    510.00 =     728.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    510.00 TO NODE    510.00 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.) =    7.16
  RAINFALL INTENSITY(INCH/HR) =   2.10
  TOTAL STREAM AREA(ACRES) =     2.39
```

```
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.02

****************************************************************************
  FLOW PROCESS FROM NODE    231.00 TO NODE    233.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   327.00
  UPSTREAM ELEVATION(FEET) =   1577.00
  DOWNSTREAM ELEVATION(FEET) =   1573.75
  ELEVATION DIFFERENCE(FEET) =      3.25
  TC = 0.323*[(  327.00**3)/(     3.25)]**.2 =    8.225
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.956
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8900
  SUBAREA RUNOFF(CFS) =      2.11
  TOTAL AREA(ACRES) =      1.21   TOTAL RUNOFF(CFS) =      2.11

****************************************************************************
  FLOW PROCESS FROM NODE    233.00 TO NODE    510.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1573.75  DOWNSTREAM(FEET) =  1572.85
  FLOW LENGTH(FEET) =    44.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   6.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.77
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.11
  PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =    8.35
  LONGEST FLOWPATH FROM NODE    231.00 TO NODE    510.00 =     371.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    510.00 TO NODE    510.00 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.) =    8.35
  RAINFALL INTENSITY(INCH/HR) =   1.94
  TOTAL STREAM AREA(ACRES) =     1.21
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.11

  ** CONFLUENCE DATA **
```

```
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        4.02     7.16        2.096          2.39
      2        2.11     8.35        1.941          1.21

 ********************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

  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        5.82     7.16       2.096
      2        5.82     8.35       1.941

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       5.82   Tc(MIN.) =    7.16
  TOTAL AREA(ACRES) =        3.6
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    510.00 =     728.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    510.00 TO NODE    515.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1572.75  DOWNSTREAM(FEET) =  1572.25
  FLOW LENGTH(FEET) =    92.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.61
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.82
  PIPE TRAVEL TIME(MIN.) =   0.33    Tc(MIN.) =    7.50
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    515.00 =     820.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    515.00 TO NODE    515.00 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.) =    7.50
  RAINFALL INTENSITY(INCH/HR) =   2.05
  TOTAL STREAM AREA(ACRES) =     3.60
```

```
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.82

****************************************************************************
  FLOW PROCESS FROM NODE    251.00 TO NODE    252.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   115.00
  UPSTREAM ELEVATION(FEET) =   1575.70
  DOWNSTREAM ELEVATION(FEET) =   1573.95
  ELEVATION DIFFERENCE(FEET) =      1.75
  TC = 0.323*[(  115.00**3)/(     1.75)]**.2 =    4.973
  COMPUTED TIME OF CONCENTRATION INCREASED TO 5 MIN.
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.509
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      1.11
  TOTAL AREA(ACRES) =      0.51   TOTAL RUNOFF(CFS) =      1.11

****************************************************************************
  FLOW PROCESS FROM NODE    252.00 TO NODE    515.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1573.95  DOWNSTREAM(FEET) =  1572.25
  FLOW LENGTH(FEET) =    41.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   3.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.59
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.11
  PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =    5.10
  LONGEST FLOWPATH FROM NODE    251.00 TO NODE    515.00 =     156.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    515.00 TO NODE    515.00 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.) =    5.10
  RAINFALL INTENSITY(INCH/HR) =   2.48
  TOTAL STREAM AREA(ACRES) =     0.51
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.11
```

```
 ** CONFLUENCE DATA **
 STREAM     RUNOFF        Tc       INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        5.82     7.50        2.049          3.60
     2        1.11     5.10        2.483          0.51

 ********************************WARNING*********************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

 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        5.08     5.10       2.483
     2        6.74     7.50       2.049

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       6.74   Tc(MIN.) =    7.50
 TOTAL AREA(ACRES) =        4.1
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE    515.00 =     820.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    515.00 TO NODE    520.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1572.15  DOWNSTREAM(FEET) =  1569.15
 FLOW LENGTH(FEET) =   323.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.1 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   5.89
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       6.74
 PIPE TRAVEL TIME(MIN.) =   0.91    Tc(MIN.) =    8.41
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE    520.00 =    1143.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    520.00 TO NODE    520.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE    271.00 TO NODE    272.00 IS CODE =  21
----------------------------------------------------------------------------
```

```
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
================================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   246.00
  UPSTREAM ELEVATION(FEET) =   1573.50
  DOWNSTREAM ELEVATION(FEET) =   1569.85
  ELEVATION DIFFERENCE(FEET) =      3.65
  TC = 0.323*[(  246.00**3)/(     3.65)]**.2 =    6.775
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.155
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      2.83
  TOTAL AREA(ACRES) =      1.51   TOTAL RUNOFF(CFS) =      2.83

****************************************************************************
  FLOW PROCESS FROM NODE    272.00 TO NODE    272.00 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.) =    6.77
  RAINFALL INTENSITY(INCH/HR) =   2.16
  TOTAL STREAM AREA(ACRES) =     1.51
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.83

****************************************************************************
  FLOW PROCESS FROM NODE    241.00 TO NODE    242.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   169.00
  UPSTREAM ELEVATION(FEET) =   1575.80
  DOWNSTREAM ELEVATION(FEET) =   1573.30
  ELEVATION DIFFERENCE(FEET) =      2.50
  TC = 0.323*[(  169.00**3)/(     2.50)]**.2 =    5.834
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.323
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8500
  SUBAREA RUNOFF(CFS) =      0.99
  TOTAL AREA(ACRES) =      0.50   TOTAL RUNOFF(CFS) =      0.99

****************************************************************************
  FLOW PROCESS FROM NODE    242.00 TO NODE    272.00 IS CODE =  31
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1571.30  DOWNSTREAM(FEET) =  1569.85
  FLOW LENGTH(FEET) =   290.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   6.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   2.85
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.99
  PIPE TRAVEL TIME(MIN.) =   1.70    Tc(MIN.) =    7.53
  LONGEST FLOWPATH FROM NODE    241.00 TO NODE    272.00 =     459.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    272.00 TO NODE    272.00 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.) =    7.53
  RAINFALL INTENSITY(INCH/HR) =   2.04
  TOTAL STREAM AREA(ACRES) =     0.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.99

  ** CONFLUENCE DATA **
  STREAM     RUNOFF        Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        2.83     6.77        2.155          1.51
      2        0.99     7.53        2.044          0.50

 ********************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

  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        3.72     6.77       2.155
      2        3.67     7.53       2.044

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       3.72   Tc(MIN.) =    6.77
  TOTAL AREA(ACRES) =        2.0
  LONGEST FLOWPATH FROM NODE    241.00 TO NODE    272.00 =     459.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    272.00 TO NODE    520.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1569.85  DOWNSTREAM(FEET) =  1569.15
  FLOW LENGTH(FEET) =   141.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS  10.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.96
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.72
  PIPE TRAVEL TIME(MIN.) =   0.59    Tc(MIN.) =    7.37
  LONGEST FLOWPATH FROM NODE    241.00 TO NODE    520.00 =     600.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    520.00 TO NODE    520.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1        3.72     7.37       2.066        2.01
  LONGEST FLOWPATH FROM NODE    241.00 TO NODE    520.00 =     600.00 FEET.

  ** MEMORY BANK #  3 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1        6.74     8.41       1.934        4.11
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    520.00 =    1143.00 FEET.

 ****************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ********************************************************************

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1       9.63       7.37        2.066
      2      10.22       8.41        1.934

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      10.22   Tc(MIN.) =    8.41
  TOTAL AREA(ACRES) =        6.1
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    520.00 TO NODE    262.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1569.85  DOWNSTREAM(FEET) =  1568.95
  FLOW LENGTH(FEET) =   180.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  16.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.03
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.22
  PIPE TRAVEL TIME(MIN.) =   0.60    Tc(MIN.) =    9.01
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    262.00 =    1323.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    262.00 TO NODE    262.00 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.) =    9.01
  RAINFALL INTENSITY(INCH/HR) =   1.87
  TOTAL STREAM AREA(ACRES) =     6.12
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.22

****************************************************************************
  FLOW PROCESS FROM NODE    261.00 TO NODE    262.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   478.00
  UPSTREAM ELEVATION(FEET) =   1575.50
  DOWNSTREAM ELEVATION(FEET) =   1569.45
  ELEVATION DIFFERENCE(FEET) =      6.05
  TC = 0.323*[(  478.00**3)/(     6.05)]**.2 =    9.122
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.857
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      2.29
  TOTAL AREA(ACRES) =      1.42   TOTAL RUNOFF(CFS) =      2.29

****************************************************************************
  FLOW PROCESS FROM NODE    262.00 TO NODE    262.00 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.) =    9.12
  RAINFALL INTENSITY(INCH/HR) =   1.86
  TOTAL STREAM AREA(ACRES) =     1.42
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.29

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       10.22     9.01        1.869          6.12
      2        2.29     9.12        1.857          1.42

 ********************************WARNING**********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 *************************************************************************

  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       12.49     9.01       1.869
      2       12.45     9.12       1.857

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      12.49   Tc(MIN.) =    9.01
  TOTAL AREA(ACRES) =        7.5
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    262.00 =    1323.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    262.00 TO NODE    530.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1566.28  DOWNSTREAM(FEET) =  1565.40
  FLOW LENGTH(FEET) =    13.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS  10.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.38
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      12.49
  PIPE TRAVEL TIME(MIN.) =   0.02    Tc(MIN.) =    9.02
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    530.00 =    1336.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    530.00 TO NODE    530.00 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.) =    9.02
  RAINFALL INTENSITY(INCH/HR) =   1.87
  TOTAL STREAM AREA(ACRES) =     7.54
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.49

****************************************************************************
  FLOW PROCESS FROM NODE    281.00 TO NODE    282.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   344.00
  UPSTREAM ELEVATION(FEET) =   1571.00
  DOWNSTREAM ELEVATION(FEET) =   1568.18
  ELEVATION DIFFERENCE(FEET) =      2.82
  TC = 0.323*[(  344.00**3)/(     2.82)]**.2 =    8.723
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.899
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      1.98
  TOTAL AREA(ACRES) =      1.20   TOTAL RUNOFF(CFS) =      1.98

****************************************************************************
  FLOW PROCESS FROM NODE    282.00 TO NODE    530.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1565.51  DOWNSTREAM(FEET) =  1565.40
  FLOW LENGTH(FEET) =    20.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   8.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.54
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.98
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =    8.82
  LONGEST FLOWPATH FROM NODE    281.00 TO NODE    530.00 =     364.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    530.00 TO NODE    530.00 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.) =    8.82
  RAINFALL INTENSITY(INCH/HR) =   1.89
  TOTAL STREAM AREA(ACRES) =     1.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.98

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       12.49     9.02        1.867          7.54
      2        1.98     8.82        1.889          1.20

 **********************************WARNING**********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ********************************************************************************

  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       14.19     8.82       1.889
      2       14.45     9.02       1.867

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      14.45   Tc(MIN.) =    9.02
  TOTAL AREA(ACRES) =        8.7
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    530.00 =    1336.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    535.00 TO NODE    540.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1563.70  DOWNSTREAM(FEET) =  1563.44
  FLOW LENGTH(FEET) =    34.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.59
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      14.45
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =    9.11
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    540.00 =    1370.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    540.00 TO NODE    541.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1563.40  DOWNSTREAM(FEET) =   1561.53
  CHANNEL LENGTH THRU SUBAREA(FEET) =   133.00   CHANNEL SLOPE =  0.0141
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   0.018
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   0.07

         ==>>WARNING: FLOW IN CHANNEL EXCEEDS CHANNEL
             CAPACITY( NORMAL DEPTH EQUAL TO SPECIFIED MAXIMUM
             ALLOWABLE DEPTH).
             AS AN APPROXIMATION, FLOWDEPTH IS SET AT MAXIMUM
             ALLOWABLE DEPTH AND IS USED FOR TRAVELTIME CALCULATIONS.

  CHANNEL FLOW THRU SUBAREA(CFS) =      14.45
  FLOW VELOCITY(FEET/SEC.) =  25.79   FLOW DEPTH(FEET) =   0.07
  TRAVEL TIME(MIN.) =   0.09   Tc(MIN.) =    9.19
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    541.00 =    1503.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    541.00 TO NODE    541.00 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) =   1.85
  TOTAL STREAM AREA(ACRES) =     8.74
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     14.45

****************************************************************************
  FLOW PROCESS FROM NODE    110.00 TO NODE    541.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   252.00
  UPSTREAM ELEVATION(FEET) =   1566.10
  DOWNSTREAM ELEVATION(FEET) =   1561.53
  ELEVATION DIFFERENCE(FEET) =      4.57
  TC = 0.323*[(  252.00**3)/(     4.57)]**.2 =    6.571
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.188
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8200
```

```
  SUBAREA RUNOFF(CFS) =      0.36
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.36

****************************************************************************
  FLOW PROCESS FROM NODE    541.00 TO NODE    541.00 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.) =    6.57
  RAINFALL INTENSITY(INCH/HR) =   2.19
  TOTAL STREAM AREA(ACRES) =     0.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.36

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       14.45     9.19        1.850          8.74
      2        0.36     6.57        2.188          0.20

 ********************************WARNING***********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 **************************************************************************

  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       10.69     6.57       2.188
      2       14.75     9.19       1.850

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      14.75   Tc(MIN.) =    9.19
  TOTAL AREA(ACRES) =        8.9
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    541.00 =    1503.00 FEET.

****************************************************************************
  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) =   1561.53  DOWNSTREAM(FEET) =   1561.10
  CHANNEL LENGTH THRU SUBAREA(FEET) =    61.00   CHANNEL SLOPE =  0.0071
```

```
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   0.018
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   0.07

         ==>>WARNING: FLOW IN CHANNEL EXCEEDS CHANNEL
             CAPACITY( NORMAL DEPTH EQUAL TO SPECIFIED MAXIMUM
             ALLOWABLE DEPTH).
             AS AN APPROXIMATION, FLOWDEPTH IS SET AT MAXIMUM
             ALLOWABLE DEPTH AND IS USED FOR TRAVELTIME CALCULATIONS.

  CHANNEL FLOW THRU SUBAREA(CFS) =      14.75
  FLOW VELOCITY(FEET/SEC.) =  26.33   FLOW DEPTH(FEET) =   0.07
  TRAVEL TIME(MIN.) =   0.04   Tc(MIN.) =    9.23
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    542.00 =    1564.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    301.00 TO NODE    302.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   176.00
  UPSTREAM ELEVATION(FEET) =   1581.00
  DOWNSTREAM ELEVATION(FEET) =   1580.00
  ELEVATION DIFFERENCE(FEET) =      1.00
  TC = 0.323*[(  176.00**3)/(     1.00)]**.2 =    7.180
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.093
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      0.85
  TOTAL AREA(ACRES) =      0.46   TOTAL RUNOFF(CFS) =      0.85

****************************************************************************
  FLOW PROCESS FROM NODE    302.00 TO NODE    600.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1578.40  DOWNSTREAM(FEET) =  1574.45
  FLOW LENGTH(FEET) =   187.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   3.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.77
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.85
  PIPE TRAVEL TIME(MIN.) =   0.65    Tc(MIN.) =    7.83
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    600.00 =     363.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    600.00 TO NODE    600.00 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.) =    7.83
  RAINFALL INTENSITY(INCH/HR) =   2.00
  TOTAL STREAM AREA(ACRES) =     0.46
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.85

************************************************************************
  FLOW PROCESS FROM NODE    311.00 TO NODE    312.00 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
========================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   157.00
  UPSTREAM ELEVATION(FEET) =   1580.80
  DOWNSTREAM ELEVATION(FEET) =   1577.70
  ELEVATION DIFFERENCE(FEET) =      3.10
  TC = 0.323*[(  157.00**3)/(     3.10)]**.2 =    5.346
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.426
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      1.32
  TOTAL AREA(ACRES) =      0.62   TOTAL RUNOFF(CFS) =      1.32

************************************************************************
  FLOW PROCESS FROM NODE    312.00 TO NODE    600.00 IS CODE =  31
------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1575.70  DOWNSTREAM(FEET) =  1574.45
  FLOW LENGTH(FEET) =    89.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   5.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.56
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.32
  PIPE TRAVEL TIME(MIN.) =   0.33    Tc(MIN.) =    5.67
  LONGEST FLOWPATH FROM NODE    311.00 TO NODE    600.00 =     246.00 FEET.

************************************************************************
  FLOW PROCESS FROM NODE    600.00 TO NODE    600.00 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.) =    5.67
  RAINFALL INTENSITY(INCH/HR) =   2.36
  TOTAL STREAM AREA(ACRES) =     0.62
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.32

****************************************************************************
  FLOW PROCESS FROM NODE    321.00 TO NODE    322.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   190.00
  UPSTREAM ELEVATION(FEET) =   1578.50
  DOWNSTREAM ELEVATION(FEET) =   1576.10
  ELEVATION DIFFERENCE(FEET) =      2.40
  TC = 0.323*[(  190.00**3)/(     2.40)]**.2 =    6.310
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.233
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      1.12
  TOTAL AREA(ACRES) =      0.57   TOTAL RUNOFF(CFS) =      1.12

****************************************************************************
  FLOW PROCESS FROM NODE    322.00 TO NODE    600.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1576.10  DOWNSTREAM(FEET) =  1574.45
  FLOW LENGTH(FEET) =    21.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   6.0 INCH PIPE IS   3.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.36
  ESTIMATED PIPE DIAMETER(INCH) =   6.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.12
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =    6.35
  LONGEST FLOWPATH FROM NODE    321.00 TO NODE    600.00 =     211.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    600.00 TO NODE    600.00 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.) =    6.35
  RAINFALL INTENSITY(INCH/HR) =   2.23
```

```
 TOTAL STREAM AREA(ACRES) =     0.57
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.12

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        0.85     7.83        2.004          0.46
     2        1.32     5.67        2.356          0.62
     3        1.12     6.35        2.226          0.57

 ********************************WARNING*********************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

 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        2.94     5.67       2.356
     2        3.06     6.35       2.226
     3        2.98     7.83       2.004

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       2.94   Tc(MIN.) =    5.67
 TOTAL AREA(ACRES) =        1.7
 LONGEST FLOWPATH FROM NODE    301.00 TO NODE    600.00 =     363.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    600.00 TO NODE    605.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1574.45  DOWNSTREAM(FEET) =  1573.65
 FLOW LENGTH(FEET) =   137.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  15.0 INCH PIPE IS   8.6 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   4.03
 ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       2.94
 PIPE TRAVEL TIME(MIN.) =   0.57    Tc(MIN.) =    6.24
 LONGEST FLOWPATH FROM NODE    301.00 TO NODE    605.00 =     500.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    605.00 TO NODE    605.00 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.) =    6.24
  RAINFALL INTENSITY(INCH/HR) =   2.25
  TOTAL STREAM AREA(ACRES) =     1.65
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.94

****************************************************************************
  FLOW PROCESS FROM NODE    341.00 TO NODE    342.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   176.00
  UPSTREAM ELEVATION(FEET) =   1581.00
  DOWNSTREAM ELEVATION(FEET) =   1576.80
  ELEVATION DIFFERENCE(FEET) =      4.20
  TC = 0.323*[(  176.00**3)/(     4.20)]**.2 =    5.388
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.417
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      1.34
  TOTAL AREA(ACRES) =      0.63   TOTAL RUNOFF(CFS) =      1.34

****************************************************************************
  FLOW PROCESS FROM NODE    342.00 TO NODE    605.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1575.30  DOWNSTREAM(FEET) =  1573.65
  FLOW LENGTH(FEET) =    45.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   4.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.59
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.34
  PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =    5.50
  LONGEST FLOWPATH FROM NODE    341.00 TO NODE    605.00 =     221.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    605.00 TO NODE    605.00 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.) =    5.50
 RAINFALL INTENSITY(INCH/HR) =   2.39
 TOTAL STREAM AREA(ACRES) =     0.63
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.34

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        2.94     6.24        2.246          1.65
     2        1.34     5.50        2.392          0.63

*******************************WARNING*********************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
*************************************************************************

 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        3.93     5.50       2.392
     2        4.20     6.24       2.246

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       4.20   Tc(MIN.) =    6.24
 TOTAL AREA(ACRES) =        2.3
 LONGEST FLOWPATH FROM NODE    301.00 TO NODE    605.00 =     500.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    605.00 TO NODE    615.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1573.55  DOWNSTREAM(FEET) =  1573.20
 FLOW LENGTH(FEET) =    62.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  15.0 INCH PIPE IS  11.2 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   4.26
 ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       4.20
 PIPE TRAVEL TIME(MIN.) =   0.24    Tc(MIN.) =    6.48
 LONGEST FLOWPATH FROM NODE    301.00 TO NODE    615.00 =     562.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    615.00 TO NODE    615.00 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.) =    6.48
  RAINFALL INTENSITY(INCH/HR) =   2.20
  TOTAL STREAM AREA(ACRES) =     2.28
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.20

****************************************************************************
  FLOW PROCESS FROM NODE    331.00 TO NODE    332.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   185.00
  UPSTREAM ELEVATION(FEET) =   1576.30
  DOWNSTREAM ELEVATION(FEET) =   1573.90
  ELEVATION DIFFERENCE(FEET) =      2.40
  TC = 0.323*[(  185.00**3)/(     2.40)]**.2 =    6.210
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.251
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8900
  SUBAREA RUNOFF(CFS) =      1.06
  TOTAL AREA(ACRES) =      0.53   TOTAL RUNOFF(CFS) =      1.06

****************************************************************************
  FLOW PROCESS FROM NODE    332.00 TO NODE    615.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1573.90  DOWNSTREAM(FEET) =  1573.20
  FLOW LENGTH(FEET) =    15.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   6.0 INCH PIPE IS   4.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.65
  ESTIMATED PIPE DIAMETER(INCH) =   6.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.06
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =    6.25
  LONGEST FLOWPATH FROM NODE    331.00 TO NODE    615.00 =     200.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    615.00 TO NODE    615.00 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.) =    6.25
 RAINFALL INTENSITY(INCH/HR) =   2.24
 TOTAL STREAM AREA(ACRES) =     0.53
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.06

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        4.20     6.48        2.203          2.28
     2        1.06     6.25        2.244          0.53

 ********************************WARNING*********************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

 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        5.11     6.25       2.244
     2        5.24     6.48       2.203

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       5.24   Tc(MIN.) =    6.48
 TOTAL AREA(ACRES) =        2.8
 LONGEST FLOWPATH FROM NODE    301.00 TO NODE    615.00 =     562.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    615.00 TO NODE    620.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1573.10  DOWNSTREAM(FEET) =  1572.30
 FLOW LENGTH(FEET) =   153.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.4 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   4.45
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       5.24
 PIPE TRAVEL TIME(MIN.) =   0.57    Tc(MIN.) =    7.05
 LONGEST FLOWPATH FROM NODE    301.00 TO NODE    620.00 =     715.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    620.00 TO NODE    620.00 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.) =    7.05
  RAINFALL INTENSITY(INCH/HR) =   2.11
  TOTAL STREAM AREA(ACRES) =     2.81
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.24

****************************************************************************
  FLOW PROCESS FROM NODE    361.00 TO NODE    362.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   242.00
  UPSTREAM ELEVATION(FEET) =   1577.00
  DOWNSTREAM ELEVATION(FEET) =   1572.55
  ELEVATION DIFFERENCE(FEET) =      4.45
  TC = 0.323*[(  242.00**3)/(     4.45)]**.2 =    6.448
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.209
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      1.69
  TOTAL AREA(ACRES) =      0.88   TOTAL RUNOFF(CFS) =      1.69

****************************************************************************
  FLOW PROCESS FROM NODE    362.00 TO NODE    620.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1572.55  DOWNSTREAM(FEET) =  1572.30
  FLOW LENGTH(FEET) =    44.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   7.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.46
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.69
  PIPE TRAVEL TIME(MIN.) =   0.21    Tc(MIN.) =    6.66
  LONGEST FLOWPATH FROM NODE    361.00 TO NODE    620.00 =     286.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    620.00 TO NODE    620.00 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.) =    6.66
 RAINFALL INTENSITY(INCH/HR) =   2.17
 TOTAL STREAM AREA(ACRES) =     0.88
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.69

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        5.24     7.05        2.112          2.81
     2        1.69     6.66        2.174          0.88

*********************************WARNING*********************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
*************************************************************************

 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        6.64     6.66       2.174
     2        6.88     7.05       2.112

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       6.88   Tc(MIN.) =    7.05
 TOTAL AREA(ACRES) =        3.7
 LONGEST FLOWPATH FROM NODE    301.00 TO NODE    620.00 =     715.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    620.00 TO NODE    352.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1572.20  DOWNSTREAM(FEET) =  1572.01
 FLOW LENGTH(FEET) =    36.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  14.0 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   4.66
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       6.88
 PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =    7.18
 LONGEST FLOWPATH FROM NODE    301.00 TO NODE    352.00 =     751.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    352.00 TO NODE    352.00 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.) =    7.18
  RAINFALL INTENSITY(INCH/HR) =   2.09
  TOTAL STREAM AREA(ACRES) =     3.69
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.88

**************************************************************************
  FLOW PROCESS FROM NODE    351.00 TO NODE    352.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   158.00
  UPSTREAM ELEVATION(FEET) =   1575.50
  DOWNSTREAM ELEVATION(FEET) =   1572.01
  ELEVATION DIFFERENCE(FEET) =      3.49
  TC = 0.323*[(  158.00**3)/(     3.49)]**.2 =    5.241
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.450
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      0.88
  TOTAL AREA(ACRES) =      0.41   TOTAL RUNOFF(CFS) =      0.88

**************************************************************************
  FLOW PROCESS FROM NODE    352.00 TO NODE    352.00 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.) =    5.24
  RAINFALL INTENSITY(INCH/HR) =   2.45
  TOTAL STREAM AREA(ACRES) =     0.41
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.88

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        6.88     7.18        2.093          3.69
      2        0.88     5.24        2.450          0.41

 ********************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
```

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

  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        5.90     5.24       2.450
      2        7.64     7.18       2.093

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       7.64   Tc(MIN.) =    7.18
  TOTAL AREA(ACRES) =        4.1
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    352.00 =     751.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    352.00 TO NODE    625.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1569.34  DOWNSTREAM(FEET) =  1569.00
  FLOW LENGTH(FEET) =    63.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  12.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.96
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.64
  PIPE TRAVEL TIME(MIN.) =   0.21    Tc(MIN.) =    7.40
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    625.00 =     814.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    625.00 TO NODE    625.00 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.) =    7.40
  RAINFALL INTENSITY(INCH/HR) =   2.06
  TOTAL STREAM AREA(ACRES) =     4.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.64

****************************************************************************
  FLOW PROCESS FROM NODE    371.00 TO NODE    373.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
          ASSUMED INITIAL SUBAREA UNIFORM
          DEVELOPMENT IS APARTMENT
```

```
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   301.00
  UPSTREAM ELEVATION(FEET) =   1575.20
  DOWNSTREAM ELEVATION(FEET) =   1572.50
  ELEVATION DIFFERENCE(FEET) =      2.70
  TC = 0.323*[(  301.00**3)/(     2.70)]**.2 =    8.122
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.968
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      1.02
  TOTAL AREA(ACRES) =      0.59   TOTAL RUNOFF(CFS) =      1.02

****************************************************************************
  FLOW PROCESS FROM NODE    373.00 TO NODE    625.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1572.50  DOWNSTREAM(FEET) =  1569.00
  FLOW LENGTH(FEET) =    31.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   6.0 INCH PIPE IS   3.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.41
  ESTIMATED PIPE DIAMETER(INCH) =   6.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.02
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =    8.18
  LONGEST FLOWPATH FROM NODE    371.00 TO NODE    625.00 =     332.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    625.00 TO NODE    625.00 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.) =    8.18
  RAINFALL INTENSITY(INCH/HR) =   1.96
  TOTAL STREAM AREA(ACRES) =     0.59
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.02

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        7.64     7.40        2.063          4.10
      2        1.02     8.18        1.961          0.59

 ********************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
```

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

  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        8.56     7.40       2.063
      2        8.28     8.18       1.961

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       8.56   Tc(MIN.) =    7.40
  TOTAL AREA(ACRES) =        4.7
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    625.00 =     814.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    625.00 TO NODE    630.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1568.90  DOWNSTREAM(FEET) =  1567.75
  FLOW LENGTH(FEET) =   121.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.21
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       8.56
  PIPE TRAVEL TIME(MIN.) =   0.32    Tc(MIN.) =    7.72
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    630.00 =     935.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    630.00 TO NODE    630.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    381.00 TO NODE    382.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   189.00
  UPSTREAM ELEVATION(FEET) =   1574.70
  DOWNSTREAM ELEVATION(FEET) =   1570.85
  ELEVATION DIFFERENCE(FEET) =      3.85
  TC = 0.323*[(  189.00**3)/(     3.85)]**.2 =    5.722
```

```
   5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.345
 *USER SPECIFIED(SUBAREA):
 APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8600
 SUBAREA RUNOFF(CFS) =      0.73
 TOTAL AREA(ACRES) =      0.36   TOTAL RUNOFF(CFS) =      0.73

****************************************************************************
 FLOW PROCESS FROM NODE    382.00 TO NODE    392.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1570.85  DOWNSTREAM(FEET) =  1570.55
 FLOW LENGTH(FEET) =    53.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN   9.0 INCH PIPE IS   5.1 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   2.80
 ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       0.73
 PIPE TRAVEL TIME(MIN.) =   0.32    Tc(MIN.) =    6.04
 LONGEST FLOWPATH FROM NODE    381.00 TO NODE    392.00 =     242.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    392.00 TO NODE    392.00 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.) =    6.04
 RAINFALL INTENSITY(INCH/HR) =   2.28
 TOTAL STREAM AREA(ACRES) =     0.36
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.73

****************************************************************************
 FLOW PROCESS FROM NODE    391.00 TO NODE    392.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   337.00
 UPSTREAM ELEVATION(FEET) =   1574.60
 DOWNSTREAM ELEVATION(FEET) =   1571.30
 ELEVATION DIFFERENCE(FEET) =      3.30
 TC = 0.323*[(  337.00**3)/(     3.30)]**.2 =    8.350
   5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.941
 *USER SPECIFIED(SUBAREA):
 APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8900
 SUBAREA RUNOFF(CFS) =      0.98
```

```
  TOTAL AREA(ACRES) =      0.57   TOTAL RUNOFF(CFS) =      0.98

****************************************************************************
  FLOW PROCESS FROM NODE    392.00 TO NODE    392.00 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.) =    8.35
  RAINFALL INTENSITY(INCH/HR) =   1.94
  TOTAL STREAM AREA(ACRES) =     0.57
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.98

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        0.73     6.04        2.283          0.36
      2        0.98     8.35        1.941          0.57

 **********************************WARNING**********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ***************************************************************************

  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        1.44     6.04       2.283
      2        1.60     8.35       1.941

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       1.60   Tc(MIN.) =    8.35
  TOTAL AREA(ACRES) =        0.9
  LONGEST FLOWPATH FROM NODE    391.00 TO NODE    392.00 =     337.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    392.00 TO NODE    630.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1567.88  DOWNSTREAM(FEET) =  1567.75
  FLOW LENGTH(FEET) =    14.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   5.9 INCHES
```

```
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.13
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.60
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =    8.41
  LONGEST FLOWPATH FROM NODE    391.00 TO NODE    630.00 =     351.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    630.00 TO NODE    630.00 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        1.60     8.41       1.934        0.93
  LONGEST FLOWPATH FROM NODE    391.00 TO NODE    630.00 =     351.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1        8.56     7.72       2.019        4.69
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    630.00 =     935.00 FEET.

 ****************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ********************************************************************

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1      10.03       7.72        2.019
      2       9.81       8.41        1.934

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      10.03   Tc(MIN.) =    7.72
  TOTAL AREA(ACRES) =        5.6

****************************************************************************
  FLOW PROCESS FROM NODE    630.00 TO NODE    640.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1567.65  DOWNSTREAM(FEET) =  1563.55
  FLOW LENGTH(FEET) =   288.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.54
```

```
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.03
  PIPE TRAVEL TIME(MIN.) =   0.64    Tc(MIN.) =    8.36
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    640.00 =    1223.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    640.00 TO NODE    640.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    401.00 TO NODE    402.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   296.00
  UPSTREAM ELEVATION(FEET) =   1573.00
  DOWNSTREAM ELEVATION(FEET) =   1570.45
  ELEVATION DIFFERENCE(FEET) =      2.55
  TC = 0.323*[(  296.00**3)/(     2.55)]**.2 =    8.133
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.967
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      2.28
  TOTAL AREA(ACRES) =      1.33   TOTAL RUNOFF(CFS) =      2.28

****************************************************************************
  FLOW PROCESS FROM NODE    402.00 TO NODE    635.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1568.45  DOWNSTREAM(FEET) =  1567.85
  FLOW LENGTH(FEET) =    86.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   8.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.99
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.28
  PIPE TRAVEL TIME(MIN.) =   0.36    Tc(MIN.) =    8.49
  LONGEST FLOWPATH FROM NODE    401.00 TO NODE    635.00 =     382.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    635.00 TO NODE    635.00 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.) =    8.49
  RAINFALL INTENSITY(INCH/HR) =   1.92
  TOTAL STREAM AREA(ACRES) =     1.33
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.28

****************************************************************************
  FLOW PROCESS FROM NODE    411.00 TO NODE    412.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   288.00
  UPSTREAM ELEVATION(FEET) =   1572.40
  DOWNSTREAM ELEVATION(FEET) =   1570.65
  ELEVATION DIFFERENCE(FEET) =      1.75
  TC = 0.323*[(  288.00**3)/(     1.75)]**.2 =    8.626
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.910
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8500
  SUBAREA RUNOFF(CFS) =      0.73
  TOTAL AREA(ACRES) =      0.45   TOTAL RUNOFF(CFS) =      0.73

****************************************************************************
  FLOW PROCESS FROM NODE    412.00 TO NODE    635.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1568.65  DOWNSTREAM(FEET) =  1567.75
  FLOW LENGTH(FEET) =    19.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   6.0 INCH PIPE IS   3.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.23
  ESTIMATED PIPE DIAMETER(INCH) =   6.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.73
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =    8.68
  LONGEST FLOWPATH FROM NODE    411.00 TO NODE    635.00 =     307.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    635.00 TO NODE    635.00 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.) =    8.68
```

```
 RAINFALL INTENSITY(INCH/HR) =   1.90
 TOTAL STREAM AREA(ACRES) =     0.45
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.73

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        2.28     8.49        1.925          1.33
     2        0.73     8.68        1.904          0.45

 ********************************WARNING*********************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

 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        2.99     8.49       1.925
     2        2.98     8.68       1.904

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       2.99   Tc(MIN.) =    8.49
 TOTAL AREA(ACRES) =        1.8
 LONGEST FLOWPATH FROM NODE    401.00 TO NODE    635.00 =     382.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    635.00 TO NODE    422.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1567.75  DOWNSTREAM(FEET) =  1567.30
 FLOW LENGTH(FEET) =    89.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  15.0 INCH PIPE IS   9.1 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   3.83
 ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       2.99
 PIPE TRAVEL TIME(MIN.) =   0.39    Tc(MIN.) =    8.88
 LONGEST FLOWPATH FROM NODE    401.00 TO NODE    422.00 =     471.00 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.) =    8.88
  RAINFALL INTENSITY(INCH/HR) =   1.88
  TOTAL STREAM AREA(ACRES) =     1.78
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.99

****************************************************************************
  FLOW PROCESS FROM NODE    421.00 TO NODE    422.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   285.00
  UPSTREAM ELEVATION(FEET) =   1572.60
  DOWNSTREAM ELEVATION(FEET) =   1570.00
  ELEVATION DIFFERENCE(FEET) =      2.60
  TC = 0.323*[(  285.00**3)/(     2.60)]**.2 =    7.920
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.993
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8400
  SUBAREA RUNOFF(CFS) =      1.04
  TOTAL AREA(ACRES) =      0.62   TOTAL RUNOFF(CFS) =      1.04

****************************************************************************
  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.) =    7.92
  RAINFALL INTENSITY(INCH/HR) =   1.99
  TOTAL STREAM AREA(ACRES) =     0.62
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.04

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        2.99     8.88        1.882          1.78
      2        1.04     7.92        1.993          0.62

 ********************************WARNING*************************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************
```

```
  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        3.71     7.92       1.993
      2        3.97     8.88       1.882

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       3.97   Tc(MIN.) =    8.88
  TOTAL AREA(ACRES) =        2.4
  LONGEST FLOWPATH FROM NODE    401.00 TO NODE    422.00 =     471.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    422.00 TO NODE    640.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1563.63  DOWNSTREAM(FEET) =  1563.55
  FLOW LENGTH(FEET) =    18.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS  11.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.79
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.97
  PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =    8.96
  LONGEST FLOWPATH FROM NODE    401.00 TO NODE    640.00 =     489.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    640.00 TO NODE    640.00 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.) =    8.96
  RAINFALL INTENSITY(INCH/HR) =   1.87
  TOTAL STREAM AREA(ACRES) =     2.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.97

****************************************************************************
  FLOW PROCESS FROM NODE    431.00 TO NODE    432.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
          ASSUMED INITIAL SUBAREA UNIFORM
          DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
```

```
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   265.00
 UPSTREAM ELEVATION(FEET) =   1570.30
 DOWNSTREAM ELEVATION(FEET) =   1567.95
 ELEVATION DIFFERENCE(FEET) =      2.35
 TC = 0.323*[(  265.00**3)/(     2.35)]**.2 =    7.736
    5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.017
 *USER SPECIFIED(SUBAREA):
 APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8600
 SUBAREA RUNOFF(CFS) =      0.73
 TOTAL AREA(ACRES) =      0.42   TOTAL RUNOFF(CFS) =      0.73

****************************************************************************
 FLOW PROCESS FROM NODE    432.00 TO NODE    640.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1565.37  DOWNSTREAM(FEET) =  1564.40
 FLOW LENGTH(FEET) =    19.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN   6.0 INCH PIPE IS   3.4 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   6.39
 ESTIMATED PIPE DIAMETER(INCH) =   6.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       0.73
 PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =    7.79
 LONGEST FLOWPATH FROM NODE    431.00 TO NODE    640.00 =     284.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    640.00 TO NODE    640.00 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.) =    7.79
 RAINFALL INTENSITY(INCH/HR) =   2.01
 TOTAL STREAM AREA(ACRES) =     0.42
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.73

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        3.97     8.96        1.874          2.40
     2        0.73     7.79        2.010          0.42

 ********************************WARNING*************************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************
```

```
  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        4.18     7.79       2.010
      2        4.65     8.96       1.874

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       4.65   Tc(MIN.) =    8.96
  TOTAL AREA(ACRES) =        2.8
  LONGEST FLOWPATH FROM NODE    401.00 TO NODE    640.00 =     489.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    640.00 TO NODE    640.00 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        4.65     8.96       1.874        2.82
  LONGEST FLOWPATH FROM NODE    401.00 TO NODE    640.00 =     489.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1       10.03     8.36       1.940        5.62
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    640.00 =    1223.00 FEET.

 ****************************WARNING*************************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1      14.37       8.36        1.940
      2      14.34       8.96        1.874

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      14.37   Tc(MIN.) =    8.36
  TOTAL AREA(ACRES) =        8.4

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

```
 FLOW PROCESS FROM NODE    640.00 TO NODE    642.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1560.20  DOWNSTREAM(FEET) =  1560.16
 FLOW LENGTH(FEET) =     3.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  21.0 INCH PIPE IS  14.6 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   8.06
 ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      14.37
 PIPE TRAVEL TIME(MIN.) =   0.01    Tc(MIN.) =    8.36
 LONGEST FLOWPATH FROM NODE    301.00 TO NODE    642.00 =    1226.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    642.00 TO NODE    642.00 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.) =    8.36
 RAINFALL INTENSITY(INCH/HR) =   1.94
 TOTAL STREAM AREA(ACRES) =     8.44
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     14.37

****************************************************************************
 FLOW PROCESS FROM NODE    291.00 TO NODE    292.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   146.00
 UPSTREAM ELEVATION(FEET) =   1572.50
 DOWNSTREAM ELEVATION(FEET) =   1565.20
 ELEVATION DIFFERENCE(FEET) =      7.30
 TC = 0.323*[(  146.00**3)/(     7.30)]**.2 =    4.313
 COMPUTED TIME OF CONCENTRATION INCREASED TO 5 MIN.
    5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.509
 *USER SPECIFIED(SUBAREA):
 APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8500
 SUBAREA RUNOFF(CFS) =      0.66
 TOTAL AREA(ACRES) =      0.31   TOTAL RUNOFF(CFS) =      0.66

****************************************************************************
 FLOW PROCESS FROM NODE    292.00 TO NODE    642.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
```

```
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1561.66  DOWNSTREAM(FEET) =  1560.16
  FLOW LENGTH(FEET) =   297.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   5.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   2.63
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.66
  PIPE TRAVEL TIME(MIN.) =   1.88    Tc(MIN.) =    6.88
  LONGEST FLOWPATH FROM NODE    291.00 TO NODE    642.00 =     443.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    642.00 TO NODE    642.00 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) =   2.14
  TOTAL STREAM AREA(ACRES) =     0.31
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.66

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       14.37     8.36        1.940          8.44
      2        0.66     6.88        2.138          0.31

 **********************************WARNING**********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ***************************************************************************

  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       12.49     6.88       2.138
      2       14.97     8.36       1.940

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      14.97   Tc(MIN.) =    8.36
  TOTAL AREA(ACRES) =        8.8
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    642.00 =    1226.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    642.00 TO NODE    645.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1560.16  DOWNSTREAM(FEET) =  1559.75
  FLOW LENGTH(FEET) =    70.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  18.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.93
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      14.97
  PIPE TRAVEL TIME(MIN.) =   0.20    Tc(MIN.) =    8.56
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    645.00 =    1296.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    102.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   655.00
  UPSTREAM ELEVATION(FEET) =   1586.50
  DOWNSTREAM ELEVATION(FEET) =   1581.24
  ELEVATION DIFFERENCE(FEET) =      5.26
  TC = 0.323*[(  655.00**3)/(     5.26)]**.2 =   11.333
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.666
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8900
  SUBAREA RUNOFF(CFS) =      1.45
  TOTAL AREA(ACRES) =      0.98   TOTAL RUNOFF(CFS) =      1.45

****************************************************************************
  FLOW PROCESS FROM NODE    102.00 TO NODE    103.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1577.74  DOWNSTREAM(FEET) =  1571.94
  FLOW LENGTH(FEET) =    66.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   6.0 INCH PIPE IS   4.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.14
  ESTIMATED PIPE DIAMETER(INCH) =   6.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.45
  PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =   11.45
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    103.00 =     721.00 FEET.

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

```
 FLOW PROCESS FROM NODE    110.00 TO NODE    111.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
        ASSUMED INITIAL SUBAREA UNIFORM
        DEVELOPMENT IS APARTMENT
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   410.00
 UPSTREAM ELEVATION(FEET) =   1566.10
 DOWNSTREAM ELEVATION(FEET) =   1562.10
 ELEVATION DIFFERENCE(FEET) =      4.00
 TC = 0.323*[(  410.00**3)/(     4.00)]**.2 =    9.038
    5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.866
 *USER SPECIFIED(SUBAREA):
 APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
 SUBAREA RUNOFF(CFS) =      0.50
 TOTAL AREA(ACRES) =      0.31   TOTAL RUNOFF(CFS) =      0.50

****************************************************************************
 FLOW PROCESS FROM NODE    100.00 TO NODE    106.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
        ASSUMED INITIAL SUBAREA UNIFORM
        DEVELOPMENT IS APARTMENT
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH(FEET) =  1125.00
 UPSTREAM ELEVATION(FEET) =   1586.50
 DOWNSTREAM ELEVATION(FEET) =   1564.87
 ELEVATION DIFFERENCE(FEET) =     21.63
 TC = 0.323*[( 1125.00**3)/(    21.63)]**.2 =   11.816
    5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.631
 *USER SPECIFIED(SUBAREA):
 APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
 SUBAREA RUNOFF(CFS) =      1.25
 TOTAL AREA(ACRES) =      0.87   TOTAL RUNOFF(CFS) =      1.25

****************************************************************************
 FLOW PROCESS FROM NODE    106.00 TO NODE    107.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1562.20  DOWNSTREAM(FEET) =  1560.00
 FLOW LENGTH(FEET) =   232.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN   9.0 INCH PIPE IS   6.2 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   3.86
 ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       1.25
 PIPE TRAVEL TIME(MIN.) =   1.00    Tc(MIN.) =   12.82
```

```
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    107.00 =    1357.00 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =         0.9  TC(MIN.) =     12.82
  PEAK FLOW RATE(CFS)   =        1.25
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```



POST-DEVELOPMENT AES

UN-DETAINED

(10-YEAR STORM EVENT)

```
******************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
          RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                       (RCFC&WCD)  1978 HYDROLOGY MANUAL
           (c) Copyright 1982-2016 Advanced Engineering Software (aes)
                       (Rational Tabling Version 23.0)
                   Release Date: 07/01/2016  License ID 1452

                              Analysis prepared by:

   ************************* DESCRIPTION OF STUDY *************************
* 3816 ROCAS GRANDES II                                                    *
* 10 YEAR STORM EVENT                                                      *
* POST-PROJECT UNDETAINED HYDROLOGY                                        *
 ****************************************************************************



--------------------------------------------------------------------------------
  FILE NAME: 3816P10.DAT
  TIME/DATE OF STUDY: 07:24 02/11/2025
--------------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
--------------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =   6.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  10-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  2.010
  10-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  0.820
  100-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  2.940
  100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.200
  SLOPE OF 10-YEAR INTENSITY-DURATION CURVE =  0.5003939
  SLOPE OF 100-YEAR INTENSITY-DURATION CURVE =  0.5001161
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =   10.00   1-HOUR INTENSITY(INCH/HOUR) =   0.828
  SLOPE OF INTENSITY DURATION CURVE = 0.5004
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: COMPUTE CONFLUENCE VALUES ACCORDING TO RCFC&WCD HYDROLOGY MANUAL
        AND IGNORE OTHER CONFLUENCE COMBINATIONS FOR DOWNSTREAM ANALYSES
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  ===== ====== ===== =======
  1   22.0     14.0    0.020/0.020/0.018   0.50    2.00 0.0312 0.167 0.0150
  2   46.0     38.0    0.020/0.020/0.020   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    201.00 TO NODE    202.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   341.00
  UPSTREAM ELEVATION(FEET) =   1582.50
  DOWNSTREAM ELEVATION(FEET) =   1579.60
  ELEVATION DIFFERENCE(FEET) =      2.90
  TC = 0.323*[(  341.00**3)/(     2.90)]**.2 =    8.629
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.186
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      1.20
  TOTAL AREA(ACRES) =      0.63   TOTAL RUNOFF(CFS) =      1.20

****************************************************************************
  FLOW PROCESS FROM NODE    202.00 TO NODE    500.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1579.60  DOWNSTREAM(FEET) =  1574.55
  FLOW LENGTH(FEET) =   122.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   3.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.70
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.20
  PIPE TRAVEL TIME(MIN.) =   0.30    Tc(MIN.) =    8.93
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    500.00 =     463.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    500.00 TO NODE    500.00 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.) =    8.93
  RAINFALL INTENSITY(INCH/HR) =   2.15
```

```
  TOTAL STREAM AREA(ACRES) =     0.63
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.20

****************************************************************************
  FLOW PROCESS FROM NODE    211.00 TO NODE    212.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   154.00
  UPSTREAM ELEVATION(FEET) =   1580.40
  DOWNSTREAM ELEVATION(FEET) =   1577.65
  ELEVATION DIFFERENCE(FEET) =      2.75
  TC = 0.323*[(  154.00**3)/(     2.75)]**.2 =    5.413
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.760
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8900
  SUBAREA RUNOFF(CFS) =      2.95
  TOTAL AREA(ACRES) =      1.20   TOTAL RUNOFF(CFS) =      2.95

****************************************************************************
  FLOW PROCESS FROM NODE    212.00 TO NODE    500.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1575.65  DOWNSTREAM(FEET) =  1574.55
  FLOW LENGTH(FEET) =   165.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS   8.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.25
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.95
  PIPE TRAVEL TIME(MIN.) =   0.65    Tc(MIN.) =    6.06
  LONGEST FLOWPATH FROM NODE    211.00 TO NODE    500.00 =     319.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    500.00 TO NODE    500.00 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.) =    6.06
  RAINFALL INTENSITY(INCH/HR) =   2.61
  TOTAL STREAM AREA(ACRES) =     1.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.95
```

```
 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        1.20     8.93        2.148          0.63
     2        2.95     6.06        2.608          1.20

 ********************************WARNING*********************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

 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        3.76     6.06       2.608
     2        3.63     8.93       2.148

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       3.76   Tc(MIN.) =    6.06
 TOTAL AREA(ACRES) =        1.8
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE    500.00 =     463.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    500.00 TO NODE    505.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1574.45  DOWNSTREAM(FEET) =  1573.90
 FLOW LENGTH(FEET) =   106.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  15.0 INCH PIPE IS  10.6 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   4.04
 ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       3.76
 PIPE TRAVEL TIME(MIN.) =   0.44    Tc(MIN.) =    6.50
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE    505.00 =     569.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    505.00 TO NODE    505.00 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.) =    6.50
 RAINFALL INTENSITY(INCH/HR) =   2.52
```

```
  TOTAL STREAM AREA(ACRES) =     1.83
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.76

****************************************************************************
  FLOW PROCESS FROM NODE    221.00 TO NODE    222.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   328.00
  UPSTREAM ELEVATION(FEET) =   1577.80
  DOWNSTREAM ELEVATION(FEET) =   1574.90
  ELEVATION DIFFERENCE(FEET) =      2.90
  TC = 0.323*[(  328.00**3)/(     2.90)]**.2 =    8.430
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.211
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      1.09
  TOTAL AREA(ACRES) =      0.56   TOTAL RUNOFF(CFS) =      1.09

****************************************************************************
  FLOW PROCESS FROM NODE    222.00 TO NODE    505.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1574.90  DOWNSTREAM(FEET) =  1573.90
  FLOW LENGTH(FEET) =    44.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   4.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.23
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.09
  PIPE TRAVEL TIME(MIN.) =   0.14    Tc(MIN.) =    8.57
  LONGEST FLOWPATH FROM NODE    221.00 TO NODE    505.00 =     372.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    505.00 TO NODE    505.00 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.) =    8.57
  RAINFALL INTENSITY(INCH/HR) =   2.19
  TOTAL STREAM AREA(ACRES) =     0.56
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.09
```

```
 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        3.76     6.50        2.519          1.83
     2        1.09     8.57        2.193          0.56

 ********************************WARNING*********************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

 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        4.59     6.50       2.519
     2        4.36     8.57       2.193

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       4.59   Tc(MIN.) =    6.50
 TOTAL AREA(ACRES) =        2.4
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE    505.00 =     569.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    505.00 TO NODE    510.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1573.80  DOWNSTREAM(FEET) =  1572.85
 FLOW LENGTH(FEET) =   159.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  15.0 INCH PIPE IS  11.9 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   4.40
 ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       4.59
 PIPE TRAVEL TIME(MIN.) =   0.60    Tc(MIN.) =    7.10
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE    510.00 =     728.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    510.00 TO NODE    510.00 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.) =    7.10
 RAINFALL INTENSITY(INCH/HR) =   2.41
```

```
  TOTAL STREAM AREA(ACRES) =     2.39
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.59

****************************************************************************
  FLOW PROCESS FROM NODE    231.00 TO NODE    233.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   327.00
  UPSTREAM ELEVATION(FEET) =   1577.00
  DOWNSTREAM ELEVATION(FEET) =   1573.75
  ELEVATION DIFFERENCE(FEET) =      3.25
  TC = 0.323*[(  327.00**3)/(     3.25)]**.2 =    8.225
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.239
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8900
  SUBAREA RUNOFF(CFS) =      2.41
  TOTAL AREA(ACRES) =      1.21   TOTAL RUNOFF(CFS) =      2.41

****************************************************************************
  FLOW PROCESS FROM NODE    233.00 TO NODE    510.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1573.75  DOWNSTREAM(FEET) =  1572.85
  FLOW LENGTH(FEET) =    44.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   6.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.14
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.41
  PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =    8.34
  LONGEST FLOWPATH FROM NODE    231.00 TO NODE    510.00 =     371.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    510.00 TO NODE    510.00 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.) =    8.34
  RAINFALL INTENSITY(INCH/HR) =   2.22
  TOTAL STREAM AREA(ACRES) =     1.21
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.41
```

```
 ** CONFLUENCE DATA **
 STREAM     RUNOFF        Tc       INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        4.59     7.10        2.410          2.39
     2        2.41     8.34        2.223          1.21

 ********************************WARNING*********************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

 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        6.64     7.10       2.410
     2        6.64     8.34       2.223

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       6.64   Tc(MIN.) =    7.10
 TOTAL AREA(ACRES) =        3.6
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE    510.00 =     728.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    510.00 TO NODE    515.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1572.75  DOWNSTREAM(FEET) =  1572.25
 FLOW LENGTH(FEET) =    92.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.4 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   4.71
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       6.64
 PIPE TRAVEL TIME(MIN.) =   0.33    Tc(MIN.) =    7.43
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE    515.00 =     820.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    515.00 TO NODE    515.00 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.) =    7.43
 RAINFALL INTENSITY(INCH/HR) =   2.36
```

```
  TOTAL STREAM AREA(ACRES) =     3.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.64

****************************************************************************
  FLOW PROCESS FROM NODE    251.00 TO NODE    252.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   115.00
  UPSTREAM ELEVATION(FEET) =   1575.70
  DOWNSTREAM ELEVATION(FEET) =   1573.95
  ELEVATION DIFFERENCE(FEET) =      1.75
  TC = 0.323*[(  115.00**3)/(     1.75)]**.2 =    4.973
  COMPUTED TIME OF CONCENTRATION INCREASED TO 5 MIN.
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.872
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      1.27
  TOTAL AREA(ACRES) =      0.51   TOTAL RUNOFF(CFS) =      1.27

****************************************************************************
  FLOW PROCESS FROM NODE    252.00 TO NODE    515.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1573.95  DOWNSTREAM(FEET) =  1572.25
  FLOW LENGTH(FEET) =    41.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   4.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.83
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.27
  PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =    5.10
  LONGEST FLOWPATH FROM NODE    251.00 TO NODE    515.00 =     156.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    515.00 TO NODE    515.00 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.) =    5.10
  RAINFALL INTENSITY(INCH/HR) =   2.84
  TOTAL STREAM AREA(ACRES) =     0.51
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.27
```

```
  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        6.64     7.43        2.356          3.60
      2        1.27     5.10        2.843          0.51

 ********************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

  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        5.83     5.10       2.843
      2        7.69     7.43       2.356

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       7.69   Tc(MIN.) =    7.43
  TOTAL AREA(ACRES) =        4.1
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    515.00 =     820.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    515.00 TO NODE    520.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1572.15  DOWNSTREAM(FEET) =  1569.15
  FLOW LENGTH(FEET) =   323.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.04
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.69
  PIPE TRAVEL TIME(MIN.) =   0.89    Tc(MIN.) =    8.32
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    520.00 =    1143.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    520.00 TO NODE    520.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    271.00 TO NODE    272.00 IS CODE =  21
```

```
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   246.00
  UPSTREAM ELEVATION(FEET) =   1573.50
  DOWNSTREAM ELEVATION(FEET) =   1569.85
  ELEVATION DIFFERENCE(FEET) =      3.65
  TC = 0.323*[(  246.00**3)/(     3.65)]**.2 =    6.775
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.467
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      3.24
  TOTAL AREA(ACRES) =      1.51   TOTAL RUNOFF(CFS) =      3.24

****************************************************************************
  FLOW PROCESS FROM NODE    272.00 TO NODE    272.00 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.) =    6.77
  RAINFALL INTENSITY(INCH/HR) =   2.47
  TOTAL STREAM AREA(ACRES) =     1.51
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.24

****************************************************************************
  FLOW PROCESS FROM NODE    241.00 TO NODE    242.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   169.00
  UPSTREAM ELEVATION(FEET) =   1575.80
  DOWNSTREAM ELEVATION(FEET) =   1573.30
  ELEVATION DIFFERENCE(FEET) =      2.50
  TC = 0.323*[(  169.00**3)/(     2.50)]**.2 =    5.834
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.659
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8500
  SUBAREA RUNOFF(CFS) =      1.13
  TOTAL AREA(ACRES) =      0.50   TOTAL RUNOFF(CFS) =      1.13

****************************************************************************
  FLOW PROCESS FROM NODE    242.00 TO NODE    272.00 IS CODE =  31
```

```
------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1571.30  DOWNSTREAM(FEET) =  1569.85
  FLOW LENGTH(FEET) =   290.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   5.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.00
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.13
  PIPE TRAVEL TIME(MIN.) =   1.61    Tc(MIN.) =    7.45
  LONGEST FLOWPATH FROM NODE    241.00 TO NODE    272.00 =     459.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    272.00 TO NODE    272.00 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.) =    7.45
  RAINFALL INTENSITY(INCH/HR) =   2.35
  TOTAL STREAM AREA(ACRES) =     0.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.13

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        3.24     6.77        2.467          1.51
      2        1.13     7.45        2.353          0.50

 ********************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

  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        4.27     6.77       2.467
      2        4.22     7.45       2.353

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       4.27   Tc(MIN.) =    6.77
  TOTAL AREA(ACRES) =        2.0
```

```
 LONGEST FLOWPATH FROM NODE    241.00 TO NODE    272.00 =     459.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    272.00 TO NODE    520.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1569.85  DOWNSTREAM(FEET) =  1569.15
 FLOW LENGTH(FEET) =   141.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  15.0 INCH PIPE IS  12.1 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   4.01
 ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       4.27
 PIPE TRAVEL TIME(MIN.) =   0.59    Tc(MIN.) =    7.36
 LONGEST FLOWPATH FROM NODE    241.00 TO NODE    520.00 =     600.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    520.00 TO NODE    520.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
 STREAM     RUNOFF       Tc       INTENSITY     AREA
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
     1        4.27     7.36        2.367        2.01
 LONGEST FLOWPATH FROM NODE    241.00 TO NODE    520.00 =     600.00 FEET.

 ** MEMORY BANK #  3 CONFLUENCE DATA **
 STREAM     RUNOFF       Tc       INTENSITY     AREA
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
     1        7.69     8.32        2.226        4.11
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE    520.00 =    1143.00 FEET.

 **********************************WARNING***********************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

 ** PEAK FLOW RATE TABLE **
 STREAM    RUNOFF       Tc       INTENSITY
 NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
     1      11.08       7.36        2.367
     2      11.71       8.32        2.226

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      11.71   Tc(MIN.) =    8.32
 TOTAL AREA(ACRES) =        6.1
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    520.00 TO NODE    262.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1569.85  DOWNSTREAM(FEET) =  1568.95
  FLOW LENGTH(FEET) =   180.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.33
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      11.71
  PIPE TRAVEL TIME(MIN.) =   0.56    Tc(MIN.) =    8.88
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    262.00 =    1323.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    262.00 TO NODE    262.00 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.) =    8.88
  RAINFALL INTENSITY(INCH/HR) =   2.15
  TOTAL STREAM AREA(ACRES) =     6.12
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.71

****************************************************************************
  FLOW PROCESS FROM NODE    261.00 TO NODE    262.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   478.00
  UPSTREAM ELEVATION(FEET) =   1575.50
  DOWNSTREAM ELEVATION(FEET) =   1569.45
  ELEVATION DIFFERENCE(FEET) =      6.05
  TC = 0.323*[(  478.00**3)/(     6.05)]**.2 =    9.122
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.126
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      2.63
  TOTAL AREA(ACRES) =      1.42   TOTAL RUNOFF(CFS) =      2.63

****************************************************************************
  FLOW PROCESS FROM NODE    262.00 TO NODE    262.00 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.) =    9.12
  RAINFALL INTENSITY(INCH/HR) =   2.13
  TOTAL STREAM AREA(ACRES) =     1.42
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.63

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       11.71     8.88        2.154          6.12
      2        2.63     9.12        2.126          1.42

 **********************************WARNING**********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ***************************************************************************

  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       14.27     8.88       2.154
      2       14.18     9.12       2.126

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      14.27   Tc(MIN.) =    8.88
  TOTAL AREA(ACRES) =        7.5
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    262.00 =    1323.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    262.00 TO NODE    530.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1566.28  DOWNSTREAM(FEET) =  1565.40
  FLOW LENGTH(FEET) =    13.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS  11.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.69
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      14.27
  PIPE TRAVEL TIME(MIN.) =   0.01    Tc(MIN.) =    8.89
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    530.00 =    1336.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    530.00 TO NODE    530.00 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.) =    8.89
  RAINFALL INTENSITY(INCH/HR) =   2.15
  TOTAL STREAM AREA(ACRES) =     7.54
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     14.27

****************************************************************************
  FLOW PROCESS FROM NODE    281.00 TO NODE    282.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   344.00
  UPSTREAM ELEVATION(FEET) =   1571.00
  DOWNSTREAM ELEVATION(FEET) =   1568.18
  ELEVATION DIFFERENCE(FEET) =      2.82
  TC = 0.323*[(  344.00**3)/(     2.82)]**.2 =    8.723
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.174
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      2.27
  TOTAL AREA(ACRES) =      1.20   TOTAL RUNOFF(CFS) =      2.27

****************************************************************************
  FLOW PROCESS FROM NODE    282.00 TO NODE    530.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1565.51  DOWNSTREAM(FEET) =  1565.40
  FLOW LENGTH(FEET) =    20.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   8.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.62
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.27
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =    8.82
  LONGEST FLOWPATH FROM NODE    281.00 TO NODE    530.00 =     364.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    530.00 TO NODE    530.00 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.) =    8.82
  RAINFALL INTENSITY(INCH/HR) =   2.16
  TOTAL STREAM AREA(ACRES) =     1.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.27

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       14.27     8.89        2.153          7.54
      2        2.27     8.82        2.162          1.20

 **********************************WARNING**********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ***************************************************************************

  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       16.41     8.82       2.162
      2       16.52     8.89       2.153

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      16.52   Tc(MIN.) =    8.89
  TOTAL AREA(ACRES) =        8.7
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    530.00 =    1336.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    535.00 TO NODE    540.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1563.70  DOWNSTREAM(FEET) =  1563.44
  FLOW LENGTH(FEET) =    34.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  17.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.74
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      16.52
  PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =    8.98
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    540.00 =    1370.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    540.00 TO NODE    541.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1563.40  DOWNSTREAM(FEET) =   1561.53
  CHANNEL LENGTH THRU SUBAREA(FEET) =   133.00   CHANNEL SLOPE =  0.0141
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   0.018
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   0.07

         ==>>WARNING: FLOW IN CHANNEL EXCEEDS CHANNEL
             CAPACITY( NORMAL DEPTH EQUAL TO SPECIFIED MAXIMUM
             ALLOWABLE DEPTH).
             AS AN APPROXIMATION, FLOWDEPTH IS SET AT MAXIMUM
             ALLOWABLE DEPTH AND IS USED FOR TRAVELTIME CALCULATIONS.

  CHANNEL FLOW THRU SUBAREA(CFS) =      16.52
  FLOW VELOCITY(FEET/SEC.) =  29.50   FLOW DEPTH(FEET) =   0.07
  TRAVEL TIME(MIN.) =   0.08   Tc(MIN.) =    9.05
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    541.00 =    1503.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    541.00 TO NODE    541.00 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.) =    9.05
  RAINFALL INTENSITY(INCH/HR) =   2.13
  TOTAL STREAM AREA(ACRES) =     8.74
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     16.52

****************************************************************************
  FLOW PROCESS FROM NODE    110.00 TO NODE    541.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   252.00
  UPSTREAM ELEVATION(FEET) =   1566.10
  DOWNSTREAM ELEVATION(FEET) =   1561.53
  ELEVATION DIFFERENCE(FEET) =      4.57
  TC = 0.323*[(  252.00**3)/(     4.57)]**.2 =    6.571
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.505
  *USER SPECIFIED(SUBAREA):
```

```
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8200
  SUBAREA RUNOFF(CFS) =      0.41
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.41

****************************************************************************
  FLOW PROCESS FROM NODE    541.00 TO NODE    541.00 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.) =    6.57
  RAINFALL INTENSITY(INCH/HR) =   2.50
  TOTAL STREAM AREA(ACRES) =     0.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.41

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       16.52     9.05        2.134          8.74
      2        0.41     6.57        2.505          0.20

 **********************************WARNING**********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ***************************************************************************

  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       12.40     6.57       2.505
      2       16.87     9.05       2.134

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      16.87   Tc(MIN.) =    9.05
  TOTAL AREA(ACRES) =        8.9
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    541.00 =    1503.00 FEET.

****************************************************************************
  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) =   1561.53  DOWNSTREAM(FEET) =   1561.10
```

```
  CHANNEL LENGTH THRU SUBAREA(FEET) =    61.00   CHANNEL SLOPE =  0.0071
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   0.018
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   0.07

         ==>>WARNING: FLOW IN CHANNEL EXCEEDS CHANNEL
             CAPACITY( NORMAL DEPTH EQUAL TO SPECIFIED MAXIMUM
             ALLOWABLE DEPTH).
             AS AN APPROXIMATION, FLOWDEPTH IS SET AT MAXIMUM
             ALLOWABLE DEPTH AND IS USED FOR TRAVELTIME CALCULATIONS.

  CHANNEL FLOW THRU SUBAREA(CFS) =      16.87
  FLOW VELOCITY(FEET/SEC.) =  30.13   FLOW DEPTH(FEET) =   0.07
  TRAVEL TIME(MIN.) =   0.03   Tc(MIN.) =    9.09
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    542.00 =    1564.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    301.00 TO NODE    302.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   176.00
  UPSTREAM ELEVATION(FEET) =   1581.00
  DOWNSTREAM ELEVATION(FEET) =   1580.00
  ELEVATION DIFFERENCE(FEET) =      1.00
  TC = 0.323*[(  176.00**3)/(     1.00)]**.2 =    7.180
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.396
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      0.97
  TOTAL AREA(ACRES) =      0.46   TOTAL RUNOFF(CFS) =      0.97

****************************************************************************
  FLOW PROCESS FROM NODE    302.00 TO NODE    600.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1578.40  DOWNSTREAM(FEET) =  1574.45
  FLOW LENGTH(FEET) =   187.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   4.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.95
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.97
  PIPE TRAVEL TIME(MIN.) =   0.63    Tc(MIN.) =    7.81
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    600.00 =     363.00 FEET.

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

```
  FLOW PROCESS FROM NODE    600.00 TO NODE    600.00 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.) =    7.81
  RAINFALL INTENSITY(INCH/HR) =   2.30
  TOTAL STREAM AREA(ACRES) =     0.46
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.97

****************************************************************************
  FLOW PROCESS FROM NODE    311.00 TO NODE    312.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   157.00
  UPSTREAM ELEVATION(FEET) =   1580.80
  DOWNSTREAM ELEVATION(FEET) =   1577.70
  ELEVATION DIFFERENCE(FEET) =      3.10
  TC = 0.323*[(  157.00**3)/(     3.10)]**.2 =    5.346
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.777
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      1.52
  TOTAL AREA(ACRES) =      0.62   TOTAL RUNOFF(CFS) =      1.52

****************************************************************************
  FLOW PROCESS FROM NODE    312.00 TO NODE    600.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1575.70  DOWNSTREAM(FEET) =  1574.45
  FLOW LENGTH(FEET) =    89.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   6.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.68
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.52
  PIPE TRAVEL TIME(MIN.) =   0.32    Tc(MIN.) =    5.66
  LONGEST FLOWPATH FROM NODE    311.00 TO NODE    600.00 =     246.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    600.00 TO NODE    600.00 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.) =    5.66
  RAINFALL INTENSITY(INCH/HR) =   2.70
  TOTAL STREAM AREA(ACRES) =     0.62
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.52

****************************************************************************
  FLOW PROCESS FROM NODE    321.00 TO NODE    322.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   190.00
  UPSTREAM ELEVATION(FEET) =   1578.50
  DOWNSTREAM ELEVATION(FEET) =   1576.10
  ELEVATION DIFFERENCE(FEET) =      2.40
  TC = 0.323*[(  190.00**3)/(     2.40)]**.2 =    6.310
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.556
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      1.28
  TOTAL AREA(ACRES) =      0.57   TOTAL RUNOFF(CFS) =      1.28

****************************************************************************
  FLOW PROCESS FROM NODE    322.00 TO NODE    600.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1576.10  DOWNSTREAM(FEET) =  1574.45
  FLOW LENGTH(FEET) =    21.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   6.0 INCH PIPE IS   4.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.53
  ESTIMATED PIPE DIAMETER(INCH) =   6.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.28
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =    6.35
  LONGEST FLOWPATH FROM NODE    321.00 TO NODE    600.00 =     211.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    600.00 TO NODE    600.00 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.) =    6.35
```

```
 RAINFALL INTENSITY(INCH/HR) =   2.55
 TOTAL STREAM AREA(ACRES) =     0.57
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.28

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        0.97     7.81        2.298          0.46
     2        1.52     5.66        2.698          0.62
     3        1.28     6.35        2.548          0.57

 ********************************WARNING*************************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

 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        3.36     5.66       2.698
     2        3.50     6.35       2.548
     3        3.42     7.81       2.298

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       3.36   Tc(MIN.) =    5.66
 TOTAL AREA(ACRES) =        1.7
 LONGEST FLOWPATH FROM NODE    301.00 TO NODE    600.00 =     363.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    600.00 TO NODE    605.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1574.45  DOWNSTREAM(FEET) =  1573.65
 FLOW LENGTH(FEET) =   137.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  15.0 INCH PIPE IS   9.4 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   4.16
 ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       3.36
 PIPE TRAVEL TIME(MIN.) =   0.55    Tc(MIN.) =    6.21
 LONGEST FLOWPATH FROM NODE    301.00 TO NODE    605.00 =     500.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    605.00 TO NODE    605.00 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.) =    6.21
  RAINFALL INTENSITY(INCH/HR) =   2.58
  TOTAL STREAM AREA(ACRES) =     1.65
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.36

****************************************************************************
  FLOW PROCESS FROM NODE    341.00 TO NODE    342.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   176.00
  UPSTREAM ELEVATION(FEET) =   1581.00
  DOWNSTREAM ELEVATION(FEET) =   1576.80
  ELEVATION DIFFERENCE(FEET) =      4.20
  TC = 0.323*[(  176.00**3)/(     4.20)]**.2 =    5.388
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.766
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      1.53
  TOTAL AREA(ACRES) =      0.63   TOTAL RUNOFF(CFS) =      1.53

****************************************************************************
  FLOW PROCESS FROM NODE    342.00 TO NODE    605.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1575.30  DOWNSTREAM(FEET) =  1573.65
  FLOW LENGTH(FEET) =    45.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   4.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.83
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.53
  PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =    5.50
  LONGEST FLOWPATH FROM NODE    341.00 TO NODE    605.00 =     221.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    605.00 TO NODE    605.00 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.) =    5.50
 RAINFALL INTENSITY(INCH/HR) =   2.74
 TOTAL STREAM AREA(ACRES) =     0.63
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.53

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        3.36     6.21        2.576          1.65
     2        1.53     5.50        2.739          0.63

**********************************WARNING**********************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
*****************************************************************************

 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        4.51     5.50       2.739
     2        4.80     6.21       2.576

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       4.80   Tc(MIN.) =    6.21
 TOTAL AREA(ACRES) =        2.3
 LONGEST FLOWPATH FROM NODE    301.00 TO NODE    605.00 =     500.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    605.00 TO NODE    615.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1573.55  DOWNSTREAM(FEET) =  1573.20
 FLOW LENGTH(FEET) =    62.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.5 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   4.50
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       4.80
 PIPE TRAVEL TIME(MIN.) =   0.23    Tc(MIN.) =    6.44
 LONGEST FLOWPATH FROM NODE    301.00 TO NODE    615.00 =     562.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    615.00 TO NODE    615.00 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.) =    6.44
  RAINFALL INTENSITY(INCH/HR) =   2.53
  TOTAL STREAM AREA(ACRES) =     2.28
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.80

****************************************************************************
  FLOW PROCESS FROM NODE    331.00 TO NODE    332.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   185.00
  UPSTREAM ELEVATION(FEET) =   1576.30
  DOWNSTREAM ELEVATION(FEET) =   1573.90
  ELEVATION DIFFERENCE(FEET) =      2.40
  TC = 0.323*[(  185.00**3)/(     2.40)]**.2 =    6.210
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.577
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8900
  SUBAREA RUNOFF(CFS) =      1.22
  TOTAL AREA(ACRES) =      0.53   TOTAL RUNOFF(CFS) =      1.22

****************************************************************************
  FLOW PROCESS FROM NODE    332.00 TO NODE    615.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1573.90  DOWNSTREAM(FEET) =  1573.20
  FLOW LENGTH(FEET) =    15.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   3.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.04
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.22
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =    6.25
  LONGEST FLOWPATH FROM NODE    331.00 TO NODE    615.00 =     200.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    615.00 TO NODE    615.00 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.) =    6.25
 RAINFALL INTENSITY(INCH/HR) =   2.57
 TOTAL STREAM AREA(ACRES) =     0.53
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.22

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        4.80     6.44        2.530          2.28
     2        1.22     6.25        2.569          0.53

**********************************WARNING**********************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
***************************************************************************

 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        5.87     6.25       2.569
     2        6.00     6.44       2.530

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       6.00   Tc(MIN.) =    6.44
 TOTAL AREA(ACRES) =        2.8
 LONGEST FLOWPATH FROM NODE    301.00 TO NODE    615.00 =     562.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    615.00 TO NODE    620.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1573.10  DOWNSTREAM(FEET) =  1572.30
 FLOW LENGTH(FEET) =   153.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.6 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   4.56
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       6.00
 PIPE TRAVEL TIME(MIN.) =   0.56    Tc(MIN.) =    7.00
 LONGEST FLOWPATH FROM NODE    301.00 TO NODE    620.00 =     715.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    620.00 TO NODE    620.00 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.) =    7.00
  RAINFALL INTENSITY(INCH/HR) =   2.43
  TOTAL STREAM AREA(ACRES) =     2.81
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.00

****************************************************************************
  FLOW PROCESS FROM NODE    361.00 TO NODE    362.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
================================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   242.00
  UPSTREAM ELEVATION(FEET) =   1577.00
  DOWNSTREAM ELEVATION(FEET) =   1572.55
  ELEVATION DIFFERENCE(FEET) =      4.45
  TC = 0.323*[(  242.00**3)/(     4.45)]**.2 =    6.448
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.529
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      1.94
  TOTAL AREA(ACRES) =      0.88   TOTAL RUNOFF(CFS) =      1.94

****************************************************************************
  FLOW PROCESS FROM NODE    362.00 TO NODE    620.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1572.55  DOWNSTREAM(FEET) =  1572.30
  FLOW LENGTH(FEET) =    44.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   7.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.57
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.94
  PIPE TRAVEL TIME(MIN.) =   0.21    Tc(MIN.) =    6.65
  LONGEST FLOWPATH FROM NODE    361.00 TO NODE    620.00 =     286.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    620.00 TO NODE    620.00 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.) =    6.65
 RAINFALL INTENSITY(INCH/HR) =   2.49
 TOTAL STREAM AREA(ACRES) =     0.88
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.94

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        6.00     7.00        2.426          2.81
     2        1.94     6.65        2.489          0.88

**********************************WARNING**********************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
*****************************************************************************

 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        7.64     6.65       2.489
     2        7.89     7.00       2.426

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       7.89   Tc(MIN.) =    7.00
 TOTAL AREA(ACRES) =        3.7
 LONGEST FLOWPATH FROM NODE    301.00 TO NODE    620.00 =     715.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    620.00 TO NODE    352.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1572.20  DOWNSTREAM(FEET) =  1572.01
 FLOW LENGTH(FEET) =    36.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.2 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   4.94
 ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       7.89
 PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =    7.12
 LONGEST FLOWPATH FROM NODE    301.00 TO NODE    352.00 =     751.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    352.00 TO NODE    352.00 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.) =    7.12
  RAINFALL INTENSITY(INCH/HR) =   2.41
  TOTAL STREAM AREA(ACRES) =     3.69
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.89

****************************************************************************
  FLOW PROCESS FROM NODE    351.00 TO NODE    352.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   158.00
  UPSTREAM ELEVATION(FEET) =   1575.50
  DOWNSTREAM ELEVATION(FEET) =   1572.01
  ELEVATION DIFFERENCE(FEET) =      3.49
  TC = 0.323*[(  158.00**3)/(     3.49)]**.2 =    5.241
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.805
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      1.01
  TOTAL AREA(ACRES) =      0.41   TOTAL RUNOFF(CFS) =      1.01

****************************************************************************
  FLOW PROCESS FROM NODE    352.00 TO NODE    352.00 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.) =    5.24
  RAINFALL INTENSITY(INCH/HR) =   2.80
  TOTAL STREAM AREA(ACRES) =     0.41
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.01

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        7.89     7.12        2.406          3.69
      2        1.01     5.24        2.805          0.41

 ********************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
```

```
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

  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        6.82     5.24       2.805
      2        8.76     7.12       2.406

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       8.76   Tc(MIN.) =    7.12
  TOTAL AREA(ACRES) =        4.1
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    352.00 =     751.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    352.00 TO NODE    625.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1569.34  DOWNSTREAM(FEET) =  1569.00
  FLOW LENGTH(FEET) =    63.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  14.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.09
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       8.76
  PIPE TRAVEL TIME(MIN.) =   0.21    Tc(MIN.) =    7.33
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    625.00 =     814.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    625.00 TO NODE    625.00 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.) =    7.33
  RAINFALL INTENSITY(INCH/HR) =   2.37
  TOTAL STREAM AREA(ACRES) =     4.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.76

****************************************************************************
  FLOW PROCESS FROM NODE    371.00 TO NODE    373.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
          ASSUMED INITIAL SUBAREA UNIFORM
```

```
        DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   301.00
  UPSTREAM ELEVATION(FEET) =   1575.20
  DOWNSTREAM ELEVATION(FEET) =   1572.50
  ELEVATION DIFFERENCE(FEET) =      2.70
  TC = 0.323*[(  301.00**3)/(     2.70)]**.2 =    8.122
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.253
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      1.17
  TOTAL AREA(ACRES) =      0.59   TOTAL RUNOFF(CFS) =      1.17

****************************************************************************
  FLOW PROCESS FROM NODE    373.00 TO NODE    625.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1572.50  DOWNSTREAM(FEET) =  1569.00
  FLOW LENGTH(FEET) =    31.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   6.0 INCH PIPE IS   3.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.71
  ESTIMATED PIPE DIAMETER(INCH) =   6.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.17
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =    8.18
  LONGEST FLOWPATH FROM NODE    371.00 TO NODE    625.00 =     332.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    625.00 TO NODE    625.00 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.) =    8.18
  RAINFALL INTENSITY(INCH/HR) =   2.25
  TOTAL STREAM AREA(ACRES) =     0.59
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.17

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        8.76     7.33        2.372          4.10
      2        1.17     8.18        2.245          0.59

 ********************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
```

```
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

  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        9.81     7.33       2.372
      2        9.46     8.18       2.245

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       9.81   Tc(MIN.) =    7.33
  TOTAL AREA(ACRES) =        4.7
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    625.00 =     814.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    625.00 TO NODE    630.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1568.90  DOWNSTREAM(FEET) =  1567.75
  FLOW LENGTH(FEET) =   121.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  12.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.53
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       9.81
  PIPE TRAVEL TIME(MIN.) =   0.31    Tc(MIN.) =    7.64
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    630.00 =     935.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    630.00 TO NODE    630.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    381.00 TO NODE    382.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   189.00
  UPSTREAM ELEVATION(FEET) =   1574.70
  DOWNSTREAM ELEVATION(FEET) =   1570.85
  ELEVATION DIFFERENCE(FEET) =      3.85
```

```
  TC = 0.323*[(  189.00**3)/(     3.85)]**.2 =    5.722
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.684
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8600
  SUBAREA RUNOFF(CFS) =      0.83
  TOTAL AREA(ACRES) =      0.36   TOTAL RUNOFF(CFS) =      0.83

****************************************************************************
  FLOW PROCESS FROM NODE    382.00 TO NODE    392.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1570.85  DOWNSTREAM(FEET) =  1570.55
  FLOW LENGTH(FEET) =    53.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   5.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   2.89
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.83
  PIPE TRAVEL TIME(MIN.) =   0.31    Tc(MIN.) =    6.03
  LONGEST FLOWPATH FROM NODE    381.00 TO NODE    392.00 =     242.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    392.00 TO NODE    392.00 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.) =    6.03
  RAINFALL INTENSITY(INCH/HR) =   2.62
  TOTAL STREAM AREA(ACRES) =     0.36
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.83

****************************************************************************
  FLOW PROCESS FROM NODE    391.00 TO NODE    392.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
          ASSUMED INITIAL SUBAREA UNIFORM
          DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   337.00
  UPSTREAM ELEVATION(FEET) =   1574.60
  DOWNSTREAM ELEVATION(FEET) =   1571.30
  ELEVATION DIFFERENCE(FEET) =      3.30
  TC = 0.323*[(  337.00**3)/(     3.30)]**.2 =    8.350
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.222
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8900
```

```
  SUBAREA RUNOFF(CFS) =      1.13
  TOTAL AREA(ACRES) =      0.57   TOTAL RUNOFF(CFS) =      1.13

****************************************************************************
  FLOW PROCESS FROM NODE    392.00 TO NODE    392.00 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.) =    8.35
  RAINFALL INTENSITY(INCH/HR) =   2.22
  TOTAL STREAM AREA(ACRES) =     0.57
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.13

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        0.83     6.03        2.615          0.36
      2        1.13     8.35        2.222          0.57

 **********************************WARNING***********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

  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        1.64     6.03       2.615
      2        1.83     8.35       2.222

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       1.83   Tc(MIN.) =    8.35
  TOTAL AREA(ACRES) =        0.9
  LONGEST FLOWPATH FROM NODE    391.00 TO NODE    392.00 =     337.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    392.00 TO NODE    630.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1567.88  DOWNSTREAM(FEET) =  1567.75
  FLOW LENGTH(FEET) =    14.00   MANNING'S N =  0.013
```

```
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   6.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.26
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.83
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =    8.40
  LONGEST FLOWPATH FROM NODE    391.00 TO NODE    630.00 =     351.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    630.00 TO NODE    630.00 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        1.83     8.40       2.215        0.93
  LONGEST FLOWPATH FROM NODE    391.00 TO NODE    630.00 =     351.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1        9.81     7.64       2.323        4.69
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    630.00 =     935.00 FEET.

 ****************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ********************************************************************

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1      11.47       7.64        2.323
      2      11.18       8.40        2.215

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      11.47   Tc(MIN.) =    7.64
  TOTAL AREA(ACRES) =        5.6

****************************************************************************
  FLOW PROCESS FROM NODE    630.00 TO NODE    640.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1567.65  DOWNSTREAM(FEET) =  1563.55
  FLOW LENGTH(FEET) =   288.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  14.2 INCHES
```

```
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.66
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      11.47
  PIPE TRAVEL TIME(MIN.) =   0.63    Tc(MIN.) =    8.26
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    640.00 =    1223.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    640.00 TO NODE    640.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    401.00 TO NODE    402.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   296.00
  UPSTREAM ELEVATION(FEET) =   1573.00
  DOWNSTREAM ELEVATION(FEET) =   1570.45
  ELEVATION DIFFERENCE(FEET) =      2.55
  TC = 0.323*[(  296.00**3)/(     2.55)]**.2 =    8.133
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.251
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      2.60
  TOTAL AREA(ACRES) =      1.33   TOTAL RUNOFF(CFS) =      2.60

****************************************************************************
  FLOW PROCESS FROM NODE    402.00 TO NODE    635.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1568.45  DOWNSTREAM(FEET) =  1567.85
  FLOW LENGTH(FEET) =    86.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   9.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.08
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.60
  PIPE TRAVEL TIME(MIN.) =   0.35    Tc(MIN.) =    8.48
  LONGEST FLOWPATH FROM NODE    401.00 TO NODE    635.00 =     382.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    635.00 TO NODE    635.00 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.) =    8.48
  RAINFALL INTENSITY(INCH/HR) =   2.20
  TOTAL STREAM AREA(ACRES) =     1.33
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.60

****************************************************************************
  FLOW PROCESS FROM NODE    411.00 TO NODE    412.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   288.00
  UPSTREAM ELEVATION(FEET) =   1572.40
  DOWNSTREAM ELEVATION(FEET) =   1570.65
  ELEVATION DIFFERENCE(FEET) =      1.75
  TC = 0.323*[(  288.00**3)/(     1.75)]**.2 =    8.626
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.186
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8500
  SUBAREA RUNOFF(CFS) =      0.84
  TOTAL AREA(ACRES) =      0.45   TOTAL RUNOFF(CFS) =      0.84

****************************************************************************
  FLOW PROCESS FROM NODE    412.00 TO NODE    635.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1568.65  DOWNSTREAM(FEET) =  1567.75
  FLOW LENGTH(FEET) =    19.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   6.0 INCH PIPE IS   3.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.43
  ESTIMATED PIPE DIAMETER(INCH) =   6.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.84
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =    8.68
  LONGEST FLOWPATH FROM NODE    411.00 TO NODE    635.00 =     307.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    635.00 TO NODE    635.00 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.) =    8.68
 RAINFALL INTENSITY(INCH/HR) =   2.18
 TOTAL STREAM AREA(ACRES) =     0.45
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.84

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        2.60     8.48        2.204          1.33
     2        0.84     8.68        2.180          0.45

 ********************************WARNING*********************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

 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        3.42     8.48       2.204
     2        3.41     8.68       2.180

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       3.42   Tc(MIN.) =    8.48
 TOTAL AREA(ACRES) =        1.8
 LONGEST FLOWPATH FROM NODE    401.00 TO NODE    635.00 =     382.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    635.00 TO NODE    422.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1567.75  DOWNSTREAM(FEET) =  1567.30
 FLOW LENGTH(FEET) =    89.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  15.0 INCH PIPE IS  10.0 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   3.93
 ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       3.42
 PIPE TRAVEL TIME(MIN.) =   0.38    Tc(MIN.) =    8.86
 LONGEST FLOWPATH FROM NODE    401.00 TO NODE    422.00 =     471.00 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.) =    8.86
  RAINFALL INTENSITY(INCH/HR) =   2.16
  TOTAL STREAM AREA(ACRES) =     1.78
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.42

**************************************************************************
  FLOW PROCESS FROM NODE    421.00 TO NODE    422.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   285.00
  UPSTREAM ELEVATION(FEET) =   1572.60
  DOWNSTREAM ELEVATION(FEET) =   1570.00
  ELEVATION DIFFERENCE(FEET) =      2.60
  TC = 0.323*[(  285.00**3)/(     2.60)]**.2 =    7.920
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.281
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8400
  SUBAREA RUNOFF(CFS) =      1.19
  TOTAL AREA(ACRES) =      0.62   TOTAL RUNOFF(CFS) =      1.19

**************************************************************************
  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.) =    7.92
  RAINFALL INTENSITY(INCH/HR) =   2.28
  TOTAL STREAM AREA(ACRES) =     0.62
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.19

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        3.42     8.86        2.157          1.78
      2        1.19     7.92        2.281          0.62

 ********************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
```

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

  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        4.25     7.92       2.281
      2        4.55     8.86       2.157

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       4.55   Tc(MIN.) =    8.86
  TOTAL AREA(ACRES) =        2.4
  LONGEST FLOWPATH FROM NODE    401.00 TO NODE    422.00 =     471.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    422.00 TO NODE    640.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1563.63  DOWNSTREAM(FEET) =  1563.55
  FLOW LENGTH(FEET) =    18.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.05
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.55
  PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =    8.94
  LONGEST FLOWPATH FROM NODE    401.00 TO NODE    640.00 =     489.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    640.00 TO NODE    640.00 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.) =    8.94
  RAINFALL INTENSITY(INCH/HR) =   2.15
  TOTAL STREAM AREA(ACRES) =     2.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.55

****************************************************************************
  FLOW PROCESS FROM NODE    431.00 TO NODE    432.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
          ASSUMED INITIAL SUBAREA UNIFORM
          DEVELOPMENT IS APARTMENT
```

```
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   265.00
  UPSTREAM ELEVATION(FEET) =   1570.30
  DOWNSTREAM ELEVATION(FEET) =   1567.95
  ELEVATION DIFFERENCE(FEET) =      2.35
  TC = 0.323*[(  265.00**3)/(     2.35)]**.2 =    7.736
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.308
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8600
  SUBAREA RUNOFF(CFS) =      0.83
  TOTAL AREA(ACRES) =      0.42   TOTAL RUNOFF(CFS) =      0.83

****************************************************************************
  FLOW PROCESS FROM NODE    432.00 TO NODE    640.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1565.37  DOWNSTREAM(FEET) =  1564.40
  FLOW LENGTH(FEET) =    19.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   6.0 INCH PIPE IS   3.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.63
  ESTIMATED PIPE DIAMETER(INCH) =   6.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.83
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =    7.78
  LONGEST FLOWPATH FROM NODE    431.00 TO NODE    640.00 =     284.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    640.00 TO NODE    640.00 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.) =    7.78
  RAINFALL INTENSITY(INCH/HR) =   2.30
  TOTAL STREAM AREA(ACRES) =     0.42
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.83

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        4.55     8.94        2.148          2.40
      2        0.83     7.78        2.301          0.42

 ********************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
```

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

  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        4.79     7.78       2.301
      2        5.32     8.94       2.148

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       5.32   Tc(MIN.) =    8.94
  TOTAL AREA(ACRES) =        2.8
  LONGEST FLOWPATH FROM NODE    401.00 TO NODE    640.00 =     489.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    640.00 TO NODE    640.00 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        5.32     8.94       2.148        2.82
  LONGEST FLOWPATH FROM NODE    401.00 TO NODE    640.00 =     489.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1       11.47     8.26       2.233        5.62
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    640.00 =    1223.00 FEET.

 ****************************WARNING*************************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF      Tc      INTENSITY
  NUMBER     (CFS)    (MIN.)   (INCH/HOUR)
      1      16.39      8.26       2.233
      2      16.36      8.94       2.148

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      16.39   Tc(MIN.) =    8.26
  TOTAL AREA(ACRES) =        8.4
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    640.00 TO NODE    642.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1560.20  DOWNSTREAM(FEET) =  1560.16
  FLOW LENGTH(FEET) =     3.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  16.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.20
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      16.39
  PIPE TRAVEL TIME(MIN.) =   0.01    Tc(MIN.) =    8.27
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    642.00 =    1226.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    642.00 TO NODE    642.00 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.) =    8.27
  RAINFALL INTENSITY(INCH/HR) =   2.23
  TOTAL STREAM AREA(ACRES) =     8.44
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     16.39

****************************************************************************
  FLOW PROCESS FROM NODE    291.00 TO NODE    292.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   146.00
  UPSTREAM ELEVATION(FEET) =   1572.50
  DOWNSTREAM ELEVATION(FEET) =   1565.20
  ELEVATION DIFFERENCE(FEET) =      7.30
  TC = 0.323*[(  146.00**3)/(     7.30)]**.2 =    4.313
  COMPUTED TIME OF CONCENTRATION INCREASED TO 5 MIN.
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.872
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8500
  SUBAREA RUNOFF(CFS) =      0.76
  TOTAL AREA(ACRES) =      0.31   TOTAL RUNOFF(CFS) =      0.76

****************************************************************************
  FLOW PROCESS FROM NODE    292.00 TO NODE    642.00 IS CODE =  31
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1561.66  DOWNSTREAM(FEET) =  1560.16
  FLOW LENGTH(FEET) =   297.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   5.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   2.72
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.76
  PIPE TRAVEL TIME(MIN.) =   1.82    Tc(MIN.) =    6.82
  LONGEST FLOWPATH FROM NODE    291.00 TO NODE    642.00 =     443.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    642.00 TO NODE    642.00 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.) =    6.82
  RAINFALL INTENSITY(INCH/HR) =   2.46
  TOTAL STREAM AREA(ACRES) =     0.31
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.76

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       16.39     8.27        2.232          8.44
      2        0.76     6.82        2.459          0.31

 **********************************WARNING***********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

  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       14.28     6.82       2.459
      2       17.08     8.27       2.232

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      17.08   Tc(MIN.) =    8.27
  TOTAL AREA(ACRES) =        8.8
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    642.00 =    1226.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    642.00 TO NODE    645.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1560.16  DOWNSTREAM(FEET) =  1559.75
  FLOW LENGTH(FEET) =    70.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  17.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.22
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      17.08
  PIPE TRAVEL TIME(MIN.) =   0.19    Tc(MIN.) =    8.46
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    645.00 =    1296.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    102.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   655.00
  UPSTREAM ELEVATION(FEET) =   1586.50
  DOWNSTREAM ELEVATION(FEET) =   1581.24
  ELEVATION DIFFERENCE(FEET) =      5.26
  TC = 0.323*[(  655.00**3)/(     5.26)]**.2 =   11.333
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.907
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8900
  SUBAREA RUNOFF(CFS) =      1.66
  TOTAL AREA(ACRES) =      0.98   TOTAL RUNOFF(CFS) =      1.66

****************************************************************************
  FLOW PROCESS FROM NODE    102.00 TO NODE    103.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1577.74  DOWNSTREAM(FEET) =  1571.94
  FLOW LENGTH(FEET) =    66.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   3.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.63
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.66
  PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =   11.45
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    103.00 =     721.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    110.00 TO NODE    111.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   410.00
  UPSTREAM ELEVATION(FEET) =   1566.10
  DOWNSTREAM ELEVATION(FEET) =   1562.10
  ELEVATION DIFFERENCE(FEET) =      4.00
  TC = 0.323*[(  410.00**3)/(     4.00)]**.2 =    9.038
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.136
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      0.58
  TOTAL AREA(ACRES) =      0.31   TOTAL RUNOFF(CFS) =      0.58

****************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    106.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1125.00
  UPSTREAM ELEVATION(FEET) =   1586.50
  DOWNSTREAM ELEVATION(FEET) =   1564.87
  ELEVATION DIFFERENCE(FEET) =     21.63
  TC = 0.323*[( 1125.00**3)/(    21.63)]**.2 =   11.816
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.867
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      1.43
  TOTAL AREA(ACRES) =      0.87   TOTAL RUNOFF(CFS) =      1.43

****************************************************************************
  FLOW PROCESS FROM NODE    106.00 TO NODE    107.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1562.20  DOWNSTREAM(FEET) =  1560.00
  FLOW LENGTH(FEET) =   232.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   6.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.94
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.43
```

```
  PIPE TRAVEL TIME(MIN.) =   0.98    Tc(MIN.) =   12.80
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    107.00 =    1357.00 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        0.9  TC(MIN.) =     12.80
  PEAK FLOW RATE(CFS)   =       1.43
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

POST-DEVELOPMENT AES

UN-DETAINED

(100-YEAR STORM EVENT)

```
**************************************************************************
           RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
        RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                    (RCFC&WCD)  1978 HYDROLOGY MANUAL
         (c) Copyright 1982-2016 Advanced Engineering Software (aes)
                    (Rational Tabling Version 23.0)
                Release Date: 07/01/2016  License ID 1452

                          Analysis prepared by:


  ************************ DESCRIPTION OF STUDY ************************
* 3816 ROCAS GRANDES II                                                  *
* 100 YEAR STORM EVENT                                                   *
* POST-PROJECT UNDETAINED HYDROLOGY                                      *
 **************************************************************************



--------------------------------------------------------------------------
  FILE NAME: 3816P100.DAT
  TIME/DATE OF STUDY: 07:14 02/11/2025
--------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
--------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =   6.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  10-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  2.010
  10-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  0.820
  100-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  2.940
  100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.200
  SLOPE OF 10-YEAR INTENSITY-DURATION CURVE =  0.5003939
  SLOPE OF 100-YEAR INTENSITY-DURATION CURVE =  0.5001161
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =  100.00   1-HOUR INTENSITY(INCH/HOUR) =   1.200
  SLOPE OF INTENSITY DURATION CURVE = 0.5001
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: COMPUTE CONFLUENCE VALUES ACCORDING TO RCFC&WCD HYDROLOGY MANUAL
        AND IGNORE OTHER CONFLUENCE COMBINATIONS FOR DOWNSTREAM ANALYSES
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  ===== ====== ===== =======
  1   22.0     14.0    0.020/0.020/0.018   0.50    2.00 0.0312 0.167 0.0150
  2   46.0     38.0    0.020/0.020/0.020   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    201.00 TO NODE    202.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   341.00
  UPSTREAM ELEVATION(FEET) =   1582.50
  DOWNSTREAM ELEVATION(FEET) =   1579.60
  ELEVATION DIFFERENCE(FEET) =      2.90
  TC = 0.323*[(  341.00**3)/(     2.90)]**.2 =    8.629
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.165
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      1.73
  TOTAL AREA(ACRES) =      0.63   TOTAL RUNOFF(CFS) =      1.73

****************************************************************************
  FLOW PROCESS FROM NODE    202.00 TO NODE    500.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1579.60  DOWNSTREAM(FEET) =  1574.55
  FLOW LENGTH(FEET) =   122.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   4.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.36
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.73
  PIPE TRAVEL TIME(MIN.) =   0.28    Tc(MIN.) =    8.91
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    500.00 =     463.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    500.00 TO NODE    500.00 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.) =    8.91
  RAINFALL INTENSITY(INCH/HR) =   3.12
  TOTAL STREAM AREA(ACRES) =     0.63
```

```
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.73

****************************************************************************
  FLOW PROCESS FROM NODE    211.00 TO NODE    212.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   154.00
  UPSTREAM ELEVATION(FEET) =   1580.40
  DOWNSTREAM ELEVATION(FEET) =   1577.65
  ELEVATION DIFFERENCE(FEET) =      2.75
  TC = 0.323*[(  154.00**3)/(     2.75)]**.2 =    5.413
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.996
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8900
  SUBAREA RUNOFF(CFS) =      4.27
  TOTAL AREA(ACRES) =      1.20   TOTAL RUNOFF(CFS) =      4.27

****************************************************************************
  FLOW PROCESS FROM NODE    212.00 TO NODE    500.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1575.65  DOWNSTREAM(FEET) =  1574.55
  FLOW LENGTH(FEET) =   165.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS  10.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.58
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.27
  PIPE TRAVEL TIME(MIN.) =   0.60    Tc(MIN.) =    6.01
  LONGEST FLOWPATH FROM NODE    211.00 TO NODE    500.00 =     319.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    500.00 TO NODE    500.00 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.) =    6.01
  RAINFALL INTENSITY(INCH/HR) =   3.79
  TOTAL STREAM AREA(ACRES) =     1.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.27

  ** CONFLUENCE DATA **
```

```
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        1.73     8.91        3.115          0.63
     2        4.27     6.01        3.792          1.20

 ********************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

  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        5.44     6.01       3.792
      2        5.24     8.91       3.115

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       5.44   Tc(MIN.) =    6.01
  TOTAL AREA(ACRES) =        1.8
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    500.00 =     463.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    500.00 TO NODE    505.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1574.45  DOWNSTREAM(FEET) =  1573.90
  FLOW LENGTH(FEET) =   106.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.47
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.44
  PIPE TRAVEL TIME(MIN.) =   0.40    Tc(MIN.) =    6.41
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    505.00 =     569.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    505.00 TO NODE    505.00 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.) =    6.41
  RAINFALL INTENSITY(INCH/HR) =   3.67
  TOTAL STREAM AREA(ACRES) =     1.83
```

```
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.44

****************************************************************************
  FLOW PROCESS FROM NODE    221.00 TO NODE    222.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   328.00
  UPSTREAM ELEVATION(FEET) =   1577.80
  DOWNSTREAM ELEVATION(FEET) =   1574.90
  ELEVATION DIFFERENCE(FEET) =      2.90
  TC = 0.323*[(  328.00**3)/(     2.90)]**.2 =    8.430
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.202
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      1.58
  TOTAL AREA(ACRES) =      0.56   TOTAL RUNOFF(CFS) =      1.58

****************************************************************************
  FLOW PROCESS FROM NODE    222.00 TO NODE    505.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1574.90  DOWNSTREAM(FEET) =  1573.90
  FLOW LENGTH(FEET) =    44.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   5.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.74
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.58
  PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =    8.56
  LONGEST FLOWPATH FROM NODE    221.00 TO NODE    505.00 =     372.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    505.00 TO NODE    505.00 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.) =    8.56
  RAINFALL INTENSITY(INCH/HR) =   3.18
  TOTAL STREAM AREA(ACRES) =     0.56
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.58

  ** CONFLUENCE DATA **
```

```
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        5.44     6.41        3.673          1.83
      2        1.58     8.56        3.178          0.56

 ********************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

  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        6.62     6.41       3.673
      2        6.28     8.56       3.178

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       6.62   Tc(MIN.) =    6.41
  TOTAL AREA(ACRES) =        2.4
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    505.00 =     569.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    505.00 TO NODE    510.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1573.80  DOWNSTREAM(FEET) =  1572.85
  FLOW LENGTH(FEET) =   159.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.90
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.62
  PIPE TRAVEL TIME(MIN.) =   0.54    Tc(MIN.) =    6.95
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    510.00 =     728.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    510.00 TO NODE    510.00 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.) =    6.95
  RAINFALL INTENSITY(INCH/HR) =   3.53
  TOTAL STREAM AREA(ACRES) =     2.39
```

```
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.62

****************************************************************************
  FLOW PROCESS FROM NODE    231.00 TO NODE    233.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   327.00
  UPSTREAM ELEVATION(FEET) =   1577.00
  DOWNSTREAM ELEVATION(FEET) =   1573.75
  ELEVATION DIFFERENCE(FEET) =      3.25
  TC = 0.323*[(  327.00**3)/(     3.25)]**.2 =    8.225
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.242
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8900
  SUBAREA RUNOFF(CFS) =      3.49
  TOTAL AREA(ACRES) =      1.21   TOTAL RUNOFF(CFS) =      3.49

****************************************************************************
  FLOW PROCESS FROM NODE    233.00 TO NODE    510.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1573.75  DOWNSTREAM(FEET) =  1572.85
  FLOW LENGTH(FEET) =    44.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   7.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.70
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.49
  PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =    8.33
  LONGEST FLOWPATH FROM NODE    231.00 TO NODE    510.00 =     371.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    510.00 TO NODE    510.00 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.) =    8.33
  RAINFALL INTENSITY(INCH/HR) =   3.22
  TOTAL STREAM AREA(ACRES) =     1.21
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.49

  ** CONFLUENCE DATA **
```

```
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        6.62     6.95        3.527          2.39
      2        3.49     8.33        3.220          1.21

 ********************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

  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        9.53     6.95       3.527
      2        9.54     8.33       3.220

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       9.53   Tc(MIN.) =    6.95
  TOTAL AREA(ACRES) =        3.6
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    510.00 =     728.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    510.00 TO NODE    515.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1572.75  DOWNSTREAM(FEET) =  1572.25
  FLOW LENGTH(FEET) =    92.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.18
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       9.53
  PIPE TRAVEL TIME(MIN.) =   0.30    Tc(MIN.) =    7.25
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    515.00 =     820.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    515.00 TO NODE    515.00 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.) =    7.25
  RAINFALL INTENSITY(INCH/HR) =   3.45
  TOTAL STREAM AREA(ACRES) =     3.60
```

```
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.53

****************************************************************************
  FLOW PROCESS FROM NODE    251.00 TO NODE    252.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   115.00
  UPSTREAM ELEVATION(FEET) =   1575.70
  DOWNSTREAM ELEVATION(FEET) =   1573.95
  ELEVATION DIFFERENCE(FEET) =      1.75
  TC = 0.323*[(  115.00**3)/(     1.75)]**.2 =    4.973
  COMPUTED TIME OF CONCENTRATION INCREASED TO 5 MIN.
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.158
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      1.84
  TOTAL AREA(ACRES) =      0.51   TOTAL RUNOFF(CFS) =      1.84

****************************************************************************
  FLOW PROCESS FROM NODE    252.00 TO NODE    515.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1573.95  DOWNSTREAM(FEET) =  1572.25
  FLOW LENGTH(FEET) =    41.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   4.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.48
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.84
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =    5.09
  LONGEST FLOWPATH FROM NODE    251.00 TO NODE    515.00 =     156.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    515.00 TO NODE    515.00 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.) =    5.09
  RAINFALL INTENSITY(INCH/HR) =   4.12
  TOTAL STREAM AREA(ACRES) =     0.51
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.84
```

```
 ** CONFLUENCE DATA **
 STREAM     RUNOFF        Tc       INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        9.53     7.25        3.454          3.60
     2        1.84     5.09        4.121          0.51

 ********************************WARNING*********************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

 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        8.54     5.09       4.121
     2       11.08     7.25       3.454

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      11.08   Tc(MIN.) =    7.25
 TOTAL AREA(ACRES) =        4.1
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE    515.00 =     820.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    515.00 TO NODE    520.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1572.15  DOWNSTREAM(FEET) =  1569.15
 FLOW LENGTH(FEET) =   323.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.8 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   6.63
 ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      11.08
 PIPE TRAVEL TIME(MIN.) =   0.81    Tc(MIN.) =    8.06
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE    520.00 =    1143.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    520.00 TO NODE    520.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE    271.00 TO NODE    272.00 IS CODE =  21
----------------------------------------------------------------------------
```

```
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
================================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   246.00
  UPSTREAM ELEVATION(FEET) =   1573.50
  DOWNSTREAM ELEVATION(FEET) =   1569.85
  ELEVATION DIFFERENCE(FEET) =      3.65
  TC = 0.323*[(  246.00**3)/(     3.65)]**.2 =    6.775
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.572
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      4.69
  TOTAL AREA(ACRES) =      1.51   TOTAL RUNOFF(CFS) =      4.69

****************************************************************************
  FLOW PROCESS FROM NODE    272.00 TO NODE    272.00 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.) =    6.77
  RAINFALL INTENSITY(INCH/HR) =   3.57
  TOTAL STREAM AREA(ACRES) =     1.51
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.69

****************************************************************************
  FLOW PROCESS FROM NODE    241.00 TO NODE    242.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   169.00
  UPSTREAM ELEVATION(FEET) =   1575.80
  DOWNSTREAM ELEVATION(FEET) =   1573.30
  ELEVATION DIFFERENCE(FEET) =      2.50
  TC = 0.323*[(  169.00**3)/(     2.50)]**.2 =    5.834
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.849
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8500
  SUBAREA RUNOFF(CFS) =      1.64
  TOTAL AREA(ACRES) =      0.50   TOTAL RUNOFF(CFS) =      1.64

****************************************************************************
  FLOW PROCESS FROM NODE    242.00 TO NODE    272.00 IS CODE =  31
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1571.30  DOWNSTREAM(FEET) =  1569.85
  FLOW LENGTH(FEET) =   290.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   7.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.28
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.64
  PIPE TRAVEL TIME(MIN.) =   1.47    Tc(MIN.) =    7.31
  LONGEST FLOWPATH FROM NODE    241.00 TO NODE    272.00 =     459.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    272.00 TO NODE    272.00 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.) =    7.31
  RAINFALL INTENSITY(INCH/HR) =   3.44
  TOTAL STREAM AREA(ACRES) =     0.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.64

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        4.69     6.77        3.572          1.51
      2        1.64     7.31        3.439          0.50

 ********************************WARNING*************************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

  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        6.21     6.77       3.572
      2        6.15     7.31       3.439

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       6.21   Tc(MIN.) =    6.77
  TOTAL AREA(ACRES) =        2.0
  LONGEST FLOWPATH FROM NODE    241.00 TO NODE    272.00 =     459.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    272.00 TO NODE    520.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1569.85  DOWNSTREAM(FEET) =  1569.15
  FLOW LENGTH(FEET) =   141.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.48
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.21
  PIPE TRAVEL TIME(MIN.) =   0.52    Tc(MIN.) =    7.30
  LONGEST FLOWPATH FROM NODE    241.00 TO NODE    520.00 =     600.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    520.00 TO NODE    520.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1        6.21     7.30       3.441        2.01
  LONGEST FLOWPATH FROM NODE    241.00 TO NODE    520.00 =     600.00 FEET.

  ** MEMORY BANK #  3 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1       11.08     8.06       3.275        4.11
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    520.00 =    1143.00 FEET.

 ****************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ********************************************************************

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1      16.25       7.30        3.441
      2      16.99       8.06        3.275

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      16.99   Tc(MIN.) =    8.06
  TOTAL AREA(ACRES) =        6.1
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    520.00 TO NODE    262.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1569.85  DOWNSTREAM(FEET) =  1568.95
  FLOW LENGTH(FEET) =   180.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  18.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.83
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      16.99
  PIPE TRAVEL TIME(MIN.) =   0.51    Tc(MIN.) =    8.57
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    262.00 =    1323.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    262.00 TO NODE    262.00 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.) =    8.57
  RAINFALL INTENSITY(INCH/HR) =   3.18
  TOTAL STREAM AREA(ACRES) =     6.12
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     16.99

****************************************************************************
  FLOW PROCESS FROM NODE    261.00 TO NODE    262.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   478.00
  UPSTREAM ELEVATION(FEET) =   1575.50
  DOWNSTREAM ELEVATION(FEET) =   1569.45
  ELEVATION DIFFERENCE(FEET) =      6.05
  TC = 0.323*[(  478.00**3)/(     6.05)]**.2 =    9.122
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.078
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      3.80
  TOTAL AREA(ACRES) =      1.42   TOTAL RUNOFF(CFS) =      3.80

****************************************************************************
  FLOW PROCESS FROM NODE    262.00 TO NODE    262.00 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.) =    9.12
  RAINFALL INTENSITY(INCH/HR) =   3.08
  TOTAL STREAM AREA(ACRES) =     1.42
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.80

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       16.99     8.57        3.176          6.12
      2        3.80     9.12        3.078          1.42

 ********************************WARNING**********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 *************************************************************************

  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       20.56     8.57       3.176
      2       20.27     9.12       3.078

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      20.56   Tc(MIN.) =    8.57
  TOTAL AREA(ACRES) =        7.5
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    262.00 =    1323.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    262.00 TO NODE    530.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1566.28  DOWNSTREAM(FEET) =  1565.40
  FLOW LENGTH(FEET) =    13.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  16.27
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      20.56
  PIPE TRAVEL TIME(MIN.) =   0.01    Tc(MIN.) =    8.58
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    530.00 =    1336.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    530.00 TO NODE    530.00 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.) =    8.58
  RAINFALL INTENSITY(INCH/HR) =   3.17
  TOTAL STREAM AREA(ACRES) =     7.54
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     20.56

****************************************************************************
  FLOW PROCESS FROM NODE    281.00 TO NODE    282.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   344.00
  UPSTREAM ELEVATION(FEET) =   1571.00
  DOWNSTREAM ELEVATION(FEET) =   1568.18
  ELEVATION DIFFERENCE(FEET) =      2.82
  TC = 0.323*[(  344.00**3)/(     2.82)]**.2 =    8.723
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.148
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      3.29
  TOTAL AREA(ACRES) =      1.20   TOTAL RUNOFF(CFS) =      3.29

****************************************************************************
  FLOW PROCESS FROM NODE    282.00 TO NODE    530.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1565.51  DOWNSTREAM(FEET) =  1565.40
  FLOW LENGTH(FEET) =    20.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS   9.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.03
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.29
  PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =    8.81
  LONGEST FLOWPATH FROM NODE    281.00 TO NODE    530.00 =     364.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    530.00 TO NODE    530.00 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.) =    8.81
  RAINFALL INTENSITY(INCH/HR) =   3.13
  TOTAL STREAM AREA(ACRES) =     1.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.29

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       20.56     8.58        3.173          7.54
      2        3.29     8.81        3.133          1.20

 **********************************WARNING**********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ********************************************************************************

  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       23.77     8.58       3.173
      2       23.59     8.81       3.133

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      23.77   Tc(MIN.) =    8.58
  TOTAL AREA(ACRES) =        8.7
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    530.00 =    1336.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    535.00 TO NODE    540.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1563.70  DOWNSTREAM(FEET) =  1563.44
  FLOW LENGTH(FEET) =    34.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  20.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.34
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      23.77
  PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =    8.66
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    540.00 =    1370.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    540.00 TO NODE    541.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1563.40  DOWNSTREAM(FEET) =   1561.53
  CHANNEL LENGTH THRU SUBAREA(FEET) =   133.00   CHANNEL SLOPE =  0.0141
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   0.018
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   0.07

         ==>>WARNING: FLOW IN CHANNEL EXCEEDS CHANNEL
             CAPACITY( NORMAL DEPTH EQUAL TO SPECIFIED MAXIMUM
             ALLOWABLE DEPTH).
             AS AN APPROXIMATION, FLOWDEPTH IS SET AT MAXIMUM
             ALLOWABLE DEPTH AND IS USED FOR TRAVELTIME CALCULATIONS.

  CHANNEL FLOW THRU SUBAREA(CFS) =      23.77
  FLOW VELOCITY(FEET/SEC.) =  42.43   FLOW DEPTH(FEET) =   0.07
  TRAVEL TIME(MIN.) =   0.05   Tc(MIN.) =    8.71
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    541.00 =    1503.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    541.00 TO NODE    541.00 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.) =    8.71
  RAINFALL INTENSITY(INCH/HR) =   3.15
  TOTAL STREAM AREA(ACRES) =     8.74
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     23.77

****************************************************************************
  FLOW PROCESS FROM NODE    110.00 TO NODE    541.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   252.00
  UPSTREAM ELEVATION(FEET) =   1566.10
  DOWNSTREAM ELEVATION(FEET) =   1561.53
  ELEVATION DIFFERENCE(FEET) =      4.57
  TC = 0.323*[(  252.00**3)/(     4.57)]**.2 =    6.571
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.627
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8200
```

```
  SUBAREA RUNOFF(CFS) =      0.59
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.59

****************************************************************************
  FLOW PROCESS FROM NODE    541.00 TO NODE    541.00 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.) =    6.57
  RAINFALL INTENSITY(INCH/HR) =   3.63
  TOTAL STREAM AREA(ACRES) =     0.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.59

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       23.77     8.71        3.149          8.74
      2        0.59     6.57        3.627          0.20

 ********************************WARNING*************************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

  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       18.52     6.57       3.627
      2       24.28     8.71       3.149

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      24.28   Tc(MIN.) =    8.71
  TOTAL AREA(ACRES) =        8.9
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    541.00 =    1503.00 FEET.

****************************************************************************
  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) =   1561.53  DOWNSTREAM(FEET) =   1561.10
  CHANNEL LENGTH THRU SUBAREA(FEET) =    61.00   CHANNEL SLOPE =  0.0071
```

```
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   0.018
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   0.07

         ==>>WARNING: FLOW IN CHANNEL EXCEEDS CHANNEL
             CAPACITY( NORMAL DEPTH EQUAL TO SPECIFIED MAXIMUM
             ALLOWABLE DEPTH).
             AS AN APPROXIMATION, FLOWDEPTH IS SET AT MAXIMUM
             ALLOWABLE DEPTH AND IS USED FOR TRAVELTIME CALCULATIONS.

  CHANNEL FLOW THRU SUBAREA(CFS) =      24.28
  FLOW VELOCITY(FEET/SEC.) =  43.35   FLOW DEPTH(FEET) =   0.07
  TRAVEL TIME(MIN.) =   0.02   Tc(MIN.) =    8.74
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    542.00 =    1564.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    301.00 TO NODE    302.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   176.00
  UPSTREAM ELEVATION(FEET) =   1581.00
  DOWNSTREAM ELEVATION(FEET) =   1580.00
  ELEVATION DIFFERENCE(FEET) =      1.00
  TC = 0.323*[(  176.00**3)/(     1.00)]**.2 =    7.180
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.470
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      1.40
  TOTAL AREA(ACRES) =      0.46   TOTAL RUNOFF(CFS) =      1.40

****************************************************************************
  FLOW PROCESS FROM NODE    302.00 TO NODE    600.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1578.40  DOWNSTREAM(FEET) =  1574.45
  FLOW LENGTH(FEET) =   187.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   5.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.42
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.40
  PIPE TRAVEL TIME(MIN.) =   0.57    Tc(MIN.) =    7.75
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    600.00 =     363.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    600.00 TO NODE    600.00 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.) =    7.75
  RAINFALL INTENSITY(INCH/HR) =   3.34
  TOTAL STREAM AREA(ACRES) =     0.46
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.40

****************************************************************************
  FLOW PROCESS FROM NODE    311.00 TO NODE    312.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   157.00
  UPSTREAM ELEVATION(FEET) =   1580.80
  DOWNSTREAM ELEVATION(FEET) =   1577.70
  ELEVATION DIFFERENCE(FEET) =      3.10
  TC = 0.323*[(  157.00**3)/(     3.10)]**.2 =    5.346
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.021
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      2.19
  TOTAL AREA(ACRES) =      0.62   TOTAL RUNOFF(CFS) =      2.19

****************************************************************************
  FLOW PROCESS FROM NODE    312.00 TO NODE    600.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1575.70  DOWNSTREAM(FEET) =  1574.45
  FLOW LENGTH(FEET) =    89.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   6.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.21
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.19
  PIPE TRAVEL TIME(MIN.) =   0.28    Tc(MIN.) =    5.63
  LONGEST FLOWPATH FROM NODE    311.00 TO NODE    600.00 =     246.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    600.00 TO NODE    600.00 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.) =    5.63
  RAINFALL INTENSITY(INCH/HR) =   3.92
  TOTAL STREAM AREA(ACRES) =     0.62
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.19

****************************************************************************
  FLOW PROCESS FROM NODE    321.00 TO NODE    322.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   190.00
  UPSTREAM ELEVATION(FEET) =   1578.50
  DOWNSTREAM ELEVATION(FEET) =   1576.10
  ELEVATION DIFFERENCE(FEET) =      2.40
  TC = 0.323*[(  190.00**3)/(     2.40)]**.2 =    6.310
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.701
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      1.86
  TOTAL AREA(ACRES) =      0.57   TOTAL RUNOFF(CFS) =      1.86

****************************************************************************
  FLOW PROCESS FROM NODE    322.00 TO NODE    600.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1576.10  DOWNSTREAM(FEET) =  1574.45
  FLOW LENGTH(FEET) =    21.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   4.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.54
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.86
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =    6.35
  LONGEST FLOWPATH FROM NODE    321.00 TO NODE    600.00 =     211.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    600.00 TO NODE    600.00 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.) =    6.35
  RAINFALL INTENSITY(INCH/HR) =   3.69
```

```
 TOTAL STREAM AREA(ACRES) =     0.57
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.86

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        1.40     7.75        3.339          0.46
     2        2.19     5.63        3.918          0.62
     3        1.86     6.35        3.691          0.57

 ********************************WARNING*********************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

 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        4.86     5.63       3.918
     2        5.07     6.35       3.691
     3        4.95     7.75       3.339

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       4.86   Tc(MIN.) =    5.63
 TOTAL AREA(ACRES) =        1.7
 LONGEST FLOWPATH FROM NODE    301.00 TO NODE    600.00 =     363.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    600.00 TO NODE    605.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1574.45  DOWNSTREAM(FEET) =  1573.65
 FLOW LENGTH(FEET) =   137.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.4 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   4.57
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       4.86
 PIPE TRAVEL TIME(MIN.) =   0.50    Tc(MIN.) =    6.13
 LONGEST FLOWPATH FROM NODE    301.00 TO NODE    605.00 =     500.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    605.00 TO NODE    605.00 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.) =    6.13
  RAINFALL INTENSITY(INCH/HR) =   3.76
  TOTAL STREAM AREA(ACRES) =     1.65
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.86

****************************************************************************
  FLOW PROCESS FROM NODE    341.00 TO NODE    342.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   176.00
  UPSTREAM ELEVATION(FEET) =   1581.00
  DOWNSTREAM ELEVATION(FEET) =   1576.80
  ELEVATION DIFFERENCE(FEET) =      4.20
  TC = 0.323*[(  176.00**3)/(     4.20)]**.2 =    5.388
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.005
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      2.22
  TOTAL AREA(ACRES) =      0.63   TOTAL RUNOFF(CFS) =      2.22

****************************************************************************
  FLOW PROCESS FROM NODE    342.00 TO NODE    605.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1575.30  DOWNSTREAM(FEET) =  1573.65
  FLOW LENGTH(FEET) =    45.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   5.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.45
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.22
  PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =    5.49
  LONGEST FLOWPATH FROM NODE    341.00 TO NODE    605.00 =     221.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    605.00 TO NODE    605.00 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.) =    5.49
 RAINFALL INTENSITY(INCH/HR) =   3.97
 TOTAL STREAM AREA(ACRES) =     0.63
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.22

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        4.86     6.13        3.755          1.65
     2        2.22     5.49        3.969          0.63

 ********************************WARNING*********************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

 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        6.57     5.49       3.969
     2        6.96     6.13       3.755

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       6.96   Tc(MIN.) =    6.13
 TOTAL AREA(ACRES) =        2.3
 LONGEST FLOWPATH FROM NODE    301.00 TO NODE    605.00 =     500.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    605.00 TO NODE    615.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1573.55  DOWNSTREAM(FEET) =  1573.20
 FLOW LENGTH(FEET) =    62.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.7 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   4.81
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       6.96
 PIPE TRAVEL TIME(MIN.) =   0.21    Tc(MIN.) =    6.35
 LONGEST FLOWPATH FROM NODE    301.00 TO NODE    615.00 =     562.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    615.00 TO NODE    615.00 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.) =    6.35
  RAINFALL INTENSITY(INCH/HR) =   3.69
  TOTAL STREAM AREA(ACRES) =     2.28
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.96

****************************************************************************
  FLOW PROCESS FROM NODE    331.00 TO NODE    332.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   185.00
  UPSTREAM ELEVATION(FEET) =   1576.30
  DOWNSTREAM ELEVATION(FEET) =   1573.90
  ELEVATION DIFFERENCE(FEET) =      2.40
  TC = 0.323*[(  185.00**3)/(     2.40)]**.2 =    6.210
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.731
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8900
  SUBAREA RUNOFF(CFS) =      1.76
  TOTAL AREA(ACRES) =      0.53   TOTAL RUNOFF(CFS) =      1.76

****************************************************************************
  FLOW PROCESS FROM NODE    332.00 TO NODE    615.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1573.90  DOWNSTREAM(FEET) =  1573.20
  FLOW LENGTH(FEET) =    15.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   4.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.76
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.76
  PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =    6.24
  LONGEST FLOWPATH FROM NODE    331.00 TO NODE    615.00 =     200.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    615.00 TO NODE    615.00 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.) =    6.24
 RAINFALL INTENSITY(INCH/HR) =   3.72
 TOTAL STREAM AREA(ACRES) =     0.53
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.76

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        6.96     6.35        3.691          2.28
     2        1.76     6.24        3.721          0.53

 ********************************WARNING*********************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

 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        8.61     6.24       3.721
     2        8.71     6.35       3.691

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       8.71   Tc(MIN.) =    6.35
 TOTAL AREA(ACRES) =        2.8
 LONGEST FLOWPATH FROM NODE    301.00 TO NODE    615.00 =     562.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    615.00 TO NODE    620.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1573.10  DOWNSTREAM(FEET) =  1572.30
 FLOW LENGTH(FEET) =   153.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  21.0 INCH PIPE IS  14.2 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   5.02
 ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       8.71
 PIPE TRAVEL TIME(MIN.) =   0.51    Tc(MIN.) =    6.85
 LONGEST FLOWPATH FROM NODE    301.00 TO NODE    620.00 =     715.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    620.00 TO NODE    620.00 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.) =    6.85
  RAINFALL INTENSITY(INCH/HR) =   3.55
  TOTAL STREAM AREA(ACRES) =     2.81
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.71

****************************************************************************
  FLOW PROCESS FROM NODE    361.00 TO NODE    362.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   242.00
  UPSTREAM ELEVATION(FEET) =   1577.00
  DOWNSTREAM ELEVATION(FEET) =   1572.55
  ELEVATION DIFFERENCE(FEET) =      4.45
  TC = 0.323*[(  242.00**3)/(     4.45)]**.2 =    6.448
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.662
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      2.80
  TOTAL AREA(ACRES) =      0.88   TOTAL RUNOFF(CFS) =      2.80

****************************************************************************
  FLOW PROCESS FROM NODE    362.00 TO NODE    620.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1572.55  DOWNSTREAM(FEET) =  1572.30
  FLOW LENGTH(FEET) =    44.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS   8.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.94
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.80
  PIPE TRAVEL TIME(MIN.) =   0.19    Tc(MIN.) =    6.63
  LONGEST FLOWPATH FROM NODE    361.00 TO NODE    620.00 =     286.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    620.00 TO NODE    620.00 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.) =    6.63
 RAINFALL INTENSITY(INCH/HR) =   3.61
 TOTAL STREAM AREA(ACRES) =     0.88
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.80

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        8.71     6.85        3.551          2.81
     2        2.80     6.63        3.610          0.88

 ********************************WARNING*********************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

 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       11.23     6.63       3.610
     2       11.47     6.85       3.551

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      11.47   Tc(MIN.) =    6.85
 TOTAL AREA(ACRES) =        3.7
 LONGEST FLOWPATH FROM NODE    301.00 TO NODE    620.00 =     715.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    620.00 TO NODE    352.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1572.20  DOWNSTREAM(FEET) =  1572.01
 FLOW LENGTH(FEET) =    36.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.3 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   5.42
 ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      11.47
 PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =    6.96
 LONGEST FLOWPATH FROM NODE    301.00 TO NODE    352.00 =     751.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    352.00 TO NODE    352.00 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.) =    6.96
  RAINFALL INTENSITY(INCH/HR) =   3.52
  TOTAL STREAM AREA(ACRES) =     3.69
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.47

**************************************************************************
  FLOW PROCESS FROM NODE    351.00 TO NODE    352.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   158.00
  UPSTREAM ELEVATION(FEET) =   1575.50
  DOWNSTREAM ELEVATION(FEET) =   1572.01
  ELEVATION DIFFERENCE(FEET) =      3.49
  TC = 0.323*[(  158.00**3)/(     3.49)]**.2 =    5.241
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.061
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      1.47
  TOTAL AREA(ACRES) =      0.41   TOTAL RUNOFF(CFS) =      1.47

**************************************************************************
  FLOW PROCESS FROM NODE    352.00 TO NODE    352.00 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.) =    5.24
  RAINFALL INTENSITY(INCH/HR) =   4.06
  TOTAL STREAM AREA(ACRES) =     0.41
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.47

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       11.47     6.96        3.523          3.69
      2        1.47     5.24        4.061          0.41

 ********************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
```

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

  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       10.09     5.24       4.061
      2       12.74     6.96       3.523

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      12.74   Tc(MIN.) =    6.96
  TOTAL AREA(ACRES) =        4.1
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    352.00 =     751.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    352.00 TO NODE    625.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1569.34  DOWNSTREAM(FEET) =  1569.00
  FLOW LENGTH(FEET) =    63.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.58
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      12.74
  PIPE TRAVEL TIME(MIN.) =   0.19    Tc(MIN.) =    7.15
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    625.00 =     814.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    625.00 TO NODE    625.00 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.) =    7.15
  RAINFALL INTENSITY(INCH/HR) =   3.48
  TOTAL STREAM AREA(ACRES) =     4.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.74

****************************************************************************
  FLOW PROCESS FROM NODE    371.00 TO NODE    373.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
          ASSUMED INITIAL SUBAREA UNIFORM
          DEVELOPMENT IS APARTMENT
```

```
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   301.00
  UPSTREAM ELEVATION(FEET) =   1575.20
  DOWNSTREAM ELEVATION(FEET) =   1572.50
  ELEVATION DIFFERENCE(FEET) =      2.70
  TC = 0.323*[(  301.00**3)/(     2.70)]**.2 =    8.122
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.262
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      1.69
  TOTAL AREA(ACRES) =      0.59   TOTAL RUNOFF(CFS) =      1.69

****************************************************************************
  FLOW PROCESS FROM NODE    373.00 TO NODE    625.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1572.50  DOWNSTREAM(FEET) =  1569.00
  FLOW LENGTH(FEET) =    31.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   6.0 INCH PIPE IS   4.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.35
  ESTIMATED PIPE DIAMETER(INCH) =   6.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.69
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =    8.17
  LONGEST FLOWPATH FROM NODE    371.00 TO NODE    625.00 =     332.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    625.00 TO NODE    625.00 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.) =    8.17
  RAINFALL INTENSITY(INCH/HR) =   3.25
  TOTAL STREAM AREA(ACRES) =     0.59
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.69

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       12.74     7.15        3.476          4.10
      2        1.69     8.17        3.252          0.59

 ********************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
```

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

  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       14.22     7.15       3.476
      2       13.61     8.17       3.252

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      14.22   Tc(MIN.) =    7.15
  TOTAL AREA(ACRES) =        4.7
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    625.00 =     814.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    625.00 TO NODE    630.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1568.90  DOWNSTREAM(FEET) =  1567.75
  FLOW LENGTH(FEET) =   121.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  16.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.94
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      14.22
  PIPE TRAVEL TIME(MIN.) =   0.29    Tc(MIN.) =    7.44
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    630.00 =     935.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    630.00 TO NODE    630.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    381.00 TO NODE    382.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   189.00
  UPSTREAM ELEVATION(FEET) =   1574.70
  DOWNSTREAM ELEVATION(FEET) =   1570.85
  ELEVATION DIFFERENCE(FEET) =      3.85
  TC = 0.323*[(  189.00**3)/(     3.85)]**.2 =    5.722
```

```
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.887
*USER SPECIFIED(SUBAREA):
APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8600
SUBAREA RUNOFF(CFS) =      1.20
TOTAL AREA(ACRES) =      0.36   TOTAL RUNOFF(CFS) =      1.20

****************************************************************************
FLOW PROCESS FROM NODE    382.00 TO NODE    392.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =  1570.85  DOWNSTREAM(FEET) =  1570.55
FLOW LENGTH(FEET) =    53.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  12.0 INCH PIPE IS   5.8 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   3.19
ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =       1.20
PIPE TRAVEL TIME(MIN.) =   0.28    Tc(MIN.) =    6.00
LONGEST FLOWPATH FROM NODE    381.00 TO NODE    392.00 =     242.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    392.00 TO NODE    392.00 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.) =    6.00
RAINFALL INTENSITY(INCH/HR) =   3.80
TOTAL STREAM AREA(ACRES) =     0.36
PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.20

****************************************************************************
FLOW PROCESS FROM NODE    391.00 TO NODE    392.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
INITIAL SUBAREA FLOW-LENGTH(FEET) =   337.00
UPSTREAM ELEVATION(FEET) =   1574.60
DOWNSTREAM ELEVATION(FEET) =   1571.30
ELEVATION DIFFERENCE(FEET) =      3.30
TC = 0.323*[(  337.00**3)/(     3.30)]**.2 =    8.350
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.217
*USER SPECIFIED(SUBAREA):
APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8900
SUBAREA RUNOFF(CFS) =      1.63
```

```
  TOTAL AREA(ACRES) =      0.57   TOTAL RUNOFF(CFS) =      1.63

****************************************************************************
  FLOW PROCESS FROM NODE    392.00 TO NODE    392.00 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.) =    8.35
  RAINFALL INTENSITY(INCH/HR) =   3.22
  TOTAL STREAM AREA(ACRES) =     0.57
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.63

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        1.20     6.00        3.796          0.36
      2        1.63     8.35        3.217          0.57

 **********************************WARNING**********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ***************************************************************************

  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        2.38     6.00       3.796
      2        2.65     8.35       3.217

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       2.65   Tc(MIN.) =    8.35
  TOTAL AREA(ACRES) =        0.9
  LONGEST FLOWPATH FROM NODE    391.00 TO NODE    392.00 =     337.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    392.00 TO NODE    630.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1567.88  DOWNSTREAM(FEET) =  1567.75
  FLOW LENGTH(FEET) =    14.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   8.2 INCHES
```

```
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.62
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.65
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =    8.40
  LONGEST FLOWPATH FROM NODE    391.00 TO NODE    630.00 =     351.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    630.00 TO NODE    630.00 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        2.65     8.40       3.208        0.93
  LONGEST FLOWPATH FROM NODE    391.00 TO NODE    630.00 =     351.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1       14.22     7.44       3.408        4.69
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    630.00 =     935.00 FEET.

 ****************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ********************************************************************

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1      16.57       7.44        3.408
      2      16.04       8.40        3.208

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      16.57   Tc(MIN.) =    7.44
  TOTAL AREA(ACRES) =        5.6

****************************************************************************
  FLOW PROCESS FROM NODE    630.00 TO NODE    640.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1567.65  DOWNSTREAM(FEET) =  1563.55
  FLOW LENGTH(FEET) =   288.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.47
```

```
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      16.57
  PIPE TRAVEL TIME(MIN.) =   0.57    Tc(MIN.) =    8.01
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    640.00 =    1223.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    640.00 TO NODE    640.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    401.00 TO NODE    402.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   296.00
  UPSTREAM ELEVATION(FEET) =   1573.00
  DOWNSTREAM ELEVATION(FEET) =   1570.45
  ELEVATION DIFFERENCE(FEET) =      2.55
  TC = 0.323*[(  296.00**3)/(     2.55)]**.2 =    8.133
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.260
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      3.77
  TOTAL AREA(ACRES) =      1.33   TOTAL RUNOFF(CFS) =      3.77

****************************************************************************
  FLOW PROCESS FROM NODE    402.00 TO NODE    635.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1568.45  DOWNSTREAM(FEET) =  1567.85
  FLOW LENGTH(FEET) =    86.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS   9.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.56
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.77
  PIPE TRAVEL TIME(MIN.) =   0.31    Tc(MIN.) =    8.45
  LONGEST FLOWPATH FROM NODE    401.00 TO NODE    635.00 =     382.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    635.00 TO NODE    635.00 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.) =    8.45
  RAINFALL INTENSITY(INCH/HR) =   3.20
  TOTAL STREAM AREA(ACRES) =     1.33
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.77

****************************************************************************
  FLOW PROCESS FROM NODE    411.00 TO NODE    412.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   288.00
  UPSTREAM ELEVATION(FEET) =   1572.40
  DOWNSTREAM ELEVATION(FEET) =   1570.65
  ELEVATION DIFFERENCE(FEET) =      1.75
  TC = 0.323*[(  288.00**3)/(     1.75)]**.2 =    8.626
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.165
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8500
  SUBAREA RUNOFF(CFS) =      1.21
  TOTAL AREA(ACRES) =      0.45   TOTAL RUNOFF(CFS) =      1.21

****************************************************************************
  FLOW PROCESS FROM NODE    412.00 TO NODE    635.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1568.65  DOWNSTREAM(FEET) =  1567.75
  FLOW LENGTH(FEET) =    19.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   3.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.06
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.21
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =    8.67
  LONGEST FLOWPATH FROM NODE    411.00 TO NODE    635.00 =     307.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    635.00 TO NODE    635.00 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.) =    8.67
```

```
 RAINFALL INTENSITY(INCH/HR) =   3.16
 TOTAL STREAM AREA(ACRES) =     0.45
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.21

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        3.77     8.45        3.199          1.33
     2        1.21     8.67        3.157          0.45

 ********************************WARNING*********************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

 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        4.95     8.45       3.199
     2        4.93     8.67       3.157

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       4.95   Tc(MIN.) =    8.45
 TOTAL AREA(ACRES) =        1.8
 LONGEST FLOWPATH FROM NODE    401.00 TO NODE    635.00 =     382.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    635.00 TO NODE    422.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1567.75  DOWNSTREAM(FEET) =  1567.30
 FLOW LENGTH(FEET) =    89.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.1 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   4.34
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       4.95
 PIPE TRAVEL TIME(MIN.) =   0.34    Tc(MIN.) =    8.79
 LONGEST FLOWPATH FROM NODE    401.00 TO NODE    422.00 =     471.00 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.) =    8.79
  RAINFALL INTENSITY(INCH/HR) =   3.14
  TOTAL STREAM AREA(ACRES) =     1.78
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.95

****************************************************************************
  FLOW PROCESS FROM NODE    421.00 TO NODE    422.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   285.00
  UPSTREAM ELEVATION(FEET) =   1572.60
  DOWNSTREAM ELEVATION(FEET) =   1570.00
  ELEVATION DIFFERENCE(FEET) =      2.60
  TC = 0.323*[(  285.00**3)/(     2.60)]**.2 =    7.920
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.304
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8400
  SUBAREA RUNOFF(CFS) =      1.72
  TOTAL AREA(ACRES) =      0.62   TOTAL RUNOFF(CFS) =      1.72

****************************************************************************
  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.) =    7.92
  RAINFALL INTENSITY(INCH/HR) =   3.30
  TOTAL STREAM AREA(ACRES) =     0.62
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.72

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        4.95     8.79        3.136          1.78
      2        1.72     7.92        3.304          0.62

 ********************************WARNING*************************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************
```

```
  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        6.18     7.92       3.304
      2        6.58     8.79       3.136

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       6.58   Tc(MIN.) =    8.79
  TOTAL AREA(ACRES) =        2.4
  LONGEST FLOWPATH FROM NODE    401.00 TO NODE    422.00 =     471.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    422.00 TO NODE    640.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1563.63  DOWNSTREAM(FEET) =  1563.55
  FLOW LENGTH(FEET) =    18.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  14.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.28
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.58
  PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =    8.86
  LONGEST FLOWPATH FROM NODE    401.00 TO NODE    640.00 =     489.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    640.00 TO NODE    640.00 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.) =    8.86
  RAINFALL INTENSITY(INCH/HR) =   3.12
  TOTAL STREAM AREA(ACRES) =     2.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.58

****************************************************************************
  FLOW PROCESS FROM NODE    431.00 TO NODE    432.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
          ASSUMED INITIAL SUBAREA UNIFORM
          DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
```

```
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   265.00
 UPSTREAM ELEVATION(FEET) =   1570.30
 DOWNSTREAM ELEVATION(FEET) =   1567.95
 ELEVATION DIFFERENCE(FEET) =      2.35
 TC = 0.323*[(  265.00**3)/(     2.35)]**.2 =    7.736
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.343
 *USER SPECIFIED(SUBAREA):
 APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8600
 SUBAREA RUNOFF(CFS) =      1.21
 TOTAL AREA(ACRES) =      0.42   TOTAL RUNOFF(CFS) =      1.21

****************************************************************************
 FLOW PROCESS FROM NODE    432.00 TO NODE    640.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1565.37  DOWNSTREAM(FEET) =  1564.40
 FLOW LENGTH(FEET) =    19.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN   9.0 INCH PIPE IS   3.6 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   7.25
 ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       1.21
 PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =    7.78
 LONGEST FLOWPATH FROM NODE    431.00 TO NODE    640.00 =     284.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    640.00 TO NODE    640.00 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.) =    7.78
 RAINFALL INTENSITY(INCH/HR) =   3.33
 TOTAL STREAM AREA(ACRES) =     0.42
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.21

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        6.58     8.86        3.124          2.40
     2        1.21     7.78        3.333          0.42

 ********************************WARNING*************************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************
```

```
  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        6.99     7.78       3.333
      2        7.72     8.86       3.124

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       7.72   Tc(MIN.) =    8.86
  TOTAL AREA(ACRES) =        2.8
  LONGEST FLOWPATH FROM NODE    401.00 TO NODE    640.00 =     489.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    640.00 TO NODE    640.00 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        7.72     8.86       3.124        2.82
  LONGEST FLOWPATH FROM NODE    401.00 TO NODE    640.00 =     489.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1       16.57     8.01       3.285        5.62
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    640.00 =    1223.00 FEET.

 ****************************WARNING*****************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1      23.55       8.01        3.285
      2      23.47       8.86        3.124

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      23.55   Tc(MIN.) =    8.01
  TOTAL AREA(ACRES) =        8.4

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

```
 FLOW PROCESS FROM NODE    640.00 TO NODE    642.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1560.20  DOWNSTREAM(FEET) =  1560.16
 FLOW LENGTH(FEET) =     3.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  24.0 INCH PIPE IS  18.7 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   8.97
 ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      23.55
 PIPE TRAVEL TIME(MIN.) =   0.01    Tc(MIN.) =    8.02
 LONGEST FLOWPATH FROM NODE    301.00 TO NODE    642.00 =    1226.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    642.00 TO NODE    642.00 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.) =    8.02
 RAINFALL INTENSITY(INCH/HR) =   3.28
 TOTAL STREAM AREA(ACRES) =     8.44
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     23.55

****************************************************************************
 FLOW PROCESS FROM NODE    291.00 TO NODE    292.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   146.00
 UPSTREAM ELEVATION(FEET) =   1572.50
 DOWNSTREAM ELEVATION(FEET) =   1565.20
 ELEVATION DIFFERENCE(FEET) =      7.30
 TC = 0.323*[(  146.00**3)/(     7.30)]**.2 =    4.313
 COMPUTED TIME OF CONCENTRATION INCREASED TO 5 MIN.
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.158
 *USER SPECIFIED(SUBAREA):
 APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8500
 SUBAREA RUNOFF(CFS) =      1.10
 TOTAL AREA(ACRES) =      0.31   TOTAL RUNOFF(CFS) =      1.10

****************************************************************************
 FLOW PROCESS FROM NODE    292.00 TO NODE    642.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
```

```
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1561.66  DOWNSTREAM(FEET) =  1560.16
  FLOW LENGTH(FEET) =   297.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   7.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   2.87
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.10
  PIPE TRAVEL TIME(MIN.) =   1.72    Tc(MIN.) =    6.72
  LONGEST FLOWPATH FROM NODE    291.00 TO NODE    642.00 =     443.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    642.00 TO NODE    642.00 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.) =    6.72
  RAINFALL INTENSITY(INCH/HR) =   3.59
  TOTAL STREAM AREA(ACRES) =     0.31
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.10

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       23.55     8.02        3.284          8.44
      2        1.10     6.72        3.586          0.31

 **********************************WARNING**********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ***************************************************************************

  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       20.85     6.72       3.586
      2       24.55     8.02       3.284

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      24.55   Tc(MIN.) =    8.02
  TOTAL AREA(ACRES) =        8.8
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    642.00 =    1226.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    642.00 TO NODE    645.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1560.16  DOWNSTREAM(FEET) =  1559.75
  FLOW LENGTH(FEET) =    70.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  20.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.78
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      24.55
  PIPE TRAVEL TIME(MIN.) =   0.17    Tc(MIN.) =    8.19
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    645.00 =    1296.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    102.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   655.00
  UPSTREAM ELEVATION(FEET) =   1586.50
  DOWNSTREAM ELEVATION(FEET) =   1581.24
  ELEVATION DIFFERENCE(FEET) =      5.26
  TC = 0.323*[(  655.00**3)/(     5.26)]**.2 =   11.333
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.762
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8900
  SUBAREA RUNOFF(CFS) =      2.41
  TOTAL AREA(ACRES) =      0.98   TOTAL RUNOFF(CFS) =      2.41

****************************************************************************
  FLOW PROCESS FROM NODE    102.00 TO NODE    103.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1577.74  DOWNSTREAM(FEET) =  1571.94
  FLOW LENGTH(FEET) =    66.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   4.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.62
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.41
  PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =   11.44
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    103.00 =     721.00 FEET.

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

```
 FLOW PROCESS FROM NODE    110.00 TO NODE    111.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
        ASSUMED INITIAL SUBAREA UNIFORM
        DEVELOPMENT IS APARTMENT
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   410.00
 UPSTREAM ELEVATION(FEET) =   1566.10
 DOWNSTREAM ELEVATION(FEET) =   1562.10
 ELEVATION DIFFERENCE(FEET) =      4.00
 TC = 0.323*[(  410.00**3)/(     4.00)]**.2 =    9.038
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.093
 *USER SPECIFIED(SUBAREA):
 APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
 SUBAREA RUNOFF(CFS) =      0.83
 TOTAL AREA(ACRES) =      0.31   TOTAL RUNOFF(CFS) =      0.83

****************************************************************************
 FLOW PROCESS FROM NODE    100.00 TO NODE    106.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
        ASSUMED INITIAL SUBAREA UNIFORM
        DEVELOPMENT IS APARTMENT
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH(FEET) =  1125.00
 UPSTREAM ELEVATION(FEET) =   1586.50
 DOWNSTREAM ELEVATION(FEET) =   1564.87
 ELEVATION DIFFERENCE(FEET) =     21.63
 TC = 0.323*[( 1125.00**3)/(    21.63)]**.2 =   11.816
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.705
 *USER SPECIFIED(SUBAREA):
 APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
 SUBAREA RUNOFF(CFS) =      2.07
 TOTAL AREA(ACRES) =      0.87   TOTAL RUNOFF(CFS) =      2.07

****************************************************************************
 FLOW PROCESS FROM NODE    106.00 TO NODE    107.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1562.20  DOWNSTREAM(FEET) =  1560.00
 FLOW LENGTH(FEET) =   232.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  12.0 INCH PIPE IS   6.9 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   4.43
 ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       2.07
 PIPE TRAVEL TIME(MIN.) =   0.87    Tc(MIN.) =   12.69
```

```
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    107.00 =    1357.00 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =         0.9  TC(MIN.) =     12.69
  PEAK FLOW RATE(CFS)   =        2.07
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```



POST-DEVELOPMENT AES

DETAINED

(2-YEAR STORM EVENT)

```
******************************************************************************
          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
        RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                    (RCFC&WCD)  1978 HYDROLOGY MANUAL
         (c) Copyright 1982-2016 Advanced Engineering Software (aes)
                    (Rational Tabling Version 23.0)
                Release Date: 07/01/2016  License ID 1452

                        Analysis prepared by:
```

```
 ************************** DESCRIPTION OF STUDY **************************
* 3816 ROCAS GRANDE II                                                    *
* MITIGATED CONDITION                                                     *
* 2-YR STORM                                                              *
 *************************************************************************

  FILE NAME: 3816PD2.DAT
  TIME/DATE OF STUDY: 12:37 02/14/2025
-----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
-----------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =    2.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =   6.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  10-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  2.010
  10-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  0.820
  100-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  2.940
  100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.200
  SLOPE OF 10-YEAR INTENSITY-DURATION CURVE =  0.5003939
  SLOPE OF 100-YEAR INTENSITY-DURATION CURVE =  0.5001161
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =    2.00   1-HOUR INTENSITY(INCH/HOUR) =   0.554
  SLOPE OF INTENSITY DURATION CURVE = 0.5004
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: COMPUTE CONFLUENCE VALUES ACCORDING TO RCFC&WCD HYDROLOGY MANUAL
        AND IGNORE OTHER CONFLUENCE COMBINATIONS FOR DOWNSTREAM ANALYSES
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   22.0     14.0    0.020/0.020/0.018   0.50    2.00 0.0312 0.167 0.0150
  2   46.0     38.0    0.020/0.020/0.020   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    201.00 TO NODE    202.00 IS CODE =  21
------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   341.00
  UPSTREAM ELEVATION(FEET) =   1582.50
  DOWNSTREAM ELEVATION(FEET) =   1579.60
  ELEVATION DIFFERENCE(FEET) =      2.90
  TC = 0.323*[(  341.00**3)/(     2.90)]**.2 =    8.629
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.463
```

```
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      0.80
  TOTAL AREA(ACRES) =      0.63   TOTAL RUNOFF(CFS) =      0.80

****************************************************************************
  FLOW PROCESS FROM NODE    202.00 TO NODE    500.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1579.60  DOWNSTREAM(FEET) =  1574.55
  FLOW LENGTH(FEET) =   122.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   6.0 INCH PIPE IS   3.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.03
  ESTIMATED PIPE DIAMETER(INCH) =   6.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.80
  PIPE TRAVEL TIME(MIN.) =   0.34    Tc(MIN.) =    8.97
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    500.00 =     463.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    500.00 TO NODE    500.00 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.) =    8.97
  RAINFALL INTENSITY(INCH/HR) =   1.44
  TOTAL STREAM AREA(ACRES) =     0.63
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.80

****************************************************************************
  FLOW PROCESS FROM NODE    211.00 TO NODE    212.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   154.00
  UPSTREAM ELEVATION(FEET) =   1580.40
  DOWNSTREAM ELEVATION(FEET) =   1577.65
  ELEVATION DIFFERENCE(FEET) =      2.75
  TC = 0.323*[(  154.00**3)/(     2.75)]**.2 =    5.413
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.847
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8900
  SUBAREA RUNOFF(CFS) =      1.97
  TOTAL AREA(ACRES) =      1.20   TOTAL RUNOFF(CFS) =      1.97

****************************************************************************
  FLOW PROCESS FROM NODE    212.00 TO NODE    500.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1575.65  DOWNSTREAM(FEET) =  1574.55
  FLOW LENGTH(FEET) =   165.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   7.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.83
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.97
  PIPE TRAVEL TIME(MIN.) =   0.72    Tc(MIN.) =    6.13
  LONGEST FLOWPATH FROM NODE    211.00 TO NODE    500.00 =     319.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    500.00 TO NODE    500.00 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.) =    6.13
  RAINFALL INTENSITY(INCH/HR) =   1.74
  TOTAL STREAM AREA(ACRES) =     1.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.97

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        0.80     8.97        1.435          0.63
      2        1.97     6.13        1.736          1.20

 **********************************WARNING***********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ********************************************************************************

  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        2.52     6.13       1.736
      2        2.43     8.97       1.435

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       2.52   Tc(MIN.) =    6.13
  TOTAL AREA(ACRES) =        1.8
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    500.00 =     463.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    500.00 TO NODE    505.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1574.45  DOWNSTREAM(FEET) =  1573.90
  FLOW LENGTH(FEET) =   106.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS   8.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.72
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.52
  PIPE TRAVEL TIME(MIN.) =   0.48    Tc(MIN.) =    6.61
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    505.00 =     569.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    505.00 TO NODE    505.00 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.) =    6.61
  RAINFALL INTENSITY(INCH/HR) =   1.67
  TOTAL STREAM AREA(ACRES) =     1.83
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.52

****************************************************************************
  FLOW PROCESS FROM NODE    221.00 TO NODE    222.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
          ASSUMED INITIAL SUBAREA UNIFORM
          DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   328.00
  UPSTREAM ELEVATION(FEET) =   1577.80
```

```
  DOWNSTREAM ELEVATION(FEET) =   1574.90
  ELEVATION DIFFERENCE(FEET) =      2.90
  TC = 0.323*[(  328.00**3)/(     2.90)]**.2 =    8.430
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.480
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      0.73
  TOTAL AREA(ACRES) =      0.56   TOTAL RUNOFF(CFS) =      0.73

****************************************************************************
  FLOW PROCESS FROM NODE    222.00 TO NODE    505.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1574.90  DOWNSTREAM(FEET) =  1573.90
  FLOW LENGTH(FEET) =    44.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   6.0 INCH PIPE IS   4.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.64
  ESTIMATED PIPE DIAMETER(INCH) =   6.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.73
  PIPE TRAVEL TIME(MIN.) =   0.16    Tc(MIN.) =    8.59
  LONGEST FLOWPATH FROM NODE    221.00 TO NODE    505.00 =     372.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    505.00 TO NODE    505.00 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.) =    8.59
  RAINFALL INTENSITY(INCH/HR) =   1.47
  TOTAL STREAM AREA(ACRES) =     0.56
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.73

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        2.52     6.61        1.672          1.83
      2        0.73     8.59        1.466          0.56

 **********************************WARNING**********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

  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        3.08     6.61       1.672
      2        2.94     8.59       1.466

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       3.08   Tc(MIN.) =    6.61
  TOTAL AREA(ACRES) =        2.4
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    505.00 =     569.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    505.00 TO NODE    510.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1573.80  DOWNSTREAM(FEET) =  1572.85
  FLOW LENGTH(FEET) =   159.00   MANNING'S N =  0.013
```

```
  DEPTH OF FLOW IN  15.0 INCH PIPE IS   8.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.11
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.08
  PIPE TRAVEL TIME(MIN.) =   0.64    Tc(MIN.) =    7.25
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    510.00 =     728.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    510.00 TO NODE    510.00 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.) =    7.25
  RAINFALL INTENSITY(INCH/HR) =   1.60
  TOTAL STREAM AREA(ACRES) =     2.39
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.08

****************************************************************************
  FLOW PROCESS FROM NODE    231.00 TO NODE    233.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   327.00
  UPSTREAM ELEVATION(FEET) =   1577.00
  DOWNSTREAM ELEVATION(FEET) =   1573.75
  ELEVATION DIFFERENCE(FEET) =      3.25
  TC = 0.323*[(  327.00**3)/(     3.25)]**.2 =    8.225
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.498
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8900
  SUBAREA RUNOFF(CFS) =      1.61
  TOTAL AREA(ACRES) =      1.21   TOTAL RUNOFF(CFS) =      1.61

****************************************************************************
  FLOW PROCESS FROM NODE    233.00 TO NODE    510.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1573.75  DOWNSTREAM(FEET) =  1572.85
  FLOW LENGTH(FEET) =    44.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   5.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.52
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.61
  PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =    8.36
  LONGEST FLOWPATH FROM NODE    231.00 TO NODE    510.00 =     371.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    510.00 TO NODE    510.00 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.) =    8.36
  RAINFALL INTENSITY(INCH/HR) =   1.49
  TOTAL STREAM AREA(ACRES) =     1.21
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.61

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        3.08     7.25        1.596          2.39
      2        1.61     8.36        1.487          1.21
```

```
 ***********************************WARNING************************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ******************************************************************************

  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        4.48     7.25       1.596
      2        4.48     8.36       1.487

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       4.48   Tc(MIN.) =    7.25
  TOTAL AREA(ACRES) =        3.6
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    510.00 =     728.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    510.00 TO NODE    515.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1572.75  DOWNSTREAM(FEET) =  1572.25
  FLOW LENGTH(FEET) =    92.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS  12.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.20
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.48
  PIPE TRAVEL TIME(MIN.) =   0.37    Tc(MIN.) =    7.62
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    515.00 =     820.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    515.00 TO NODE    515.00 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.) =    7.62
  RAINFALL INTENSITY(INCH/HR) =   1.56
  TOTAL STREAM AREA(ACRES) =     3.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.48

****************************************************************************
  FLOW PROCESS FROM NODE    251.00 TO NODE    252.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
          ASSUMED INITIAL SUBAREA UNIFORM
          DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   115.00
  UPSTREAM ELEVATION(FEET) =   1575.70
  DOWNSTREAM ELEVATION(FEET) =   1573.95
  ELEVATION DIFFERENCE(FEET) =      1.75
  TC = 0.323*[(  115.00**3)/(     1.75)]**.2 =    4.973
  COMPUTED TIME OF CONCENTRATION INCREASED TO 5 MIN.
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.922
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      0.85
  TOTAL AREA(ACRES) =      0.51   TOTAL RUNOFF(CFS) =      0.85

****************************************************************************
  FLOW PROCESS FROM NODE    252.00 TO NODE    515.00 IS CODE =  31
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1573.95  DOWNSTREAM(FEET) =  1572.25
  FLOW LENGTH(FEET) =    41.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   6.0 INCH PIPE IS   4.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.13
  ESTIMATED PIPE DIAMETER(INCH) =   6.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.85
  PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =    5.11
  LONGEST FLOWPATH FROM NODE    251.00 TO NODE    515.00 =     156.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    515.00 TO NODE    515.00 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.) =    5.11
  RAINFALL INTENSITY(INCH/HR) =   1.90
  TOTAL STREAM AREA(ACRES) =     0.51
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.85

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        4.48     7.62        1.557          3.60
      2        0.85     5.11        1.901          0.51

 **********************************WARNING***********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

  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        3.86     5.11       1.901
      2        5.18     7.62       1.557

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       5.18   Tc(MIN.) =    7.62
  TOTAL AREA(ACRES) =        4.1
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    515.00 =     820.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    515.00 TO NODE    520.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1572.15  DOWNSTREAM(FEET) =  1569.15
  FLOW LENGTH(FEET) =   323.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS  10.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.43
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.18
  PIPE TRAVEL TIME(MIN.) =   0.99    Tc(MIN.) =    8.61
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    520.00 =    1143.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    520.00 TO NODE    520.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 3 <<<<<
============================================================================
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    271.00 TO NODE    272.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   246.00
  UPSTREAM ELEVATION(FEET) =   1573.50
  DOWNSTREAM ELEVATION(FEET) =   1569.85
  ELEVATION DIFFERENCE(FEET) =      3.65
  TC = 0.323*[(  246.00**3)/(     3.65)]**.2 =    6.775
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.651
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      2.17
  TOTAL AREA(ACRES) =      1.51   TOTAL RUNOFF(CFS) =      2.17

****************************************************************************
  FLOW PROCESS FROM NODE    272.00 TO NODE    272.00 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.) =    6.77
  RAINFALL INTENSITY(INCH/HR) =   1.65
  TOTAL STREAM AREA(ACRES) =     1.51
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.17

****************************************************************************
  FLOW PROCESS FROM NODE    241.00 TO NODE    242.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   169.00
  UPSTREAM ELEVATION(FEET) =   1575.80
  DOWNSTREAM ELEVATION(FEET) =   1573.30
  ELEVATION DIFFERENCE(FEET) =      2.50
  TC = 0.323*[(  169.00**3)/(     2.50)]**.2 =    5.834
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.780
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8500
  SUBAREA RUNOFF(CFS) =      0.76
  TOTAL AREA(ACRES) =      0.50   TOTAL RUNOFF(CFS) =      0.76

****************************************************************************
  FLOW PROCESS FROM NODE    242.00 TO NODE    272.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1571.30  DOWNSTREAM(FEET) =  1569.85
  FLOW LENGTH(FEET) =   290.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   5.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   2.69
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.76
  PIPE TRAVEL TIME(MIN.) =   1.79    Tc(MIN.) =    7.63
  LONGEST FLOWPATH FROM NODE    241.00 TO NODE    272.00 =     459.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    272.00 TO NODE    272.00 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.) =    7.63
  RAINFALL INTENSITY(INCH/HR) =   1.56
  TOTAL STREAM AREA(ACRES) =     0.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.76

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        2.17     6.77        1.651          1.51
      2        0.76     7.63        1.556          0.50

 **********************************WARNING**********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ***************************************************************************

  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        2.84     6.77       1.651
      2        2.80     7.63       1.556

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       2.84   Tc(MIN.) =    6.77
  TOTAL AREA(ACRES) =        2.0
  LONGEST FLOWPATH FROM NODE    241.00 TO NODE    272.00 =     459.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    272.00 TO NODE    520.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1569.85  DOWNSTREAM(FEET) =  1569.15
  FLOW LENGTH(FEET) =   141.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS   8.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.76
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.84
  PIPE TRAVEL TIME(MIN.) =   0.63    Tc(MIN.) =    7.40
  LONGEST FLOWPATH FROM NODE    241.00 TO NODE    520.00 =     600.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    520.00 TO NODE    520.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1        2.84     7.40       1.580        2.01
  LONGEST FLOWPATH FROM NODE    241.00 TO NODE    520.00 =     600.00 FEET.

  ** MEMORY BANK #  3 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1        5.18     8.61       1.465        4.11
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    520.00 =    1143.00 FEET.

 **********************************WARNING**********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
```

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

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1       7.29       7.40        1.580
      2       7.82       8.61        1.465

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       7.82   Tc(MIN.) =    8.61
  TOTAL AREA(ACRES) =        6.1

****************************************************************************
  FLOW PROCESS FROM NODE    520.00 TO NODE    262.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1569.85  DOWNSTREAM(FEET) =  1568.95
  FLOW LENGTH(FEET) =   180.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.83
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.82
  PIPE TRAVEL TIME(MIN.) =   0.62    Tc(MIN.) =    9.23
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    262.00 =    1323.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    262.00 TO NODE    262.00 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.) =    9.23
  RAINFALL INTENSITY(INCH/HR) =   1.41
  TOTAL STREAM AREA(ACRES) =     6.12
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.82

****************************************************************************
  FLOW PROCESS FROM NODE    261.00 TO NODE    262.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   478.00
  UPSTREAM ELEVATION(FEET) =   1575.50
  DOWNSTREAM ELEVATION(FEET) =   1569.45
  ELEVATION DIFFERENCE(FEET) =      6.05
  TC = 0.323*[(  478.00**3)/(     6.05)]**.2 =    9.122
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.423
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      1.76
  TOTAL AREA(ACRES) =      1.42   TOTAL RUNOFF(CFS) =      1.76

****************************************************************************
  FLOW PROCESS FROM NODE    262.00 TO NODE    262.00 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.) =    9.12
  RAINFALL INTENSITY(INCH/HR) =   1.42
  TOTAL STREAM AREA(ACRES) =     1.42
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.76
```

```
 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        7.82     9.23        1.415          6.12
     2        1.76     9.12        1.423          1.42

 ********************************WARNING***********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 **************************************************************************

  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        9.48     9.12       1.423
      2        9.56     9.23       1.415

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       9.56   Tc(MIN.) =    9.23
  TOTAL AREA(ACRES) =        7.5
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    262.00 =    1323.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    262.00 TO NODE    530.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1566.28  DOWNSTREAM(FEET) =  1565.40
  FLOW LENGTH(FEET) =    13.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS   8.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.58
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       9.56
  PIPE TRAVEL TIME(MIN.) =   0.02    Tc(MIN.) =    9.25
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    530.00 =    1336.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    530.00 TO NODE    530.00 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.) =    9.25
  RAINFALL INTENSITY(INCH/HR) =   1.41
  TOTAL STREAM AREA(ACRES) =     7.54
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.56

****************************************************************************
  FLOW PROCESS FROM NODE    281.00 TO NODE    282.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
          ASSUMED INITIAL SUBAREA UNIFORM
          DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   344.00
  UPSTREAM ELEVATION(FEET) =   1571.00
  DOWNSTREAM ELEVATION(FEET) =   1568.18
  ELEVATION DIFFERENCE(FEET) =      2.82
  TC = 0.323*[(  344.00**3)/(     2.82)]**.2 =    8.723
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.455
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      1.52
  TOTAL AREA(ACRES) =      1.20   TOTAL RUNOFF(CFS) =      1.52
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    282.00 TO NODE    530.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1565.51  DOWNSTREAM(FEET) =  1565.40
  FLOW LENGTH(FEET) =    20.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   6.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.35
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.52
  PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =    8.82
  LONGEST FLOWPATH FROM NODE    281.00 TO NODE    530.00 =     364.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    530.00 TO NODE    530.00 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.) =    8.82
  RAINFALL INTENSITY(INCH/HR) =   1.45
  TOTAL STREAM AREA(ACRES) =     1.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.52

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        9.56     9.25        1.413          7.54
      2        1.52     8.82        1.447          1.20

 *********************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ***************************************************************************

  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       10.64     8.82       1.447
      2       11.05     9.25       1.413

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      11.05   Tc(MIN.) =    9.25
  TOTAL AREA(ACRES) =        8.7
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    530.00 =    1336.00 FEET.

+--------------------------------------------------------------------------+
| MITIGATED FLOW FROM TANK-A                                               |
|                                                                          |
|                                                                          |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE    530.00 TO NODE    530.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =  15.55   RAIN INTENSITY(INCH/HOUR) =  1.09
  TOTAL AREA(ACRES) =     8.74   TOTAL RUNOFF(CFS) =      1.55

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

```
  FLOW PROCESS FROM NODE    535.00 TO NODE    540.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1563.70  DOWNSTREAM(FEET) =  1563.44
  FLOW LENGTH(FEET) =    34.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   6.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.80
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.55
  PIPE TRAVEL TIME(MIN.) =   0.15    Tc(MIN.) =   15.70
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    540.00 =    1370.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    540.00 TO NODE    541.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1563.40  DOWNSTREAM(FEET) =   1561.53
  CHANNEL LENGTH THRU SUBAREA(FEET) =   133.00   CHANNEL SLOPE =  0.0141
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   0.018
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   0.07

         ==>>WARNING: FLOW IN CHANNEL EXCEEDS CHANNEL
             CAPACITY( NORMAL DEPTH EQUAL TO SPECIFIED MAXIMUM
             ALLOWABLE DEPTH).
             AS AN APPROXIMATION, FLOWDEPTH IS SET AT MAXIMUM
             ALLOWABLE DEPTH AND IS USED FOR TRAVELTIME CALCULATIONS.

  CHANNEL FLOW THRU SUBAREA(CFS) =       1.55
  FLOW VELOCITY(FEET/SEC.) =   2.77   FLOW DEPTH(FEET) =   0.07
  TRAVEL TIME(MIN.) =   0.80   Tc(MIN.) =   16.50
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    541.00 =    1503.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    541.00 TO NODE    541.00 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.) =   16.50
  RAINFALL INTENSITY(INCH/HR) =   1.06
  TOTAL STREAM AREA(ACRES) =     8.74
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.55

****************************************************************************
  FLOW PROCESS FROM NODE    110.00 TO NODE    541.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
          ASSUMED INITIAL SUBAREA UNIFORM
          DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   252.00
  UPSTREAM ELEVATION(FEET) =   1566.10
  DOWNSTREAM ELEVATION(FEET) =   1561.53
  ELEVATION DIFFERENCE(FEET) =      4.57
  TC = 0.323*[(  252.00**3)/(     4.57)]**.2 =    6.571
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.677
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8200
  SUBAREA RUNOFF(CFS) =      0.27
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.27

****************************************************************************
  FLOW PROCESS FROM NODE    541.00 TO NODE    541.00 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.) =    6.57
  RAINFALL INTENSITY(INCH/HR) =   1.68
  TOTAL STREAM AREA(ACRES) =     0.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.27

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        1.55    16.50        1.058          8.74
      2        0.27     6.57        1.677          0.20

 **********************************WARNING***********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ********************************************************************************

  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        0.89     6.57       1.677
      2        1.72    16.50       1.058

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       1.72   Tc(MIN.) =   16.50
  TOTAL AREA(ACRES) =        8.9
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    541.00 =    1503.00 FEET.

****************************************************************************
  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) =   1561.53  DOWNSTREAM(FEET) =   1561.10
  CHANNEL LENGTH THRU SUBAREA(FEET) =    61.00   CHANNEL SLOPE =  0.0071
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   0.018
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   0.07

         ==>>WARNING: FLOW IN CHANNEL EXCEEDS CHANNEL
             CAPACITY( NORMAL DEPTH EQUAL TO SPECIFIED MAXIMUM
             ALLOWABLE DEPTH).
             AS AN APPROXIMATION, FLOWDEPTH IS SET AT MAXIMUM
             ALLOWABLE DEPTH AND IS USED FOR TRAVELTIME CALCULATIONS.

  CHANNEL FLOW THRU SUBAREA(CFS) =       1.72
  FLOW VELOCITY(FEET/SEC.) =   3.08   FLOW DEPTH(FEET) =   0.07
  TRAVEL TIME(MIN.) =   0.33   Tc(MIN.) =   16.83
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    542.00 =    1564.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    301.00 TO NODE    302.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   176.00
  UPSTREAM ELEVATION(FEET) =   1581.00
  DOWNSTREAM ELEVATION(FEET) =   1580.00
  ELEVATION DIFFERENCE(FEET) =      1.00
  TC = 0.323*[(  176.00**3)/(     1.00)]**.2 =    7.180
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.604
```

```
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      0.65
  TOTAL AREA(ACRES) =      0.46   TOTAL RUNOFF(CFS) =      0.65

****************************************************************************
  FLOW PROCESS FROM NODE    302.00 TO NODE    600.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1578.40  DOWNSTREAM(FEET) =  1574.45
  FLOW LENGTH(FEET) =   187.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   6.0 INCH PIPE IS   4.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.43
  ESTIMATED PIPE DIAMETER(INCH) =   6.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.65
  PIPE TRAVEL TIME(MIN.) =   0.70    Tc(MIN.) =    7.88
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    600.00 =     363.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    600.00 TO NODE    600.00 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.) =    7.88
  RAINFALL INTENSITY(INCH/HR) =   1.53
  TOTAL STREAM AREA(ACRES) =     0.46
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.65

****************************************************************************
  FLOW PROCESS FROM NODE    311.00 TO NODE    312.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   157.00
  UPSTREAM ELEVATION(FEET) =   1580.80
  DOWNSTREAM ELEVATION(FEET) =   1577.70
  ELEVATION DIFFERENCE(FEET) =      3.10
  TC = 0.323*[(  157.00**3)/(     3.10)]**.2 =    5.346
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.859
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      1.01
  TOTAL AREA(ACRES) =      0.62   TOTAL RUNOFF(CFS) =      1.01

****************************************************************************
  FLOW PROCESS FROM NODE    312.00 TO NODE    600.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1575.70  DOWNSTREAM(FEET) =  1574.45
  FLOW LENGTH(FEET) =    89.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   4.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.31
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.01
  PIPE TRAVEL TIME(MIN.) =   0.34    Tc(MIN.) =    5.69
  LONGEST FLOWPATH FROM NODE    311.00 TO NODE    600.00 =     246.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    600.00 TO NODE    600.00 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.) =    5.69
  RAINFALL INTENSITY(INCH/HR) =   1.80
  TOTAL STREAM AREA(ACRES) =     0.62
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.01

****************************************************************************
  FLOW PROCESS FROM NODE    321.00 TO NODE    322.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   190.00
  UPSTREAM ELEVATION(FEET) =   1578.50
  DOWNSTREAM ELEVATION(FEET) =   1576.10
  ELEVATION DIFFERENCE(FEET) =      2.40
  TC = 0.323*[(  190.00**3)/(     2.40)]**.2 =    6.310
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.711
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      0.86
  TOTAL AREA(ACRES) =      0.57   TOTAL RUNOFF(CFS) =      0.86

****************************************************************************
  FLOW PROCESS FROM NODE    322.00 TO NODE    600.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1576.10  DOWNSTREAM(FEET) =  1574.45
  FLOW LENGTH(FEET) =    21.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   6.0 INCH PIPE IS   3.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.87
  ESTIMATED PIPE DIAMETER(INCH) =   6.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.86
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =    6.35
  LONGEST FLOWPATH FROM NODE    321.00 TO NODE    600.00 =     211.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    600.00 TO NODE    600.00 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.) =    6.35
  RAINFALL INTENSITY(INCH/HR) =   1.71
  TOTAL STREAM AREA(ACRES) =     0.57
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.86

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        0.65     7.88        1.531          0.46
      2        1.01     5.69        1.802          0.62
      3        0.86     6.35        1.705          0.57

 **********************************WARNING**********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

  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        2.25     5.69       1.802
      2        2.34     6.35       1.705
      3        2.28     7.88       1.531

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       2.25   Tc(MIN.) =    5.69
  TOTAL AREA(ACRES) =        1.7
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    600.00 =     363.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    600.00 TO NODE    605.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1574.45  DOWNSTREAM(FEET) =  1573.65
  FLOW LENGTH(FEET) =   137.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   8.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.70
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.25
  PIPE TRAVEL TIME(MIN.) =   0.62    Tc(MIN.) =    6.31
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    605.00 =     500.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    605.00 TO NODE    605.00 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.) =    6.31
  RAINFALL INTENSITY(INCH/HR) =   1.71
  TOTAL STREAM AREA(ACRES) =     1.65
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.25

****************************************************************************
  FLOW PROCESS FROM NODE    341.00 TO NODE    342.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   176.00
  UPSTREAM ELEVATION(FEET) =   1581.00
  DOWNSTREAM ELEVATION(FEET) =   1576.80
  ELEVATION DIFFERENCE(FEET) =      4.20
  TC = 0.323*[(  176.00**3)/(     4.20)]**.2 =    5.388
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.852
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      1.03
  TOTAL AREA(ACRES) =      0.63   TOTAL RUNOFF(CFS) =      1.03

****************************************************************************
  FLOW PROCESS FROM NODE    342.00 TO NODE    605.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1575.30  DOWNSTREAM(FEET) =  1573.65
  FLOW LENGTH(FEET) =    45.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   3.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.16
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.03
  PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =    5.51
  LONGEST FLOWPATH FROM NODE    341.00 TO NODE    605.00 =     221.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    605.00 TO NODE    605.00 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.) =    5.51
  RAINFALL INTENSITY(INCH/HR) =   1.83
  TOTAL STREAM AREA(ACRES) =     0.63
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.03

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        2.25     6.31        1.711          1.65
      2        1.03     5.51        1.831          0.63

 **********************************WARNING***********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

  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        2.99     5.51       1.831
      2        3.21     6.31       1.711

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       3.21   Tc(MIN.) =    6.31
  TOTAL AREA(ACRES) =        2.3
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    605.00 =     500.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    605.00 TO NODE    615.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1573.55  DOWNSTREAM(FEET) =  1573.20
  FLOW LENGTH(FEET) =    62.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS   9.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.06
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.21
  PIPE TRAVEL TIME(MIN.) =   0.25    Tc(MIN.) =    6.56
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    615.00 =     562.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    615.00 TO NODE    615.00 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) =   1.68
  TOTAL STREAM AREA(ACRES) =     2.28
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.21

****************************************************************************
  FLOW PROCESS FROM NODE    331.00 TO NODE    332.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
```

```
==========================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   185.00
  UPSTREAM ELEVATION(FEET) =   1576.30
  DOWNSTREAM ELEVATION(FEET) =   1573.90
  ELEVATION DIFFERENCE(FEET) =      2.40
  TC = 0.323*[(  185.00**3)/(     2.40)]**.2 =    6.210
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.725
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8900
  SUBAREA RUNOFF(CFS) =      0.81
  TOTAL AREA(ACRES) =      0.53   TOTAL RUNOFF(CFS) =      0.81

**************************************************************************
  FLOW PROCESS FROM NODE    332.00 TO NODE    615.00 IS CODE =  31
--------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1573.90  DOWNSTREAM(FEET) =  1573.20
  FLOW LENGTH(FEET) =    15.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   6.0 INCH PIPE IS   3.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.36
  ESTIMATED PIPE DIAMETER(INCH) =   6.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.81
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =    6.25
  LONGEST FLOWPATH FROM NODE    331.00 TO NODE    615.00 =     200.00 FEET.

**************************************************************************
  FLOW PROCESS FROM NODE    615.00 TO NODE    615.00 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.) =    6.25
  RAINFALL INTENSITY(INCH/HR) =   1.72
  TOTAL STREAM AREA(ACRES) =     0.53
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.81

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        3.21     6.56        1.678         2.28
      2        0.81     6.25        1.719         0.53

 **********************************WARNING**********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ***************************************************************************

  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        3.87     6.25       1.719
      2        4.00     6.56       1.678

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       4.00   Tc(MIN.) =    6.56
  TOTAL AREA(ACRES) =        2.8
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    615.00 =     562.00 FEET.

**************************************************************************
  FLOW PROCESS FROM NODE    615.00 TO NODE    620.00 IS CODE =  31
```

```
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1573.10  DOWNSTREAM(FEET) =  1572.30
  FLOW LENGTH(FEET) =   153.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS  11.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.08
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.00
  PIPE TRAVEL TIME(MIN.) =   0.62    Tc(MIN.) =    7.19
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    620.00 =     715.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    620.00 TO NODE    620.00 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.) =    7.19
  RAINFALL INTENSITY(INCH/HR) =   1.60
  TOTAL STREAM AREA(ACRES) =     2.81
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.00

****************************************************************************
  FLOW PROCESS FROM NODE    361.00 TO NODE    362.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   242.00
  UPSTREAM ELEVATION(FEET) =   1577.00
  DOWNSTREAM ELEVATION(FEET) =   1572.55
  ELEVATION DIFFERENCE(FEET) =      4.45
  TC = 0.323*[(  242.00**3)/(     4.45)]**.2 =    6.448
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.693
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      1.30
  TOTAL AREA(ACRES) =      0.88   TOTAL RUNOFF(CFS) =      1.30

****************************************************************************
  FLOW PROCESS FROM NODE    362.00 TO NODE    620.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1572.55  DOWNSTREAM(FEET) =  1572.30
  FLOW LENGTH(FEET) =    44.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   6.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.27
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.30
  PIPE TRAVEL TIME(MIN.) =   0.22    Tc(MIN.) =    6.67
  LONGEST FLOWPATH FROM NODE    361.00 TO NODE    620.00 =     286.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    620.00 TO NODE    620.00 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.) =    6.67
  RAINFALL INTENSITY(INCH/HR) =   1.66
  TOTAL STREAM AREA(ACRES) =     0.88
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.30
```

```
 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        4.00     7.19        1.603          2.81
     2        1.30     6.67        1.664          0.88

 ********************************WARNING*********************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

 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        5.01     6.67       1.664
     2        5.25     7.19       1.603

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       5.25   Tc(MIN.) =    7.19
 TOTAL AREA(ACRES) =        3.7
 LONGEST FLOWPATH FROM NODE    301.00 TO NODE    620.00 =     715.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    620.00 TO NODE    352.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1572.20  DOWNSTREAM(FEET) =  1572.01
 FLOW LENGTH(FEET) =    36.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.4 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   4.46
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       5.25
 PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =    7.32
 LONGEST FLOWPATH FROM NODE    301.00 TO NODE    352.00 =     751.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    352.00 TO NODE    352.00 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.) =    7.32
 RAINFALL INTENSITY(INCH/HR) =   1.59
 TOTAL STREAM AREA(ACRES) =     3.69
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.25

****************************************************************************
 FLOW PROCESS FROM NODE    351.00 TO NODE    352.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   158.00
 UPSTREAM ELEVATION(FEET) =   1575.50
 DOWNSTREAM ELEVATION(FEET) =   1572.01
 ELEVATION DIFFERENCE(FEET) =      3.49
 TC = 0.323*[(  158.00**3)/(     3.49)]**.2 =    5.241
    2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.878
 *USER SPECIFIED(SUBAREA):
 APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
 SUBAREA RUNOFF(CFS) =      0.68
```

```
  TOTAL AREA(ACRES) =      0.41   TOTAL RUNOFF(CFS) =      0.68

****************************************************************************
  FLOW PROCESS FROM NODE    352.00 TO NODE    352.00 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.) =    5.24
  RAINFALL INTENSITY(INCH/HR) =   1.88
  TOTAL STREAM AREA(ACRES) =     0.41
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.68

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        5.25     7.32        1.588          3.69
      2        0.68     5.24        1.878          0.41

 **********************************WARNING***********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

  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        4.44     5.24       1.878
      2        5.83     7.32       1.588

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       5.83   Tc(MIN.) =    7.32
  TOTAL AREA(ACRES) =        4.1
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    352.00 =     751.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    352.00 TO NODE    625.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1569.34  DOWNSTREAM(FEET) =  1569.00
  FLOW LENGTH(FEET) =    63.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.60
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.83
  PIPE TRAVEL TIME(MIN.) =   0.23    Tc(MIN.) =    7.55
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    625.00 =     814.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    625.00 TO NODE    625.00 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.) =    7.55
  RAINFALL INTENSITY(INCH/HR) =   1.56
  TOTAL STREAM AREA(ACRES) =     4.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.83

****************************************************************************
  FLOW PROCESS FROM NODE    371.00 TO NODE    373.00 IS CODE =  21
----------------------------------------------------------------------------
```

```
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
================================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   301.00
  UPSTREAM ELEVATION(FEET) =   1575.20
  DOWNSTREAM ELEVATION(FEET) =   1572.50
  ELEVATION DIFFERENCE(FEET) =      2.70
  TC = 0.323*[(  301.00**3)/(     2.70)]**.2 =    8.122
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.508
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      0.78
  TOTAL AREA(ACRES) =      0.59   TOTAL RUNOFF(CFS) =      0.78

********************************************************************************
  FLOW PROCESS FROM NODE    373.00 TO NODE    625.00 IS CODE =  31
--------------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1572.50  DOWNSTREAM(FEET) =  1569.00
  FLOW LENGTH(FEET) =    31.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   6.0 INCH PIPE IS   2.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.83
  ESTIMATED PIPE DIAMETER(INCH) =   6.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.78
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =    8.18
  LONGEST FLOWPATH FROM NODE    371.00 TO NODE    625.00 =     332.00 FEET.

********************************************************************************
  FLOW PROCESS FROM NODE    625.00 TO NODE    625.00 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.) =    8.18
  RAINFALL INTENSITY(INCH/HR) =   1.50
  TOTAL STREAM AREA(ACRES) =     0.59
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.78

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        5.83     7.55        1.564          4.10
      2        0.78     8.18        1.503          0.59

 **********************************WARNING***********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

  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        6.55     7.55       1.564
      2        6.38     8.18       1.503

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       6.55   Tc(MIN.) =    7.55
  TOTAL AREA(ACRES) =        4.7
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    625.00 =     814.00 FEET.

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

```
  FLOW PROCESS FROM NODE    625.00 TO NODE    630.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1568.90  DOWNSTREAM(FEET) =  1567.75
  FLOW LENGTH(FEET) =   121.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.90
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.55
  PIPE TRAVEL TIME(MIN.) =   0.34    Tc(MIN.) =    7.89
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    630.00 =     935.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    630.00 TO NODE    630.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    381.00 TO NODE    382.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   189.00
  UPSTREAM ELEVATION(FEET) =   1574.70
  DOWNSTREAM ELEVATION(FEET) =   1570.85
  ELEVATION DIFFERENCE(FEET) =      3.85
  TC = 0.323*[(  189.00**3)/(     3.85)]**.2 =    5.722
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.797
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8600
  SUBAREA RUNOFF(CFS) =      0.56
  TOTAL AREA(ACRES) =      0.36   TOTAL RUNOFF(CFS) =      0.56

****************************************************************************
  FLOW PROCESS FROM NODE    382.00 TO NODE    392.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1570.85  DOWNSTREAM(FEET) =  1570.55
  FLOW LENGTH(FEET) =    53.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   4.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   2.62
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.56
  PIPE TRAVEL TIME(MIN.) =   0.34    Tc(MIN.) =    6.06
  LONGEST FLOWPATH FROM NODE    381.00 TO NODE    392.00 =     242.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    392.00 TO NODE    392.00 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.) =    6.06
  RAINFALL INTENSITY(INCH/HR) =   1.75
  TOTAL STREAM AREA(ACRES) =     0.36
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.56

****************************************************************************
  FLOW PROCESS FROM NODE    391.00 TO NODE    392.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
```

```
        ASSUMED INITIAL SUBAREA UNIFORM
        DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   337.00
  UPSTREAM ELEVATION(FEET) =   1574.60
  DOWNSTREAM ELEVATION(FEET) =   1571.30
  ELEVATION DIFFERENCE(FEET) =      3.30
  TC = 0.323*[(  337.00**3)/(     3.30)]**.2 =    8.350
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.487
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8900
  SUBAREA RUNOFF(CFS) =      0.75
  TOTAL AREA(ACRES) =      0.57   TOTAL RUNOFF(CFS) =      0.75

****************************************************************************
  FLOW PROCESS FROM NODE    392.00 TO NODE    392.00 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.) =    8.35
  RAINFALL INTENSITY(INCH/HR) =   1.49
  TOTAL STREAM AREA(ACRES) =     0.57
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.75

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        0.56     6.06        1.746          0.36
      2        0.75     8.35        1.487          0.57

 **********************************WARNING**********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ***************************************************************************

  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        1.10     6.06       1.746
      2        1.23     8.35       1.487

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       1.23   Tc(MIN.) =    8.35
  TOTAL AREA(ACRES) =        0.9
  LONGEST FLOWPATH FROM NODE    391.00 TO NODE    392.00 =     337.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    392.00 TO NODE    630.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1567.88  DOWNSTREAM(FEET) =  1567.75
  FLOW LENGTH(FEET) =    14.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   6.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.82
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.23
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =    8.41
  LONGEST FLOWPATH FROM NODE    391.00 TO NODE    630.00 =     351.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    630.00 TO NODE    630.00 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        1.23     8.41       1.482        0.93
  LONGEST FLOWPATH FROM NODE    391.00 TO NODE    630.00 =     351.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1        6.55     7.89       1.530        4.69
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    630.00 =     935.00 FEET.

 ****************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ********************************************************************

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1       7.70       7.89        1.530
      2       7.57       8.41        1.482

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       7.70   Tc(MIN.) =    7.89
  TOTAL AREA(ACRES) =        5.6

********************************************************************************
  FLOW PROCESS FROM NODE    630.00 TO NODE    640.00 IS CODE =  31
--------------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1567.65  DOWNSTREAM(FEET) =  1563.55
  FLOW LENGTH(FEET) =   288.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.16
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.70
  PIPE TRAVEL TIME(MIN.) =   0.67    Tc(MIN.) =    8.56
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    640.00 =    1223.00 FEET.

********************************************************************************
  FLOW PROCESS FROM NODE    640.00 TO NODE    640.00 IS CODE =  10
--------------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
================================================================================

********************************************************************************
  FLOW PROCESS FROM NODE    401.00 TO NODE    402.00 IS CODE =  21
--------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
================================================================================
          ASSUMED INITIAL SUBAREA UNIFORM
          DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   296.00
  UPSTREAM ELEVATION(FEET) =   1573.00
  DOWNSTREAM ELEVATION(FEET) =   1570.45
  ELEVATION DIFFERENCE(FEET) =      2.55
  TC = 0.323*[(  296.00**3)/(     2.55)]**.2 =    8.133
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.507
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      1.74
  TOTAL AREA(ACRES) =      1.33   TOTAL RUNOFF(CFS) =      1.74
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    402.00 TO NODE    635.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1568.45  DOWNSTREAM(FEET) =  1567.85
  FLOW LENGTH(FEET) =    86.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   6.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.79
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.74
  PIPE TRAVEL TIME(MIN.) =   0.38    Tc(MIN.) =    8.51
  LONGEST FLOWPATH FROM NODE    401.00 TO NODE    635.00 =     382.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    635.00 TO NODE    635.00 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.) =    8.51
  RAINFALL INTENSITY(INCH/HR) =   1.47
  TOTAL STREAM AREA(ACRES) =     1.33
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.74

****************************************************************************
  FLOW PROCESS FROM NODE    411.00 TO NODE    412.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   288.00
  UPSTREAM ELEVATION(FEET) =   1572.40
  DOWNSTREAM ELEVATION(FEET) =   1570.65
  ELEVATION DIFFERENCE(FEET) =      1.75
  TC = 0.323*[(  288.00**3)/(     1.75)]**.2 =    8.626
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.463
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8500
  SUBAREA RUNOFF(CFS) =      0.56
  TOTAL AREA(ACRES) =      0.45   TOTAL RUNOFF(CFS) =      0.56

****************************************************************************
  FLOW PROCESS FROM NODE    412.00 TO NODE    635.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1568.65  DOWNSTREAM(FEET) =  1567.75
  FLOW LENGTH(FEET) =    19.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   6.0 INCH PIPE IS   2.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.87
  ESTIMATED PIPE DIAMETER(INCH) =   6.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.56
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =    8.68
  LONGEST FLOWPATH FROM NODE    411.00 TO NODE    635.00 =     307.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    635.00 TO NODE    635.00 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.) =    8.68
  RAINFALL INTENSITY(INCH/HR) =   1.46
```

```
 TOTAL STREAM AREA(ACRES) =     0.45
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.56

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        1.74     8.51        1.473          1.33
     2        0.56     8.68        1.459          0.45

 ***********************************WARNING***********************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 *****************************************************************************

 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        2.29     8.51       1.473
     2        2.29     8.68       1.459

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       2.29   Tc(MIN.) =    8.51
 TOTAL AREA(ACRES) =        1.8
 LONGEST FLOWPATH FROM NODE    401.00 TO NODE    635.00 =     382.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    635.00 TO NODE    422.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1567.75  DOWNSTREAM(FEET) =  1567.30
 FLOW LENGTH(FEET) =    89.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  12.0 INCH PIPE IS   9.4 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   3.48
 ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       2.29
 PIPE TRAVEL TIME(MIN.) =   0.43    Tc(MIN.) =    8.94
 LONGEST FLOWPATH FROM NODE    401.00 TO NODE    422.00 =     471.00 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.) =    8.94
 RAINFALL INTENSITY(INCH/HR) =   1.44
 TOTAL STREAM AREA(ACRES) =     1.78
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.29

****************************************************************************
 FLOW PROCESS FROM NODE    421.00 TO NODE    422.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
          ASSUMED INITIAL SUBAREA UNIFORM
          DEVELOPMENT IS APARTMENT
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   285.00
 UPSTREAM ELEVATION(FEET) =   1572.60
 DOWNSTREAM ELEVATION(FEET) =   1570.00
 ELEVATION DIFFERENCE(FEET) =      2.60
 TC = 0.323*[(  285.00**3)/(     2.60)]**.2 =    7.920
    2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.527
 *USER SPECIFIED(SUBAREA):
```

```
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8400
  SUBAREA RUNOFF(CFS) =      0.80
  TOTAL AREA(ACRES) =      0.62   TOTAL RUNOFF(CFS) =      0.80

****************************************************************************
  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.) =    7.92
  RAINFALL INTENSITY(INCH/HR) =   1.53
  TOTAL STREAM AREA(ACRES) =     0.62
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.80

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        2.29     8.94        1.438          1.78
      2        0.80     7.92        1.527          0.62

 **********************************WARNING***********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

  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        2.83     7.92       1.527
      2        3.04     8.94       1.438

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       3.04   Tc(MIN.) =    8.94
  TOTAL AREA(ACRES) =        2.4
  LONGEST FLOWPATH FROM NODE    401.00 TO NODE    422.00 =     471.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    422.00 TO NODE    640.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1563.63  DOWNSTREAM(FEET) =  1563.55
  FLOW LENGTH(FEET) =    18.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS   9.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.64
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.04
  PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =    9.02
  LONGEST FLOWPATH FROM NODE    401.00 TO NODE    640.00 =     489.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    640.00 TO NODE    640.00 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.) =    9.02
  RAINFALL INTENSITY(INCH/HR) =   1.43
  TOTAL STREAM AREA(ACRES) =     2.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.04

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

```
 FLOW PROCESS FROM NODE    431.00 TO NODE    432.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
        ASSUMED INITIAL SUBAREA UNIFORM
        DEVELOPMENT IS APARTMENT
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   265.00
 UPSTREAM ELEVATION(FEET) =   1570.30
 DOWNSTREAM ELEVATION(FEET) =   1567.95
 ELEVATION DIFFERENCE(FEET) =      2.35
 TC = 0.323*[(  265.00**3)/(     2.35)]**.2 =    7.736
   2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.545
 *USER SPECIFIED(SUBAREA):
 APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8600
 SUBAREA RUNOFF(CFS) =      0.56
 TOTAL AREA(ACRES) =      0.42   TOTAL RUNOFF(CFS) =      0.56

****************************************************************************
 FLOW PROCESS FROM NODE    432.00 TO NODE    640.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1565.37  DOWNSTREAM(FEET) =  1564.40
 FLOW LENGTH(FEET) =    19.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN   6.0 INCH PIPE IS   2.9 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   5.99
 ESTIMATED PIPE DIAMETER(INCH) =   6.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       0.56
 PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =    7.79
 LONGEST FLOWPATH FROM NODE    431.00 TO NODE    640.00 =     284.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    640.00 TO NODE    640.00 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.) =    7.79
 RAINFALL INTENSITY(INCH/HR) =   1.54
 TOTAL STREAM AREA(ACRES) =     0.42
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.56

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        3.04     9.02        1.431          2.40
     2        0.56     7.79        1.540          0.42

 ***********************************WARNING***********************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 *****************************************************************************

 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        3.18     7.79       1.540
     2        3.56     9.02       1.431

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       3.56   Tc(MIN.) =    9.02
 TOTAL AREA(ACRES) =        2.8
 LONGEST FLOWPATH FROM NODE    401.00 TO NODE    640.00 =     489.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    640.00 TO NODE    640.00 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        3.56     9.02       1.431        2.82
  LONGEST FLOWPATH FROM NODE    401.00 TO NODE    640.00 =     489.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)   (ACRE)
      1        7.70     8.56       1.469        5.62
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    640.00 =    1223.00 FEET.

 ****************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ********************************************************************

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1      11.08       8.56        1.469
      2      11.06       9.02        1.431

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      11.08   Tc(MIN.) =    8.56
  TOTAL AREA(ACRES) =        8.4

+--------------------------------------------------------------------------+
| MITIGATED FLOW FROM TANK-B                                               |
|                                                                          |
|                                                                          |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE    640.00 TO NODE    640.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =  12.96   RAIN INTENSITY(INCH/HOUR) =  1.19
  TOTAL AREA(ACRES) =     8.44   TOTAL RUNOFF(CFS) =      3.19

****************************************************************************
  FLOW PROCESS FROM NODE    640.00 TO NODE    642.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1560.20  DOWNSTREAM(FEET) =  1560.16
  FLOW LENGTH(FEET) =     3.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   8.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.54
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.19
  PIPE TRAVEL TIME(MIN.) =   0.01    Tc(MIN.) =   12.97
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    642.00 =    1226.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    642.00 TO NODE    642.00 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.) =   12.97
  RAINFALL INTENSITY(INCH/HR) =   1.19
  TOTAL STREAM AREA(ACRES) =     8.44
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.19

****************************************************************************
  FLOW PROCESS FROM NODE    291.00 TO NODE    292.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   146.00
  UPSTREAM ELEVATION(FEET) =   1572.50
  DOWNSTREAM ELEVATION(FEET) =   1565.20
  ELEVATION DIFFERENCE(FEET) =      7.30
  TC = 0.323*[(  146.00**3)/(     7.30)]**.2 =    4.313
  COMPUTED TIME OF CONCENTRATION INCREASED TO 5 MIN.
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.922
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8500
  SUBAREA RUNOFF(CFS) =      0.51
  TOTAL AREA(ACRES) =      0.31   TOTAL RUNOFF(CFS) =      0.51

****************************************************************************
  FLOW PROCESS FROM NODE    292.00 TO NODE    642.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1561.66  DOWNSTREAM(FEET) =  1560.16
  FLOW LENGTH(FEET) =   297.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   4.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   2.45
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.51
  PIPE TRAVEL TIME(MIN.) =   2.02    Tc(MIN.) =    7.02
  LONGEST FLOWPATH FROM NODE    291.00 TO NODE    642.00 =     443.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    642.00 TO NODE    642.00 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.) =    7.02
  RAINFALL INTENSITY(INCH/HR) =   1.62
  TOTAL STREAM AREA(ACRES) =     0.31
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.51

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        3.19    12.97        1.193          8.44
      2        0.51     7.02        1.622          0.31

 **********************************WARNING**********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ***************************************************************************

  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        2.23      7.02       1.622
      2        3.56     12.97       1.193

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       3.56   Tc(MIN.) =   12.97
  TOTAL AREA(ACRES) =        8.8
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    642.00 =    1226.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    642.00 TO NODE    645.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1560.16  DOWNSTREAM(FEET) =  1559.75
  FLOW LENGTH(FEET) =    70.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS   9.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.20
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.56
  PIPE TRAVEL TIME(MIN.) =   0.28    Tc(MIN.) =   13.25
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    645.00 =    1296.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    102.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   655.00
  UPSTREAM ELEVATION(FEET) =   1586.50
  DOWNSTREAM ELEVATION(FEET) =   1581.24
  ELEVATION DIFFERENCE(FEET) =      5.26
  TC = 0.323*[(  655.00**3)/(     5.26)]**.2 =   11.333
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.276
    *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8900
  SUBAREA RUNOFF(CFS) =      1.11
  TOTAL AREA(ACRES) =      0.98   TOTAL RUNOFF(CFS) =      1.11

****************************************************************************
  FLOW PROCESS FROM NODE    102.00 TO NODE    103.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1577.74  DOWNSTREAM(FEET) =  1571.94
  FLOW LENGTH(FEET) =    66.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   6.0 INCH PIPE IS   3.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.70
  ESTIMATED PIPE DIAMETER(INCH) =   6.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.11
  PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =   11.46
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    103.00 =     721.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    110.00 TO NODE    111.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   410.00
  UPSTREAM ELEVATION(FEET) =   1566.10
  DOWNSTREAM ELEVATION(FEET) =   1562.10
  ELEVATION DIFFERENCE(FEET) =      4.00
  TC = 0.323*[(  410.00**3)/(     4.00)]**.2 =    9.038
```

```
    2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.430
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      0.39
  TOTAL AREA(ACRES) =      0.31   TOTAL RUNOFF(CFS) =      0.39

****************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    106.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1125.00
  UPSTREAM ELEVATION(FEET) =   1586.50
  DOWNSTREAM ELEVATION(FEET) =   1564.87
  ELEVATION DIFFERENCE(FEET) =     21.63
  TC = 0.323*[( 1125.00**3)/(    21.63)]**.2 =   11.816
    2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.250
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      0.96
  TOTAL AREA(ACRES) =      0.87   TOTAL RUNOFF(CFS) =      0.96

****************************************************************************
  FLOW PROCESS FROM NODE    106.00 TO NODE    107.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1562.20  DOWNSTREAM(FEET) =  1560.00
  FLOW LENGTH(FEET) =   232.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   5.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.66
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.96
  PIPE TRAVEL TIME(MIN.) =   1.06    Tc(MIN.) =   12.87
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    107.00 =    1357.00 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        0.9  TC(MIN.) =     12.87
  PEAK FLOW RATE(CFS)   =       0.96
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

POST-DEVELOPMENT AES

DETAINED

(5-YEAR STORM EVENT)

```
************************************************************************
          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
        RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                    (RCFC&WCD)  1978 HYDROLOGY MANUAL
         (c) Copyright 1982-2016 Advanced Engineering Software (aes)
                    (Rational Tabling Version 23.0)
                Release Date: 07/01/2016  License ID 1452

                         Analysis prepared by:
```

```
 ************************** DESCRIPTION OF STUDY **************************
* 3816 ROCAS GRANDE II                                                   *
* MITIGATED CONDITION                                                    *
* 5-YR STORM                                                             *
 ************************************************************************

  FILE NAME: 3816PD5.DAT
  TIME/DATE OF STUDY: 12:37 02/14/2025
------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =    5.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =   6.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  10-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  2.010
  10-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  0.820
  100-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  2.940
  100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.200
  SLOPE OF 10-YEAR INTENSITY-DURATION CURVE =  0.5003939
  SLOPE OF 100-YEAR INTENSITY-DURATION CURVE =  0.5001161
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =    5.00   1-HOUR INTENSITY(INCH/HOUR) =   0.724
  SLOPE OF INTENSITY DURATION CURVE = 0.5004
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: COMPUTE CONFLUENCE VALUES ACCORDING TO RCFC&WCD HYDROLOGY MANUAL
        AND IGNORE OTHER CONFLUENCE COMBINATIONS FOR DOWNSTREAM ANALYSES
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   22.0     14.0    0.020/0.020/0.018   0.50    2.00 0.0312 0.167 0.0150
  2   46.0     38.0    0.020/0.020/0.020   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    201.00 TO NODE    202.00 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
========================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   341.00
  UPSTREAM ELEVATION(FEET) =   1582.50
  DOWNSTREAM ELEVATION(FEET) =   1579.60
  ELEVATION DIFFERENCE(FEET) =      2.90
  TC = 0.323*[(  341.00**3)/(     2.90)]**.2 =    8.629
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.909
```

```
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      1.05
  TOTAL AREA(ACRES) =      0.63   TOTAL RUNOFF(CFS) =      1.05

****************************************************************************
  FLOW PROCESS FROM NODE    202.00 TO NODE    500.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1579.60  DOWNSTREAM(FEET) =  1574.55
  FLOW LENGTH(FEET) =   122.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   6.0 INCH PIPE IS   4.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.28
  ESTIMATED PIPE DIAMETER(INCH) =   6.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.05
  PIPE TRAVEL TIME(MIN.) =   0.32    Tc(MIN.) =    8.95
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    500.00 =     463.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    500.00 TO NODE    500.00 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.) =    8.95
  RAINFALL INTENSITY(INCH/HR) =   1.87
  TOTAL STREAM AREA(ACRES) =     0.63
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.05

****************************************************************************
  FLOW PROCESS FROM NODE    211.00 TO NODE    212.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   154.00
  UPSTREAM ELEVATION(FEET) =   1580.40
  DOWNSTREAM ELEVATION(FEET) =   1577.65
  ELEVATION DIFFERENCE(FEET) =      2.75
  TC = 0.323*[(  154.00**3)/(     2.75)]**.2 =    5.413
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.411
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8900
  SUBAREA RUNOFF(CFS) =      2.58
  TOTAL AREA(ACRES) =      1.20   TOTAL RUNOFF(CFS) =      2.58

****************************************************************************
  FLOW PROCESS FROM NODE    212.00 TO NODE    500.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1575.65  DOWNSTREAM(FEET) =  1574.55
  FLOW LENGTH(FEET) =   165.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   9.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.99
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.58
  PIPE TRAVEL TIME(MIN.) =   0.69    Tc(MIN.) =    6.10
  LONGEST FLOWPATH FROM NODE    211.00 TO NODE    500.00 =     319.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    500.00 TO NODE    500.00 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.) =    6.10
  RAINFALL INTENSITY(INCH/HR) =   2.27
  TOTAL STREAM AREA(ACRES) =     1.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.58

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        1.05     8.95        1.874          0.63
      2        2.58     6.10        2.271          1.20

 **********************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ******************************************************************************

  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        3.29     6.10       2.271
      2        3.17     8.95       1.874

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       3.29   Tc(MIN.) =    6.10
  TOTAL AREA(ACRES) =        1.8
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    500.00 =     463.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    500.00 TO NODE    505.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1574.45  DOWNSTREAM(FEET) =  1573.90
  FLOW LENGTH(FEET) =   106.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS   9.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.94
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.29
  PIPE TRAVEL TIME(MIN.) =   0.45    Tc(MIN.) =    6.55
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    505.00 =     569.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    505.00 TO NODE    505.00 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.) =    6.55
  RAINFALL INTENSITY(INCH/HR) =   2.19
  TOTAL STREAM AREA(ACRES) =     1.83
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.29

****************************************************************************
  FLOW PROCESS FROM NODE    221.00 TO NODE    222.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   328.00
  UPSTREAM ELEVATION(FEET) =   1577.80
```

```
  DOWNSTREAM ELEVATION(FEET) =   1574.90
  ELEVATION DIFFERENCE(FEET) =      2.90
  TC = 0.323*[(  328.00**3)/(     2.90)]**.2 =    8.430
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.932
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      0.95
  TOTAL AREA(ACRES) =      0.56   TOTAL RUNOFF(CFS) =      0.95

****************************************************************************
  FLOW PROCESS FROM NODE    222.00 TO NODE    505.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1574.90  DOWNSTREAM(FEET) =  1573.90
  FLOW LENGTH(FEET) =    44.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   4.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.08
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.95
  PIPE TRAVEL TIME(MIN.) =   0.14    Tc(MIN.) =    8.57
  LONGEST FLOWPATH FROM NODE    221.00 TO NODE    505.00 =     372.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    505.00 TO NODE    505.00 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.) =    8.57
  RAINFALL INTENSITY(INCH/HR) =   1.92
  TOTAL STREAM AREA(ACRES) =     0.56
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.95

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        3.29     6.55        2.192          1.83
      2        0.95     8.57        1.915          0.56

 **********************************WARNING**********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ***************************************************************************

  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        4.02     6.55       2.192
      2        3.83     8.57       1.915

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       4.02   Tc(MIN.) =    6.55
  TOTAL AREA(ACRES) =        2.4
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    505.00 =     569.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    505.00 TO NODE    510.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1573.80  DOWNSTREAM(FEET) =  1572.85
  FLOW LENGTH(FEET) =   159.00   MANNING'S N =  0.013
```

```
  DEPTH OF FLOW IN  15.0 INCH PIPE IS  10.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.33
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.02
  PIPE TRAVEL TIME(MIN.) =   0.61    Tc(MIN.) =    7.16
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    510.00 =     728.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    510.00 TO NODE    510.00 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.) =    7.16
  RAINFALL INTENSITY(INCH/HR) =   2.10
  TOTAL STREAM AREA(ACRES) =     2.39
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.02

****************************************************************************
  FLOW PROCESS FROM NODE    231.00 TO NODE    233.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   327.00
  UPSTREAM ELEVATION(FEET) =   1577.00
  DOWNSTREAM ELEVATION(FEET) =   1573.75
  ELEVATION DIFFERENCE(FEET) =      3.25
  TC = 0.323*[(  327.00**3)/(     3.25)]**.2 =    8.225
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.956
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8900
  SUBAREA RUNOFF(CFS) =      2.11
  TOTAL AREA(ACRES) =      1.21   TOTAL RUNOFF(CFS) =      2.11

****************************************************************************
  FLOW PROCESS FROM NODE    233.00 TO NODE    510.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1573.75  DOWNSTREAM(FEET) =  1572.85
  FLOW LENGTH(FEET) =    44.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   6.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.77
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.11
  PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =    8.35
  LONGEST FLOWPATH FROM NODE    231.00 TO NODE    510.00 =     371.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    510.00 TO NODE    510.00 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.) =    8.35
  RAINFALL INTENSITY(INCH/HR) =   1.94
  TOTAL STREAM AREA(ACRES) =     1.21
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.11

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        4.02     7.16        2.096          2.39
      2        2.11     8.35        1.941          1.21
```

```
 ********************************WARNING***********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 **************************************************************************

  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        5.82     7.16       2.096
      2        5.82     8.35       1.941

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       5.82   Tc(MIN.) =    7.16
  TOTAL AREA(ACRES) =        3.6
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    510.00 =     728.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    510.00 TO NODE    515.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1572.75  DOWNSTREAM(FEET) =  1572.25
  FLOW LENGTH(FEET) =    92.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.61
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.82
  PIPE TRAVEL TIME(MIN.) =   0.33    Tc(MIN.) =    7.50
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    515.00 =     820.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    515.00 TO NODE    515.00 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.) =    7.50
  RAINFALL INTENSITY(INCH/HR) =   2.05
  TOTAL STREAM AREA(ACRES) =     3.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.82

****************************************************************************
  FLOW PROCESS FROM NODE    251.00 TO NODE    252.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
          ASSUMED INITIAL SUBAREA UNIFORM
          DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   115.00
  UPSTREAM ELEVATION(FEET) =   1575.70
  DOWNSTREAM ELEVATION(FEET) =   1573.95
  ELEVATION DIFFERENCE(FEET) =      1.75
  TC = 0.323*[(  115.00**3)/(     1.75)]**.2 =    4.973
  COMPUTED TIME OF CONCENTRATION INCREASED TO 5 MIN.
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.509
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      1.11
  TOTAL AREA(ACRES) =      0.51   TOTAL RUNOFF(CFS) =      1.11

****************************************************************************
  FLOW PROCESS FROM NODE    252.00 TO NODE    515.00 IS CODE =  31
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1573.95  DOWNSTREAM(FEET) =  1572.25
  FLOW LENGTH(FEET) =    41.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   3.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.59
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.11
  PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =    5.10
  LONGEST FLOWPATH FROM NODE    251.00 TO NODE    515.00 =     156.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    515.00 TO NODE    515.00 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.) =    5.10
  RAINFALL INTENSITY(INCH/HR) =   2.48
  TOTAL STREAM AREA(ACRES) =     0.51
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.11

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        5.82     7.50        2.049          3.60
      2        1.11     5.10        2.483          0.51

 **********************************WARNING***********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

  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        5.08     5.10       2.483
      2        6.74     7.50       2.049

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       6.74   Tc(MIN.) =    7.50
  TOTAL AREA(ACRES) =        4.1
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    515.00 =     820.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    515.00 TO NODE    520.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1572.15  DOWNSTREAM(FEET) =  1569.15
  FLOW LENGTH(FEET) =   323.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.89
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.74
  PIPE TRAVEL TIME(MIN.) =   0.91    Tc(MIN.) =    8.41
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    520.00 =    1143.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    520.00 TO NODE    520.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 3 <<<<<
============================================================================
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    271.00 TO NODE    272.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   246.00
  UPSTREAM ELEVATION(FEET) =   1573.50
  DOWNSTREAM ELEVATION(FEET) =   1569.85
  ELEVATION DIFFERENCE(FEET) =      3.65
  TC = 0.323*[(  246.00**3)/(     3.65)]**.2 =    6.775
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.155
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      2.83
  TOTAL AREA(ACRES) =      1.51   TOTAL RUNOFF(CFS) =      2.83

****************************************************************************
  FLOW PROCESS FROM NODE    272.00 TO NODE    272.00 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.) =    6.77
  RAINFALL INTENSITY(INCH/HR) =   2.16
  TOTAL STREAM AREA(ACRES) =     1.51
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.83

****************************************************************************
  FLOW PROCESS FROM NODE    241.00 TO NODE    242.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   169.00
  UPSTREAM ELEVATION(FEET) =   1575.80
  DOWNSTREAM ELEVATION(FEET) =   1573.30
  ELEVATION DIFFERENCE(FEET) =      2.50
  TC = 0.323*[(  169.00**3)/(     2.50)]**.2 =    5.834
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.323
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8500
  SUBAREA RUNOFF(CFS) =      0.99
  TOTAL AREA(ACRES) =      0.50   TOTAL RUNOFF(CFS) =      0.99

****************************************************************************
  FLOW PROCESS FROM NODE    242.00 TO NODE    272.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1571.30  DOWNSTREAM(FEET) =  1569.85
  FLOW LENGTH(FEET) =   290.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   6.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   2.85
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.99
  PIPE TRAVEL TIME(MIN.) =   1.70    Tc(MIN.) =    7.53
  LONGEST FLOWPATH FROM NODE    241.00 TO NODE    272.00 =     459.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    272.00 TO NODE    272.00 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.) =    7.53
  RAINFALL INTENSITY(INCH/HR) =   2.04
  TOTAL STREAM AREA(ACRES) =     0.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.99

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        2.83     6.77        2.155          1.51
      2        0.99     7.53        2.044          0.50

 **********************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ******************************************************************************

  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        3.72     6.77       2.155
      2        3.67     7.53       2.044

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       3.72   Tc(MIN.) =    6.77
  TOTAL AREA(ACRES) =        2.0
  LONGEST FLOWPATH FROM NODE    241.00 TO NODE    272.00 =     459.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    272.00 TO NODE    520.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1569.85  DOWNSTREAM(FEET) =  1569.15
  FLOW LENGTH(FEET) =   141.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS  10.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.96
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.72
  PIPE TRAVEL TIME(MIN.) =   0.59    Tc(MIN.) =    7.37
  LONGEST FLOWPATH FROM NODE    241.00 TO NODE    520.00 =     600.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    520.00 TO NODE    520.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1        3.72     7.37       2.066        2.01
  LONGEST FLOWPATH FROM NODE    241.00 TO NODE    520.00 =     600.00 FEET.

  ** MEMORY BANK #  3 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1        6.74     8.41       1.934        4.11
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    520.00 =    1143.00 FEET.

 **********************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
```

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

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1       9.63       7.37        2.066
      2      10.22       8.41        1.934

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      10.22   Tc(MIN.) =    8.41
  TOTAL AREA(ACRES) =        6.1

****************************************************************************
  FLOW PROCESS FROM NODE    520.00 TO NODE    262.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1569.85  DOWNSTREAM(FEET) =  1568.95
  FLOW LENGTH(FEET) =   180.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  16.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.03
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.22
  PIPE TRAVEL TIME(MIN.) =   0.60    Tc(MIN.) =    9.01
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    262.00 =    1323.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    262.00 TO NODE    262.00 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.) =    9.01
  RAINFALL INTENSITY(INCH/HR) =   1.87
  TOTAL STREAM AREA(ACRES) =     6.12
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.22

****************************************************************************
  FLOW PROCESS FROM NODE    261.00 TO NODE    262.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   478.00
  UPSTREAM ELEVATION(FEET) =   1575.50
  DOWNSTREAM ELEVATION(FEET) =   1569.45
  ELEVATION DIFFERENCE(FEET) =      6.05
  TC = 0.323*[(  478.00**3)/(     6.05)]**.2 =    9.122
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.857
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      2.29
  TOTAL AREA(ACRES) =      1.42   TOTAL RUNOFF(CFS) =      2.29

****************************************************************************
  FLOW PROCESS FROM NODE    262.00 TO NODE    262.00 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.) =    9.12
  RAINFALL INTENSITY(INCH/HR) =   1.86
  TOTAL STREAM AREA(ACRES) =     1.42
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.29
```

```
 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1       10.22     9.01        1.869          6.12
     2        2.29     9.12        1.857          1.42

 ********************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

  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       12.49     9.01       1.869
      2       12.45     9.12       1.857

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      12.49   Tc(MIN.) =    9.01
  TOTAL AREA(ACRES) =        7.5
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    262.00 =    1323.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    262.00 TO NODE    530.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1566.28  DOWNSTREAM(FEET) =  1565.40
  FLOW LENGTH(FEET) =    13.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS  10.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.38
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      12.49
  PIPE TRAVEL TIME(MIN.) =   0.02    Tc(MIN.) =    9.02
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    530.00 =    1336.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    530.00 TO NODE    530.00 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.) =    9.02
  RAINFALL INTENSITY(INCH/HR) =   1.87
  TOTAL STREAM AREA(ACRES) =     7.54
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.49

****************************************************************************
  FLOW PROCESS FROM NODE    281.00 TO NODE    282.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
          ASSUMED INITIAL SUBAREA UNIFORM
          DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   344.00
  UPSTREAM ELEVATION(FEET) =   1571.00
  DOWNSTREAM ELEVATION(FEET) =   1568.18
  ELEVATION DIFFERENCE(FEET) =      2.82
  TC = 0.323*[(  344.00**3)/(     2.82)]**.2 =    8.723
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.899
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      1.98
  TOTAL AREA(ACRES) =      1.20   TOTAL RUNOFF(CFS) =      1.98
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    282.00 TO NODE    530.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1565.51  DOWNSTREAM(FEET) =  1565.40
  FLOW LENGTH(FEET) =    20.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   8.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.54
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.98
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =    8.82
  LONGEST FLOWPATH FROM NODE    281.00 TO NODE    530.00 =     364.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    530.00 TO NODE    530.00 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.) =    8.82
  RAINFALL INTENSITY(INCH/HR) =   1.89
  TOTAL STREAM AREA(ACRES) =     1.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.98

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       12.49     9.02        1.867          7.54
      2        1.98     8.82        1.889          1.20

 **********************************WARNING***********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

  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       14.19     8.82       1.889
      2       14.45     9.02       1.867

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      14.45   Tc(MIN.) =    9.02
  TOTAL AREA(ACRES) =        8.7
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    530.00 =    1336.00 FEET.

+--------------------------------------------------------------------------+
| MITIGATED FLOW FROM TANK-A                                               |
|                                                                          |
|                                                                          |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE    530.00 TO NODE    530.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =  15.32   RAIN INTENSITY(INCH/HOUR) =  1.43
  TOTAL AREA(ACRES) =     8.74   TOTAL RUNOFF(CFS) =      2.67

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

```
 FLOW PROCESS FROM NODE    535.00 TO NODE    540.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1563.70  DOWNSTREAM(FEET) =  1563.44
 FLOW LENGTH(FEET) =    34.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  12.0 INCH PIPE IS   8.9 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   4.27
 ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       2.67
 PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =   15.45
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE    540.00 =    1370.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    540.00 TO NODE    541.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1563.40  DOWNSTREAM(FEET) =   1561.53
 CHANNEL LENGTH THRU SUBAREA(FEET) =   133.00   CHANNEL SLOPE =  0.0141
 CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   0.018
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   0.07

        ==>>WARNING: FLOW IN CHANNEL EXCEEDS CHANNEL
            CAPACITY( NORMAL DEPTH EQUAL TO SPECIFIED MAXIMUM
            ALLOWABLE DEPTH).
            AS AN APPROXIMATION, FLOWDEPTH IS SET AT MAXIMUM
            ALLOWABLE DEPTH AND IS USED FOR TRAVELTIME CALCULATIONS.

 CHANNEL FLOW THRU SUBAREA(CFS) =       2.67
 FLOW VELOCITY(FEET/SEC.) =   4.77   FLOW DEPTH(FEET) =   0.07
 TRAVEL TIME(MIN.) =   0.46   Tc(MIN.) =   15.92
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE    541.00 =    1503.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    541.00 TO NODE    541.00 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.) =   15.92
 RAINFALL INTENSITY(INCH/HR) =   1.41
 TOTAL STREAM AREA(ACRES) =     8.74
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.67

****************************************************************************
 FLOW PROCESS FROM NODE    110.00 TO NODE    541.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   252.00
 UPSTREAM ELEVATION(FEET) =   1566.10
 DOWNSTREAM ELEVATION(FEET) =   1561.53
 ELEVATION DIFFERENCE(FEET) =      4.57
 TC = 0.323*[(  252.00**3)/(     4.57)]**.2 =    6.571
    5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.188
 *USER SPECIFIED(SUBAREA):
 APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8200
 SUBAREA RUNOFF(CFS) =      0.36
 TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.36

****************************************************************************
 FLOW PROCESS FROM NODE    541.00 TO NODE    541.00 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.) =    6.57
  RAINFALL INTENSITY(INCH/HR) =   2.19
  TOTAL STREAM AREA(ACRES) =     0.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.36

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        2.67    15.92        1.405          8.74
      2        0.36     6.57        2.188          0.20

 ********************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

  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        1.46     6.57       2.188
      2        2.90    15.92       1.405

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       2.90   Tc(MIN.) =   15.92
  TOTAL AREA(ACRES) =        8.9
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    541.00 =    1503.00 FEET.

****************************************************************************
  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) =   1561.53  DOWNSTREAM(FEET) =   1561.10
  CHANNEL LENGTH THRU SUBAREA(FEET) =    61.00   CHANNEL SLOPE =  0.0071
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   0.018
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   0.07

         ==>>WARNING: FLOW IN CHANNEL EXCEEDS CHANNEL
             CAPACITY( NORMAL DEPTH EQUAL TO SPECIFIED MAXIMUM
             ALLOWABLE DEPTH).
             AS AN APPROXIMATION, FLOWDEPTH IS SET AT MAXIMUM
             ALLOWABLE DEPTH AND IS USED FOR TRAVELTIME CALCULATIONS.

  CHANNEL FLOW THRU SUBAREA(CFS) =       2.90
  FLOW VELOCITY(FEET/SEC.) =   5.18   FLOW DEPTH(FEET) =   0.07
  TRAVEL TIME(MIN.) =   0.20   Tc(MIN.) =   16.11
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    542.00 =    1564.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    301.00 TO NODE    302.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   176.00
  UPSTREAM ELEVATION(FEET) =   1581.00
  DOWNSTREAM ELEVATION(FEET) =   1580.00
  ELEVATION DIFFERENCE(FEET) =      1.00
  TC = 0.323*[(  176.00**3)/(     1.00)]**.2 =    7.180
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.093
```

```
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      0.85
  TOTAL AREA(ACRES) =      0.46   TOTAL RUNOFF(CFS) =      0.85

****************************************************************************
  FLOW PROCESS FROM NODE    302.00 TO NODE    600.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1578.40  DOWNSTREAM(FEET) =  1574.45
  FLOW LENGTH(FEET) =   187.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   3.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.77
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.85
  PIPE TRAVEL TIME(MIN.) =   0.65    Tc(MIN.) =    7.83
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    600.00 =     363.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    600.00 TO NODE    600.00 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.) =    7.83
  RAINFALL INTENSITY(INCH/HR) =   2.00
  TOTAL STREAM AREA(ACRES) =     0.46
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.85

****************************************************************************
  FLOW PROCESS FROM NODE    311.00 TO NODE    312.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   157.00
  UPSTREAM ELEVATION(FEET) =   1580.80
  DOWNSTREAM ELEVATION(FEET) =   1577.70
  ELEVATION DIFFERENCE(FEET) =      3.10
  TC = 0.323*[(  157.00**3)/(     3.10)]**.2 =    5.346
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.426
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      1.32
  TOTAL AREA(ACRES) =      0.62   TOTAL RUNOFF(CFS) =      1.32

****************************************************************************
  FLOW PROCESS FROM NODE    312.00 TO NODE    600.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1575.70  DOWNSTREAM(FEET) =  1574.45
  FLOW LENGTH(FEET) =    89.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   5.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.56
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.32
  PIPE TRAVEL TIME(MIN.) =   0.33    Tc(MIN.) =    5.67
  LONGEST FLOWPATH FROM NODE    311.00 TO NODE    600.00 =     246.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    600.00 TO NODE    600.00 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.) =    5.67
  RAINFALL INTENSITY(INCH/HR) =   2.36
  TOTAL STREAM AREA(ACRES) =     0.62
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.32

****************************************************************************
  FLOW PROCESS FROM NODE    321.00 TO NODE    322.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   190.00
  UPSTREAM ELEVATION(FEET) =   1578.50
  DOWNSTREAM ELEVATION(FEET) =   1576.10
  ELEVATION DIFFERENCE(FEET) =      2.40
  TC = 0.323*[(  190.00**3)/(     2.40)]**.2 =    6.310
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.233
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      1.12
  TOTAL AREA(ACRES) =      0.57   TOTAL RUNOFF(CFS) =      1.12

****************************************************************************
  FLOW PROCESS FROM NODE    322.00 TO NODE    600.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1576.10  DOWNSTREAM(FEET) =  1574.45
  FLOW LENGTH(FEET) =    21.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   6.0 INCH PIPE IS   3.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.36
  ESTIMATED PIPE DIAMETER(INCH) =   6.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.12
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =    6.35
  LONGEST FLOWPATH FROM NODE    321.00 TO NODE    600.00 =     211.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    600.00 TO NODE    600.00 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.) =    6.35
  RAINFALL INTENSITY(INCH/HR) =   2.23
  TOTAL STREAM AREA(ACRES) =     0.57
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.12

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        0.85     7.83        2.004          0.46
      2        1.32     5.67        2.356          0.62
      3        1.12     6.35        2.226          0.57

 *********************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 *************************************************************************

  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        2.94     5.67       2.356
      2        3.06     6.35       2.226
      3        2.98     7.83       2.004

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       2.94   Tc(MIN.) =    5.67
  TOTAL AREA(ACRES) =        1.7
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    600.00 =     363.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    600.00 TO NODE    605.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1574.45  DOWNSTREAM(FEET) =  1573.65
  FLOW LENGTH(FEET) =   137.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS   8.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.03
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.94
  PIPE TRAVEL TIME(MIN.) =   0.57    Tc(MIN.) =    6.24
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    605.00 =     500.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    605.00 TO NODE    605.00 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.) =    6.24
  RAINFALL INTENSITY(INCH/HR) =   2.25
  TOTAL STREAM AREA(ACRES) =     1.65
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.94

****************************************************************************
  FLOW PROCESS FROM NODE    341.00 TO NODE    342.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   176.00
  UPSTREAM ELEVATION(FEET) =   1581.00
  DOWNSTREAM ELEVATION(FEET) =   1576.80
  ELEVATION DIFFERENCE(FEET) =      4.20
  TC = 0.323*[(  176.00**3)/(     4.20)]**.2 =    5.388
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.417
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      1.34
  TOTAL AREA(ACRES) =      0.63   TOTAL RUNOFF(CFS) =      1.34

****************************************************************************
  FLOW PROCESS FROM NODE    342.00 TO NODE    605.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1575.30  DOWNSTREAM(FEET) =  1573.65
  FLOW LENGTH(FEET) =    45.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   4.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.59
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.34
  PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =    5.50
  LONGEST FLOWPATH FROM NODE    341.00 TO NODE    605.00 =     221.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    605.00 TO NODE    605.00 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.) =    5.50
  RAINFALL INTENSITY(INCH/HR) =   2.39
  TOTAL STREAM AREA(ACRES) =     0.63
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.34

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        2.94     6.24        2.246          1.65
      2        1.34     5.50        2.392          0.63

 **********************************WARNING***********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

  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        3.93     5.50       2.392
      2        4.20     6.24       2.246

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       4.20   Tc(MIN.) =    6.24
  TOTAL AREA(ACRES) =        2.3
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    605.00 =     500.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    605.00 TO NODE    615.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1573.55  DOWNSTREAM(FEET) =  1573.20
  FLOW LENGTH(FEET) =    62.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS  11.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.26
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.20
  PIPE TRAVEL TIME(MIN.) =   0.24    Tc(MIN.) =    6.48
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    615.00 =     562.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    615.00 TO NODE    615.00 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.) =    6.48
  RAINFALL INTENSITY(INCH/HR) =   2.20
  TOTAL STREAM AREA(ACRES) =     2.28
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.20

****************************************************************************
  FLOW PROCESS FROM NODE    331.00 TO NODE    332.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
```

```
==========================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   185.00
  UPSTREAM ELEVATION(FEET) =   1576.30
  DOWNSTREAM ELEVATION(FEET) =   1573.90
  ELEVATION DIFFERENCE(FEET) =      2.40
  TC = 0.323*[(  185.00**3)/(     2.40)]**.2 =    6.210
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.251
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8900
  SUBAREA RUNOFF(CFS) =      1.06
  TOTAL AREA(ACRES) =      0.53   TOTAL RUNOFF(CFS) =      1.06

**************************************************************************
  FLOW PROCESS FROM NODE    332.00 TO NODE    615.00 IS CODE =  31
--------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1573.90  DOWNSTREAM(FEET) =  1573.20
  FLOW LENGTH(FEET) =    15.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   6.0 INCH PIPE IS   4.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.65
  ESTIMATED PIPE DIAMETER(INCH) =   6.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.06
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =    6.25
  LONGEST FLOWPATH FROM NODE    331.00 TO NODE    615.00 =     200.00 FEET.

**************************************************************************
  FLOW PROCESS FROM NODE    615.00 TO NODE    615.00 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.) =    6.25
  RAINFALL INTENSITY(INCH/HR) =   2.24
  TOTAL STREAM AREA(ACRES) =     0.53
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.06

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        4.20     6.48        2.203          2.28
      2        1.06     6.25        2.244          0.53

 **********************************WARNING**********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ***************************************************************************

  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        5.11     6.25       2.244
      2        5.24     6.48       2.203

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       5.24   Tc(MIN.) =    6.48
  TOTAL AREA(ACRES) =        2.8
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    615.00 =     562.00 FEET.

**************************************************************************
  FLOW PROCESS FROM NODE    615.00 TO NODE    620.00 IS CODE =  31
```

```
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1573.10  DOWNSTREAM(FEET) =  1572.30
  FLOW LENGTH(FEET) =   153.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.45
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.24
  PIPE TRAVEL TIME(MIN.) =   0.57    Tc(MIN.) =    7.05
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    620.00 =     715.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    620.00 TO NODE    620.00 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.) =    7.05
  RAINFALL INTENSITY(INCH/HR) =   2.11
  TOTAL STREAM AREA(ACRES) =     2.81
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.24

****************************************************************************
  FLOW PROCESS FROM NODE    361.00 TO NODE    362.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   242.00
  UPSTREAM ELEVATION(FEET) =   1577.00
  DOWNSTREAM ELEVATION(FEET) =   1572.55
  ELEVATION DIFFERENCE(FEET) =      4.45
  TC = 0.323*[(  242.00**3)/(     4.45)]**.2 =    6.448
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.209
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      1.69
  TOTAL AREA(ACRES) =      0.88   TOTAL RUNOFF(CFS) =      1.69

****************************************************************************
  FLOW PROCESS FROM NODE    362.00 TO NODE    620.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1572.55  DOWNSTREAM(FEET) =  1572.30
  FLOW LENGTH(FEET) =    44.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   7.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.46
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.69
  PIPE TRAVEL TIME(MIN.) =   0.21    Tc(MIN.) =    6.66
  LONGEST FLOWPATH FROM NODE    361.00 TO NODE    620.00 =     286.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    620.00 TO NODE    620.00 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.) =    6.66
  RAINFALL INTENSITY(INCH/HR) =   2.17
  TOTAL STREAM AREA(ACRES) =     0.88
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.69
```

```
 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        5.24     7.05        2.112          2.81
     2        1.69     6.66        2.174          0.88

 ********************************WARNING*********************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

 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        6.64     6.66       2.174
     2        6.88     7.05       2.112

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       6.88   Tc(MIN.) =    7.05
 TOTAL AREA(ACRES) =        3.7
 LONGEST FLOWPATH FROM NODE    301.00 TO NODE    620.00 =     715.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    620.00 TO NODE    352.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1572.20  DOWNSTREAM(FEET) =  1572.01
 FLOW LENGTH(FEET) =    36.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  14.0 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   4.66
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       6.88
 PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =    7.18
 LONGEST FLOWPATH FROM NODE    301.00 TO NODE    352.00 =     751.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    352.00 TO NODE    352.00 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.) =    7.18
 RAINFALL INTENSITY(INCH/HR) =   2.09
 TOTAL STREAM AREA(ACRES) =     3.69
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.88

****************************************************************************
 FLOW PROCESS FROM NODE    351.00 TO NODE    352.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   158.00
 UPSTREAM ELEVATION(FEET) =   1575.50
 DOWNSTREAM ELEVATION(FEET) =   1572.01
 ELEVATION DIFFERENCE(FEET) =      3.49
 TC = 0.323*[(  158.00**3)/(     3.49)]**.2 =    5.241
    5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.450
 *USER SPECIFIED(SUBAREA):
 APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
 SUBAREA RUNOFF(CFS) =      0.88
```

```
  TOTAL AREA(ACRES) =      0.41   TOTAL RUNOFF(CFS) =      0.88

****************************************************************************
  FLOW PROCESS FROM NODE    352.00 TO NODE    352.00 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.) =    5.24
  RAINFALL INTENSITY(INCH/HR) =   2.45
  TOTAL STREAM AREA(ACRES) =     0.41
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.88

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        6.88     7.18        2.093          3.69
      2        0.88     5.24        2.450          0.41

 **********************************WARNING***********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

  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        5.90     5.24       2.450
      2        7.64     7.18       2.093

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       7.64   Tc(MIN.) =    7.18
  TOTAL AREA(ACRES) =        4.1
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    352.00 =     751.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    352.00 TO NODE    625.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1569.34  DOWNSTREAM(FEET) =  1569.00
  FLOW LENGTH(FEET) =    63.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  12.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.96
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.64
  PIPE TRAVEL TIME(MIN.) =   0.21    Tc(MIN.) =    7.40
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    625.00 =     814.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    625.00 TO NODE    625.00 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.) =    7.40
  RAINFALL INTENSITY(INCH/HR) =   2.06
  TOTAL STREAM AREA(ACRES) =     4.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.64

****************************************************************************
  FLOW PROCESS FROM NODE    371.00 TO NODE    373.00 IS CODE =  21
----------------------------------------------------------------------------
```

```
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
================================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   301.00
  UPSTREAM ELEVATION(FEET) =   1575.20
  DOWNSTREAM ELEVATION(FEET) =   1572.50
  ELEVATION DIFFERENCE(FEET) =      2.70
  TC = 0.323*[(  301.00**3)/(     2.70)]**.2 =    8.122
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.968
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      1.02
  TOTAL AREA(ACRES) =      0.59   TOTAL RUNOFF(CFS) =      1.02

********************************************************************************
  FLOW PROCESS FROM NODE    373.00 TO NODE    625.00 IS CODE =  31
--------------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1572.50  DOWNSTREAM(FEET) =  1569.00
  FLOW LENGTH(FEET) =    31.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   6.0 INCH PIPE IS   3.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.41
  ESTIMATED PIPE DIAMETER(INCH) =   6.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.02
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =    8.18
  LONGEST FLOWPATH FROM NODE    371.00 TO NODE    625.00 =     332.00 FEET.

********************************************************************************
  FLOW PROCESS FROM NODE    625.00 TO NODE    625.00 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.) =    8.18
  RAINFALL INTENSITY(INCH/HR) =   1.96
  TOTAL STREAM AREA(ACRES) =     0.59
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.02

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        7.64     7.40        2.063          4.10
      2        1.02     8.18        1.961          0.59

 **********************************WARNING***********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

  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        8.56     7.40       2.063
      2        8.28     8.18       1.961

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       8.56   Tc(MIN.) =    7.40
  TOTAL AREA(ACRES) =        4.7
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    625.00 =     814.00 FEET.

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

```
  FLOW PROCESS FROM NODE    625.00 TO NODE    630.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1568.90  DOWNSTREAM(FEET) =  1567.75
  FLOW LENGTH(FEET) =   121.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.21
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       8.56
  PIPE TRAVEL TIME(MIN.) =   0.32    Tc(MIN.) =    7.72
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    630.00 =     935.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    630.00 TO NODE    630.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    381.00 TO NODE    382.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   189.00
  UPSTREAM ELEVATION(FEET) =   1574.70
  DOWNSTREAM ELEVATION(FEET) =   1570.85
  ELEVATION DIFFERENCE(FEET) =      3.85
  TC = 0.323*[(  189.00**3)/(     3.85)]**.2 =    5.722
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.345
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8600
  SUBAREA RUNOFF(CFS) =      0.73
  TOTAL AREA(ACRES) =      0.36   TOTAL RUNOFF(CFS) =      0.73

****************************************************************************
  FLOW PROCESS FROM NODE    382.00 TO NODE    392.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1570.85  DOWNSTREAM(FEET) =  1570.55
  FLOW LENGTH(FEET) =    53.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   5.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   2.80
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.73
  PIPE TRAVEL TIME(MIN.) =   0.32    Tc(MIN.) =    6.04
  LONGEST FLOWPATH FROM NODE    381.00 TO NODE    392.00 =     242.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    392.00 TO NODE    392.00 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.) =    6.04
  RAINFALL INTENSITY(INCH/HR) =   2.28
  TOTAL STREAM AREA(ACRES) =     0.36
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.73

****************************************************************************
  FLOW PROCESS FROM NODE    391.00 TO NODE    392.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
```

```
        ASSUMED INITIAL SUBAREA UNIFORM
        DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   337.00
  UPSTREAM ELEVATION(FEET) =   1574.60
  DOWNSTREAM ELEVATION(FEET) =   1571.30
  ELEVATION DIFFERENCE(FEET) =      3.30
  TC = 0.323*[(  337.00**3)/(     3.30)]**.2 =    8.350
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.941
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8900
  SUBAREA RUNOFF(CFS) =      0.98
  TOTAL AREA(ACRES) =      0.57   TOTAL RUNOFF(CFS) =      0.98

****************************************************************************
  FLOW PROCESS FROM NODE    392.00 TO NODE    392.00 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.) =    8.35
  RAINFALL INTENSITY(INCH/HR) =   1.94
  TOTAL STREAM AREA(ACRES) =     0.57
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.98

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        0.73     6.04        2.283          0.36
      2        0.98     8.35        1.941          0.57

 **********************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

  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        1.44     6.04       2.283
      2        1.60     8.35       1.941

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       1.60   Tc(MIN.) =    8.35
  TOTAL AREA(ACRES) =        0.9
  LONGEST FLOWPATH FROM NODE    391.00 TO NODE    392.00 =     337.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    392.00 TO NODE    630.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1567.88  DOWNSTREAM(FEET) =  1567.75
  FLOW LENGTH(FEET) =    14.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   5.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.13
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.60
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =    8.41
  LONGEST FLOWPATH FROM NODE    391.00 TO NODE    630.00 =     351.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    630.00 TO NODE    630.00 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        1.60     8.41       1.934        0.93
  LONGEST FLOWPATH FROM NODE    391.00 TO NODE    630.00 =     351.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1        8.56     7.72       2.019        4.69
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    630.00 =     935.00 FEET.

 ****************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ********************************************************************

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1      10.03       7.72        2.019
      2       9.81       8.41        1.934

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      10.03   Tc(MIN.) =    7.72
  TOTAL AREA(ACRES) =        5.6

****************************************************************************
  FLOW PROCESS FROM NODE    630.00 TO NODE    640.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1567.65  DOWNSTREAM(FEET) =  1563.55
  FLOW LENGTH(FEET) =   288.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.54
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.03
  PIPE TRAVEL TIME(MIN.) =   0.64    Tc(MIN.) =    8.36
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    640.00 =    1223.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    640.00 TO NODE    640.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    401.00 TO NODE    402.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
          ASSUMED INITIAL SUBAREA UNIFORM
          DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   296.00
  UPSTREAM ELEVATION(FEET) =   1573.00
  DOWNSTREAM ELEVATION(FEET) =   1570.45
  ELEVATION DIFFERENCE(FEET) =      2.55
  TC = 0.323*[(  296.00**3)/(     2.55)]**.2 =    8.133
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.967
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      2.28
  TOTAL AREA(ACRES) =      1.33   TOTAL RUNOFF(CFS) =      2.28
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    402.00 TO NODE    635.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1568.45  DOWNSTREAM(FEET) =  1567.85
  FLOW LENGTH(FEET) =    86.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   8.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.99
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.28
  PIPE TRAVEL TIME(MIN.) =   0.36    Tc(MIN.) =    8.49
  LONGEST FLOWPATH FROM NODE    401.00 TO NODE    635.00 =     382.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    635.00 TO NODE    635.00 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.) =    8.49
  RAINFALL INTENSITY(INCH/HR) =   1.92
  TOTAL STREAM AREA(ACRES) =     1.33
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.28

****************************************************************************
  FLOW PROCESS FROM NODE    411.00 TO NODE    412.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   288.00
  UPSTREAM ELEVATION(FEET) =   1572.40
  DOWNSTREAM ELEVATION(FEET) =   1570.65
  ELEVATION DIFFERENCE(FEET) =      1.75
  TC = 0.323*[(  288.00**3)/(     1.75)]**.2 =    8.626
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.910
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8500
  SUBAREA RUNOFF(CFS) =      0.73
  TOTAL AREA(ACRES) =      0.45   TOTAL RUNOFF(CFS) =      0.73

****************************************************************************
  FLOW PROCESS FROM NODE    412.00 TO NODE    635.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1568.65  DOWNSTREAM(FEET) =  1567.75
  FLOW LENGTH(FEET) =    19.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   6.0 INCH PIPE IS   3.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.23
  ESTIMATED PIPE DIAMETER(INCH) =   6.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.73
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =    8.68
  LONGEST FLOWPATH FROM NODE    411.00 TO NODE    635.00 =     307.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    635.00 TO NODE    635.00 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.) =    8.68
  RAINFALL INTENSITY(INCH/HR) =   1.90
```

```
 TOTAL STREAM AREA(ACRES) =     0.45
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.73

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        2.28     8.49        1.925          1.33
     2        0.73     8.68        1.904          0.45

 ***********************************WARNING************************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ******************************************************************************

 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        2.99     8.49       1.925
     2        2.98     8.68       1.904

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       2.99   Tc(MIN.) =    8.49
 TOTAL AREA(ACRES) =        1.8
 LONGEST FLOWPATH FROM NODE    401.00 TO NODE    635.00 =     382.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    635.00 TO NODE    422.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1567.75  DOWNSTREAM(FEET) =  1567.30
 FLOW LENGTH(FEET) =    89.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  15.0 INCH PIPE IS   9.1 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   3.83
 ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       2.99
 PIPE TRAVEL TIME(MIN.) =   0.39    Tc(MIN.) =    8.88
 LONGEST FLOWPATH FROM NODE    401.00 TO NODE    422.00 =     471.00 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.) =    8.88
 RAINFALL INTENSITY(INCH/HR) =   1.88
 TOTAL STREAM AREA(ACRES) =     1.78
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.99

****************************************************************************
 FLOW PROCESS FROM NODE    421.00 TO NODE    422.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
          ASSUMED INITIAL SUBAREA UNIFORM
          DEVELOPMENT IS APARTMENT
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   285.00
 UPSTREAM ELEVATION(FEET) =   1572.60
 DOWNSTREAM ELEVATION(FEET) =   1570.00
 ELEVATION DIFFERENCE(FEET) =      2.60
 TC = 0.323*[(  285.00**3)/(     2.60)]**.2 =    7.920
    5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.993
 *USER SPECIFIED(SUBAREA):
```

```
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8400
  SUBAREA RUNOFF(CFS) =      1.04
  TOTAL AREA(ACRES) =      0.62   TOTAL RUNOFF(CFS) =      1.04

****************************************************************************
  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.) =    7.92
  RAINFALL INTENSITY(INCH/HR) =   1.99
  TOTAL STREAM AREA(ACRES) =     0.62
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.04

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        2.99     8.88        1.882          1.78
      2        1.04     7.92        1.993          0.62

 **********************************WARNING***********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

  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        3.71     7.92       1.993
      2        3.97     8.88       1.882

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       3.97   Tc(MIN.) =    8.88
  TOTAL AREA(ACRES) =        2.4
  LONGEST FLOWPATH FROM NODE    401.00 TO NODE    422.00 =     471.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    422.00 TO NODE    640.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1563.63  DOWNSTREAM(FEET) =  1563.55
  FLOW LENGTH(FEET) =    18.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS  11.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.79
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.97
  PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =    8.96
  LONGEST FLOWPATH FROM NODE    401.00 TO NODE    640.00 =     489.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    640.00 TO NODE    640.00 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.) =    8.96
  RAINFALL INTENSITY(INCH/HR) =   1.87
  TOTAL STREAM AREA(ACRES) =     2.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.97

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

```
 FLOW PROCESS FROM NODE    431.00 TO NODE    432.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
        ASSUMED INITIAL SUBAREA UNIFORM
        DEVELOPMENT IS APARTMENT
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   265.00
 UPSTREAM ELEVATION(FEET) =   1570.30
 DOWNSTREAM ELEVATION(FEET) =   1567.95
 ELEVATION DIFFERENCE(FEET) =      2.35
 TC = 0.323*[(  265.00**3)/(     2.35)]**.2 =    7.736
   5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.017
 *USER SPECIFIED(SUBAREA):
 APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8600
 SUBAREA RUNOFF(CFS) =      0.73
 TOTAL AREA(ACRES) =      0.42   TOTAL RUNOFF(CFS) =      0.73

****************************************************************************
 FLOW PROCESS FROM NODE    432.00 TO NODE    640.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1565.37  DOWNSTREAM(FEET) =  1564.40
 FLOW LENGTH(FEET) =    19.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN   6.0 INCH PIPE IS   3.4 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   6.39
 ESTIMATED PIPE DIAMETER(INCH) =   6.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       0.73
 PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =    7.79
 LONGEST FLOWPATH FROM NODE    431.00 TO NODE    640.00 =     284.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    640.00 TO NODE    640.00 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.) =    7.79
 RAINFALL INTENSITY(INCH/HR) =   2.01
 TOTAL STREAM AREA(ACRES) =     0.42
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.73

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        3.97     8.96        1.874          2.40
     2        0.73     7.79        2.010          0.42

 ********************************WARNING*********************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

 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        4.18     7.79       2.010
     2        4.65     8.96       1.874

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       4.65   Tc(MIN.) =    8.96
 TOTAL AREA(ACRES) =        2.8
 LONGEST FLOWPATH FROM NODE    401.00 TO NODE    640.00 =     489.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    640.00 TO NODE    640.00 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        4.65     8.96       1.874        2.82
  LONGEST FLOWPATH FROM NODE    401.00 TO NODE    640.00 =     489.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)   (ACRE)
      1       10.03     8.36       1.940        5.62
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    640.00 =    1223.00 FEET.

 ****************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ********************************************************************

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1      14.37       8.36       1.940
      2      14.34       8.96       1.874

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      14.37   Tc(MIN.) =    8.36
  TOTAL AREA(ACRES) =        8.4

+--------------------------------------------------------------------------+
| MITIGATED FLOW FROM TANK-B                                               |
|                                                                          |
|                                                                          |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE    640.00 TO NODE    640.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =  12.96   RAIN INTENSITY(INCH/HOUR) =  1.56
  TOTAL AREA(ACRES) =     8.44   TOTAL RUNOFF(CFS) =      4.29

****************************************************************************
  FLOW PROCESS FROM NODE    640.00 TO NODE    642.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1560.20  DOWNSTREAM(FEET) =  1560.16
  FLOW LENGTH(FEET) =     3.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS   8.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.03
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.29
  PIPE TRAVEL TIME(MIN.) =   0.01    Tc(MIN.) =   12.97
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    642.00 =    1226.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    642.00 TO NODE    642.00 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.) =   12.97
  RAINFALL INTENSITY(INCH/HR) =   1.56
  TOTAL STREAM AREA(ACRES) =     8.44
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.29

****************************************************************************
  FLOW PROCESS FROM NODE    291.00 TO NODE    292.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   146.00
  UPSTREAM ELEVATION(FEET) =   1572.50
  DOWNSTREAM ELEVATION(FEET) =   1565.20
  ELEVATION DIFFERENCE(FEET) =      7.30
  TC = 0.323*[(  146.00**3)/(     7.30)]**.2 =    4.313
  COMPUTED TIME OF CONCENTRATION INCREASED TO 5 MIN.
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.509
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8500
  SUBAREA RUNOFF(CFS) =      0.66
  TOTAL AREA(ACRES) =      0.31   TOTAL RUNOFF(CFS) =      0.66

****************************************************************************
  FLOW PROCESS FROM NODE    292.00 TO NODE    642.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1561.66  DOWNSTREAM(FEET) =  1560.16
  FLOW LENGTH(FEET) =   297.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   5.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   2.63
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.66
  PIPE TRAVEL TIME(MIN.) =   1.88    Tc(MIN.) =    6.88
  LONGEST FLOWPATH FROM NODE    291.00 TO NODE    642.00 =     443.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    642.00 TO NODE    642.00 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) =   2.14
  TOTAL STREAM AREA(ACRES) =     0.31
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.66

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        4.29    12.97        1.557          8.44
      2        0.66     6.88        2.138          0.31

 **********************************WARNING**********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ***************************************************************************

  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        2.94      6.88       2.138
      2        4.77     12.97       1.557

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       4.77   Tc(MIN.) =   12.97
  TOTAL AREA(ACRES) =        8.8
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    642.00 =    1226.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    642.00 TO NODE    645.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1560.16  DOWNSTREAM(FEET) =  1559.75
  FLOW LENGTH(FEET) =    70.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.55
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.77
  PIPE TRAVEL TIME(MIN.) =   0.26    Tc(MIN.) =   13.22
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    645.00 =    1296.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    102.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   655.00
  UPSTREAM ELEVATION(FEET) =   1586.50
  DOWNSTREAM ELEVATION(FEET) =   1581.24
  ELEVATION DIFFERENCE(FEET) =      5.26
  TC = 0.323*[(  655.00**3)/(     5.26)]**.2 =   11.333
     5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.666
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8900
  SUBAREA RUNOFF(CFS) =      1.45
  TOTAL AREA(ACRES) =      0.98   TOTAL RUNOFF(CFS) =      1.45

****************************************************************************
  FLOW PROCESS FROM NODE    102.00 TO NODE    103.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1577.74  DOWNSTREAM(FEET) =  1571.94
  FLOW LENGTH(FEET) =    66.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   6.0 INCH PIPE IS   4.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.14
  ESTIMATED PIPE DIAMETER(INCH) =   6.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.45
  PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =   11.45
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    103.00 =     721.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    110.00 TO NODE    111.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   410.00
  UPSTREAM ELEVATION(FEET) =   1566.10
  DOWNSTREAM ELEVATION(FEET) =   1562.10
  ELEVATION DIFFERENCE(FEET) =      4.00
  TC = 0.323*[(  410.00**3)/(     4.00)]**.2 =    9.038
```

```
    5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.866
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      0.50
  TOTAL AREA(ACRES) =      0.31   TOTAL RUNOFF(CFS) =      0.50

****************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    106.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1125.00
  UPSTREAM ELEVATION(FEET) =   1586.50
  DOWNSTREAM ELEVATION(FEET) =   1564.87
  ELEVATION DIFFERENCE(FEET) =     21.63
  TC = 0.323*[( 1125.00**3)/(    21.63)]**.2 =   11.816
    5 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.631
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      1.25
  TOTAL AREA(ACRES) =      0.87   TOTAL RUNOFF(CFS) =      1.25

****************************************************************************
  FLOW PROCESS FROM NODE    106.00 TO NODE    107.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1562.20  DOWNSTREAM(FEET) =  1560.00
  FLOW LENGTH(FEET) =   232.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   6.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.86
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.25
  PIPE TRAVEL TIME(MIN.) =   1.00    Tc(MIN.) =   12.82
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    107.00 =    1357.00 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        0.9  TC(MIN.) =     12.82
  PEAK FLOW RATE(CFS)   =       1.25
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

POST-DEVELOPMENT AES

DETAINED

(10-YEAR STORM EVENT)

```
************************************************************************
          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
        RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                    (RCFC&WCD)  1978 HYDROLOGY MANUAL
         (c) Copyright 1982-2016 Advanced Engineering Software (aes)
                    (Rational Tabling Version 23.0)
                Release Date: 07/01/2016  License ID 1452

                         Analysis prepared by:
```

```
 ************************** DESCRIPTION OF STUDY **************************
* 3816 ROCAS GRANDE II                                                   *
* MITIGATED CONDITION                                                    *
* 10-YR STORM                                                            *
 ************************************************************************

  FILE NAME: 3816PD10.DAT
  TIME/DATE OF STUDY: 12:34 02/14/2025
------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =   6.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  10-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  2.010
  10-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  0.820
  100-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  2.940
  100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.200
  SLOPE OF 10-YEAR INTENSITY-DURATION CURVE =  0.5003939
  SLOPE OF 100-YEAR INTENSITY-DURATION CURVE =  0.5001161
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =   10.00   1-HOUR INTENSITY(INCH/HOUR) =   0.828
  SLOPE OF INTENSITY DURATION CURVE = 0.5004
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: COMPUTE CONFLUENCE VALUES ACCORDING TO RCFC&WCD HYDROLOGY MANUAL
        AND IGNORE OTHER CONFLUENCE COMBINATIONS FOR DOWNSTREAM ANALYSES
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   22.0     14.0    0.020/0.020/0.018   0.50    2.00 0.0312 0.167 0.0150
  2   46.0     38.0    0.020/0.020/0.020   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    201.00 TO NODE    202.00 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
========================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   341.00
  UPSTREAM ELEVATION(FEET) =   1582.50
  DOWNSTREAM ELEVATION(FEET) =   1579.60
  ELEVATION DIFFERENCE(FEET) =      2.90
  TC = 0.323*[(  341.00**3)/(     2.90)]**.2 =    8.629
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.186
```

```
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      1.20
  TOTAL AREA(ACRES) =      0.63   TOTAL RUNOFF(CFS) =      1.20

****************************************************************************
  FLOW PROCESS FROM NODE    202.00 TO NODE    500.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1579.60  DOWNSTREAM(FEET) =  1574.55
  FLOW LENGTH(FEET) =   122.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   3.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.70
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.20
  PIPE TRAVEL TIME(MIN.) =   0.30    Tc(MIN.) =    8.93
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    500.00 =     463.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    500.00 TO NODE    500.00 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.) =    8.93
  RAINFALL INTENSITY(INCH/HR) =   2.15
  TOTAL STREAM AREA(ACRES) =     0.63
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.20

****************************************************************************
  FLOW PROCESS FROM NODE    211.00 TO NODE    212.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   154.00
  UPSTREAM ELEVATION(FEET) =   1580.40
  DOWNSTREAM ELEVATION(FEET) =   1577.65
  ELEVATION DIFFERENCE(FEET) =      2.75
  TC = 0.323*[(  154.00**3)/(     2.75)]**.2 =    5.413
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.760
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8900
  SUBAREA RUNOFF(CFS) =      2.95
  TOTAL AREA(ACRES) =      1.20   TOTAL RUNOFF(CFS) =      2.95

****************************************************************************
  FLOW PROCESS FROM NODE    212.00 TO NODE    500.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1575.65  DOWNSTREAM(FEET) =  1574.55
  FLOW LENGTH(FEET) =   165.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS   8.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.25
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.95
  PIPE TRAVEL TIME(MIN.) =   0.65    Tc(MIN.) =    6.06
  LONGEST FLOWPATH FROM NODE    211.00 TO NODE    500.00 =     319.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    500.00 TO NODE    500.00 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.) =    6.06
  RAINFALL INTENSITY(INCH/HR) =   2.61
  TOTAL STREAM AREA(ACRES) =     1.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.95

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        1.20     8.93        2.148          0.63
      2        2.95     6.06        2.608          1.20

 ********************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

  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        3.76     6.06       2.608
      2        3.63     8.93       2.148

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       3.76   Tc(MIN.) =    6.06
  TOTAL AREA(ACRES) =        1.8
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    500.00 =     463.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    500.00 TO NODE    505.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1574.45  DOWNSTREAM(FEET) =  1573.90
  FLOW LENGTH(FEET) =   106.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS  10.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.04
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.76
  PIPE TRAVEL TIME(MIN.) =   0.44    Tc(MIN.) =    6.50
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    505.00 =     569.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    505.00 TO NODE    505.00 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.) =    6.50
  RAINFALL INTENSITY(INCH/HR) =   2.52
  TOTAL STREAM AREA(ACRES) =     1.83
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.76

****************************************************************************
  FLOW PROCESS FROM NODE    221.00 TO NODE    222.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
          ASSUMED INITIAL SUBAREA UNIFORM
          DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   328.00
  UPSTREAM ELEVATION(FEET) =   1577.80
```

```
  DOWNSTREAM ELEVATION(FEET) =   1574.90
  ELEVATION DIFFERENCE(FEET) =      2.90
  TC = 0.323*[(  328.00**3)/(     2.90)]**.2 =    8.430
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.211
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      1.09
  TOTAL AREA(ACRES) =      0.56   TOTAL RUNOFF(CFS) =      1.09

****************************************************************************
  FLOW PROCESS FROM NODE    222.00 TO NODE    505.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1574.90  DOWNSTREAM(FEET) =  1573.90
  FLOW LENGTH(FEET) =    44.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   4.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.23
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.09
  PIPE TRAVEL TIME(MIN.) =   0.14    Tc(MIN.) =    8.57
  LONGEST FLOWPATH FROM NODE    221.00 TO NODE    505.00 =     372.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    505.00 TO NODE    505.00 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.) =    8.57
  RAINFALL INTENSITY(INCH/HR) =   2.19
  TOTAL STREAM AREA(ACRES) =     0.56
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.09

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        3.76     6.50        2.519          1.83
      2        1.09     8.57        2.193          0.56

 **********************************WARNING**********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ***************************************************************************

  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        4.59     6.50       2.519
      2        4.36     8.57       2.193

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       4.59   Tc(MIN.) =    6.50
  TOTAL AREA(ACRES) =        2.4
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    505.00 =     569.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    505.00 TO NODE    510.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1573.80  DOWNSTREAM(FEET) =  1572.85
  FLOW LENGTH(FEET) =   159.00   MANNING'S N =  0.013
```

```
  DEPTH OF FLOW IN  15.0 INCH PIPE IS  11.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.40
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.59
  PIPE TRAVEL TIME(MIN.) =   0.60    Tc(MIN.) =    7.10
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    510.00 =     728.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    510.00 TO NODE    510.00 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.) =    7.10
  RAINFALL INTENSITY(INCH/HR) =   2.41
  TOTAL STREAM AREA(ACRES) =     2.39
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.59

****************************************************************************
  FLOW PROCESS FROM NODE    231.00 TO NODE    233.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
          ASSUMED INITIAL SUBAREA UNIFORM
          DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   327.00
  UPSTREAM ELEVATION(FEET) =   1577.00
  DOWNSTREAM ELEVATION(FEET) =   1573.75
  ELEVATION DIFFERENCE(FEET) =      3.25
  TC = 0.323*[(  327.00**3)/(     3.25)]**.2 =    8.225
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.239
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8900
  SUBAREA RUNOFF(CFS) =      2.41
  TOTAL AREA(ACRES) =      1.21   TOTAL RUNOFF(CFS) =      2.41

****************************************************************************
  FLOW PROCESS FROM NODE    233.00 TO NODE    510.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1573.75  DOWNSTREAM(FEET) =  1572.85
  FLOW LENGTH(FEET) =    44.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   6.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.14
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.41
  PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =    8.34
  LONGEST FLOWPATH FROM NODE    231.00 TO NODE    510.00 =     371.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    510.00 TO NODE    510.00 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.) =    8.34
  RAINFALL INTENSITY(INCH/HR) =   2.22
  TOTAL STREAM AREA(ACRES) =     1.21
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.41

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        4.59     7.10        2.410          2.39
      2        2.41     8.34        2.223          1.21
```

```
 ********************************WARNING***********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 **************************************************************************

  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        6.64     7.10       2.410
      2        6.64     8.34       2.223

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       6.64   Tc(MIN.) =    7.10
  TOTAL AREA(ACRES) =        3.6
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    510.00 =     728.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    510.00 TO NODE    515.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1572.75  DOWNSTREAM(FEET) =  1572.25
  FLOW LENGTH(FEET) =    92.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.71
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.64
  PIPE TRAVEL TIME(MIN.) =   0.33    Tc(MIN.) =    7.43
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    515.00 =     820.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    515.00 TO NODE    515.00 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.) =    7.43
  RAINFALL INTENSITY(INCH/HR) =   2.36
  TOTAL STREAM AREA(ACRES) =     3.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.64

****************************************************************************
  FLOW PROCESS FROM NODE    251.00 TO NODE    252.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
          ASSUMED INITIAL SUBAREA UNIFORM
          DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   115.00
  UPSTREAM ELEVATION(FEET) =   1575.70
  DOWNSTREAM ELEVATION(FEET) =   1573.95
  ELEVATION DIFFERENCE(FEET) =      1.75
  TC = 0.323*[(  115.00**3)/(     1.75)]**.2 =    4.973
  COMPUTED TIME OF CONCENTRATION INCREASED TO 5 MIN.
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.872
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      1.27
  TOTAL AREA(ACRES) =      0.51   TOTAL RUNOFF(CFS) =      1.27

****************************************************************************
  FLOW PROCESS FROM NODE    252.00 TO NODE    515.00 IS CODE =  31
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1573.95  DOWNSTREAM(FEET) =  1572.25
  FLOW LENGTH(FEET) =    41.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   4.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.83
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.27
  PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =    5.10
  LONGEST FLOWPATH FROM NODE    251.00 TO NODE    515.00 =     156.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    515.00 TO NODE    515.00 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.) =    5.10
  RAINFALL INTENSITY(INCH/HR) =   2.84
  TOTAL STREAM AREA(ACRES) =     0.51
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.27

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        6.64     7.43        2.356          3.60
      2        1.27     5.10        2.843          0.51

 **********************************WARNING***********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

  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        5.83     5.10       2.843
      2        7.69     7.43       2.356

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       7.69   Tc(MIN.) =    7.43
  TOTAL AREA(ACRES) =        4.1
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    515.00 =     820.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    515.00 TO NODE    520.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1572.15  DOWNSTREAM(FEET) =  1569.15
  FLOW LENGTH(FEET) =   323.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.04
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.69
  PIPE TRAVEL TIME(MIN.) =   0.89    Tc(MIN.) =    8.32
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    520.00 =    1143.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    520.00 TO NODE    520.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 3 <<<<<
============================================================================
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    271.00 TO NODE    272.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   246.00
  UPSTREAM ELEVATION(FEET) =   1573.50
  DOWNSTREAM ELEVATION(FEET) =   1569.85
  ELEVATION DIFFERENCE(FEET) =      3.65
  TC = 0.323*[(  246.00**3)/(     3.65)]**.2 =    6.775
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.467
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      3.24
  TOTAL AREA(ACRES) =      1.51   TOTAL RUNOFF(CFS) =      3.24

****************************************************************************
  FLOW PROCESS FROM NODE    272.00 TO NODE    272.00 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.) =    6.77
  RAINFALL INTENSITY(INCH/HR) =   2.47
  TOTAL STREAM AREA(ACRES) =     1.51
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.24

****************************************************************************
  FLOW PROCESS FROM NODE    241.00 TO NODE    242.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   169.00
  UPSTREAM ELEVATION(FEET) =   1575.80
  DOWNSTREAM ELEVATION(FEET) =   1573.30
  ELEVATION DIFFERENCE(FEET) =      2.50
  TC = 0.323*[(  169.00**3)/(     2.50)]**.2 =    5.834
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.659
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8500
  SUBAREA RUNOFF(CFS) =      1.13
  TOTAL AREA(ACRES) =      0.50   TOTAL RUNOFF(CFS) =      1.13

****************************************************************************
  FLOW PROCESS FROM NODE    242.00 TO NODE    272.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1571.30  DOWNSTREAM(FEET) =  1569.85
  FLOW LENGTH(FEET) =   290.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   5.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.00
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.13
  PIPE TRAVEL TIME(MIN.) =   1.61    Tc(MIN.) =    7.45
  LONGEST FLOWPATH FROM NODE    241.00 TO NODE    272.00 =     459.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    272.00 TO NODE    272.00 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.) =    7.45
  RAINFALL INTENSITY(INCH/HR) =   2.35
  TOTAL STREAM AREA(ACRES) =     0.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.13

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        3.24     6.77        2.467          1.51
      2        1.13     7.45        2.353          0.50

 **********************************WARNING**********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ***************************************************************************

  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        4.27     6.77       2.467
      2        4.22     7.45       2.353

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       4.27   Tc(MIN.) =    6.77
  TOTAL AREA(ACRES) =        2.0
  LONGEST FLOWPATH FROM NODE    241.00 TO NODE    272.00 =     459.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    272.00 TO NODE    520.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1569.85  DOWNSTREAM(FEET) =  1569.15
  FLOW LENGTH(FEET) =   141.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS  12.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.01
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.27
  PIPE TRAVEL TIME(MIN.) =   0.59    Tc(MIN.) =    7.36
  LONGEST FLOWPATH FROM NODE    241.00 TO NODE    520.00 =     600.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    520.00 TO NODE    520.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1        4.27     7.36       2.367        2.01
  LONGEST FLOWPATH FROM NODE    241.00 TO NODE    520.00 =     600.00 FEET.

  ** MEMORY BANK #  3 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1        7.69     8.32       2.226        4.11
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    520.00 =    1143.00 FEET.

 **********************************WARNING**********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
```

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

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1      11.08       7.36        2.367
      2      11.71       8.32        2.226

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      11.71   Tc(MIN.) =    8.32
  TOTAL AREA(ACRES) =        6.1

****************************************************************************
  FLOW PROCESS FROM NODE    520.00 TO NODE    262.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1569.85  DOWNSTREAM(FEET) =  1568.95
  FLOW LENGTH(FEET) =   180.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.33
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      11.71
  PIPE TRAVEL TIME(MIN.) =   0.56    Tc(MIN.) =    8.88
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    262.00 =    1323.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    262.00 TO NODE    262.00 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.) =    8.88
  RAINFALL INTENSITY(INCH/HR) =   2.15
  TOTAL STREAM AREA(ACRES) =     6.12
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.71

****************************************************************************
  FLOW PROCESS FROM NODE    261.00 TO NODE    262.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   478.00
  UPSTREAM ELEVATION(FEET) =   1575.50
  DOWNSTREAM ELEVATION(FEET) =   1569.45
  ELEVATION DIFFERENCE(FEET) =      6.05
  TC = 0.323*[(  478.00**3)/(     6.05)]**.2 =    9.122
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.126
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      2.63
  TOTAL AREA(ACRES) =      1.42   TOTAL RUNOFF(CFS) =      2.63

****************************************************************************
  FLOW PROCESS FROM NODE    262.00 TO NODE    262.00 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.) =    9.12
  RAINFALL INTENSITY(INCH/HR) =   2.13
  TOTAL STREAM AREA(ACRES) =     1.42
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.63
```

```
 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1       11.71     8.88        2.154          6.12
     2        2.63     9.12        2.126          1.42

 ********************************WARNING***********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 **************************************************************************

  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       14.27     8.88       2.154
      2       14.18     9.12       2.126

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      14.27   Tc(MIN.) =    8.88
  TOTAL AREA(ACRES) =        7.5
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    262.00 =    1323.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    262.00 TO NODE    530.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1566.28  DOWNSTREAM(FEET) =  1565.40
  FLOW LENGTH(FEET) =    13.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS  11.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.69
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      14.27
  PIPE TRAVEL TIME(MIN.) =   0.01    Tc(MIN.) =    8.89
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    530.00 =    1336.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    530.00 TO NODE    530.00 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.) =    8.89
  RAINFALL INTENSITY(INCH/HR) =   2.15
  TOTAL STREAM AREA(ACRES) =     7.54
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     14.27

****************************************************************************
  FLOW PROCESS FROM NODE    281.00 TO NODE    282.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
          ASSUMED INITIAL SUBAREA UNIFORM
          DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   344.00
  UPSTREAM ELEVATION(FEET) =   1571.00
  DOWNSTREAM ELEVATION(FEET) =   1568.18
  ELEVATION DIFFERENCE(FEET) =      2.82
  TC = 0.323*[(  344.00**3)/(     2.82)]**.2 =    8.723
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.174
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      2.27
  TOTAL AREA(ACRES) =      1.20   TOTAL RUNOFF(CFS) =      2.27
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    282.00 TO NODE    530.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1565.51  DOWNSTREAM(FEET) =  1565.40
  FLOW LENGTH(FEET) =    20.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   8.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.62
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.27
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =    8.82
  LONGEST FLOWPATH FROM NODE    281.00 TO NODE    530.00 =     364.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    530.00 TO NODE    530.00 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.) =    8.82
  RAINFALL INTENSITY(INCH/HR) =   2.16
  TOTAL STREAM AREA(ACRES) =     1.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.27

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       14.27     8.89        2.153          7.54
      2        2.27     8.82        2.162          1.20

 **********************************WARNING***********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

  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       16.41     8.82       2.162
      2       16.52     8.89       2.153

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      16.52   Tc(MIN.) =    8.89
  TOTAL AREA(ACRES) =        8.7
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    530.00 =    1336.00 FEET.

+--------------------------------------------------------------------------+
| MITIGATED FLOW FROM TANK-A                                               |
|                                                                          |
|                                                                          |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE    530.00 TO NODE    530.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =  17.79   RAIN INTENSITY(INCH/HOUR) =  1.52
  TOTAL AREA(ACRES) =     8.74   TOTAL RUNOFF(CFS) =      3.65

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

```
 FLOW PROCESS FROM NODE    535.00 TO NODE    540.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1563.70  DOWNSTREAM(FEET) =  1563.44
 FLOW LENGTH(FEET) =    34.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  15.0 INCH PIPE IS   9.1 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   4.70
 ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       3.65
 PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =   17.91
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE    540.00 =    1370.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    540.00 TO NODE    541.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1563.40  DOWNSTREAM(FEET) =   1561.53
 CHANNEL LENGTH THRU SUBAREA(FEET) =   133.00   CHANNEL SLOPE =  0.0141
 CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   0.018
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   0.07

        ==>>WARNING: FLOW IN CHANNEL EXCEEDS CHANNEL
            CAPACITY( NORMAL DEPTH EQUAL TO SPECIFIED MAXIMUM
            ALLOWABLE DEPTH).
            AS AN APPROXIMATION, FLOWDEPTH IS SET AT MAXIMUM
            ALLOWABLE DEPTH AND IS USED FOR TRAVELTIME CALCULATIONS.

 CHANNEL FLOW THRU SUBAREA(CFS) =       3.65
 FLOW VELOCITY(FEET/SEC.) =   6.52   FLOW DEPTH(FEET) =   0.07
 TRAVEL TIME(MIN.) =   0.34   Tc(MIN.) =   18.25
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE    541.00 =    1503.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    541.00 TO NODE    541.00 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.) =   18.25
 RAINFALL INTENSITY(INCH/HR) =   1.50
 TOTAL STREAM AREA(ACRES) =     8.74
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.65

****************************************************************************
 FLOW PROCESS FROM NODE    110.00 TO NODE    541.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   252.00
 UPSTREAM ELEVATION(FEET) =   1566.10
 DOWNSTREAM ELEVATION(FEET) =   1561.53
 ELEVATION DIFFERENCE(FEET) =      4.57
 TC = 0.323*[(  252.00**3)/(     4.57)]**.2 =    6.571
   10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.505
 *USER SPECIFIED(SUBAREA):
 APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8200
 SUBAREA RUNOFF(CFS) =      0.41
 TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.41

****************************************************************************
 FLOW PROCESS FROM NODE    541.00 TO NODE    541.00 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.) =    6.57
  RAINFALL INTENSITY(INCH/HR) =   2.50
  TOTAL STREAM AREA(ACRES) =     0.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.41

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        3.65    18.25        1.502          8.74
      2        0.41     6.57        2.505          0.20

 **********************************WARNING**********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ***************************************************************************

  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        1.73     6.57       2.505
      2        3.90    18.25       1.502

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       3.90   Tc(MIN.) =   18.25
  TOTAL AREA(ACRES) =        8.9
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    541.00 =    1503.00 FEET.

****************************************************************************
  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) =   1561.53  DOWNSTREAM(FEET) =   1561.10
  CHANNEL LENGTH THRU SUBAREA(FEET) =    61.00   CHANNEL SLOPE =  0.0071
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   0.018
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   0.07

         ==>>WARNING: FLOW IN CHANNEL EXCEEDS CHANNEL
             CAPACITY( NORMAL DEPTH EQUAL TO SPECIFIED MAXIMUM
             ALLOWABLE DEPTH).
             AS AN APPROXIMATION, FLOWDEPTH IS SET AT MAXIMUM
             ALLOWABLE DEPTH AND IS USED FOR TRAVELTIME CALCULATIONS.

  CHANNEL FLOW THRU SUBAREA(CFS) =       3.90
  FLOW VELOCITY(FEET/SEC.) =   6.96   FLOW DEPTH(FEET) =   0.07
  TRAVEL TIME(MIN.) =   0.15   Tc(MIN.) =   18.40
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    542.00 =    1564.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    301.00 TO NODE    302.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   176.00
  UPSTREAM ELEVATION(FEET) =   1581.00
  DOWNSTREAM ELEVATION(FEET) =   1580.00
  ELEVATION DIFFERENCE(FEET) =      1.00
  TC = 0.323*[(  176.00**3)/(     1.00)]**.2 =    7.180
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.396
```

```
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      0.97
  TOTAL AREA(ACRES) =      0.46   TOTAL RUNOFF(CFS) =      0.97

****************************************************************************
  FLOW PROCESS FROM NODE    302.00 TO NODE    600.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1578.40  DOWNSTREAM(FEET) =  1574.45
  FLOW LENGTH(FEET) =   187.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   4.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.95
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.97
  PIPE TRAVEL TIME(MIN.) =   0.63    Tc(MIN.) =    7.81
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    600.00 =     363.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    600.00 TO NODE    600.00 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.) =    7.81
  RAINFALL INTENSITY(INCH/HR) =   2.30
  TOTAL STREAM AREA(ACRES) =     0.46
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.97

****************************************************************************
  FLOW PROCESS FROM NODE    311.00 TO NODE    312.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   157.00
  UPSTREAM ELEVATION(FEET) =   1580.80
  DOWNSTREAM ELEVATION(FEET) =   1577.70
  ELEVATION DIFFERENCE(FEET) =      3.10
  TC = 0.323*[(  157.00**3)/(     3.10)]**.2 =    5.346
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.777
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      1.52
  TOTAL AREA(ACRES) =      0.62   TOTAL RUNOFF(CFS) =      1.52

****************************************************************************
  FLOW PROCESS FROM NODE    312.00 TO NODE    600.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1575.70  DOWNSTREAM(FEET) =  1574.45
  FLOW LENGTH(FEET) =    89.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   6.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.68
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.52
  PIPE TRAVEL TIME(MIN.) =   0.32    Tc(MIN.) =    5.66
  LONGEST FLOWPATH FROM NODE    311.00 TO NODE    600.00 =     246.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    600.00 TO NODE    600.00 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.) =    5.66
  RAINFALL INTENSITY(INCH/HR) =   2.70
  TOTAL STREAM AREA(ACRES) =     0.62
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.52

****************************************************************************
  FLOW PROCESS FROM NODE    321.00 TO NODE    322.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   190.00
  UPSTREAM ELEVATION(FEET) =   1578.50
  DOWNSTREAM ELEVATION(FEET) =   1576.10
  ELEVATION DIFFERENCE(FEET) =      2.40
  TC = 0.323*[(  190.00**3)/(     2.40)]**.2 =    6.310
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.556
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      1.28
  TOTAL AREA(ACRES) =      0.57   TOTAL RUNOFF(CFS) =      1.28

****************************************************************************
  FLOW PROCESS FROM NODE    322.00 TO NODE    600.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1576.10  DOWNSTREAM(FEET) =  1574.45
  FLOW LENGTH(FEET) =    21.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   6.0 INCH PIPE IS   4.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.53
  ESTIMATED PIPE DIAMETER(INCH) =   6.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.28
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =    6.35
  LONGEST FLOWPATH FROM NODE    321.00 TO NODE    600.00 =     211.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    600.00 TO NODE    600.00 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.) =    6.35
  RAINFALL INTENSITY(INCH/HR) =   2.55
  TOTAL STREAM AREA(ACRES) =     0.57
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.28

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        0.97     7.81        2.298          0.46
      2        1.52     5.66        2.698          0.62
      3        1.28     6.35        2.548          0.57

 *********************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 *************************************************************************

  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        3.36     5.66       2.698
      2        3.50     6.35       2.548
      3        3.42     7.81       2.298

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       3.36   Tc(MIN.) =    5.66
  TOTAL AREA(ACRES) =        1.7
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    600.00 =     363.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    600.00 TO NODE    605.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1574.45  DOWNSTREAM(FEET) =  1573.65
  FLOW LENGTH(FEET) =   137.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS   9.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.16
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.36
  PIPE TRAVEL TIME(MIN.) =   0.55    Tc(MIN.) =    6.21
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    605.00 =     500.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    605.00 TO NODE    605.00 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.) =    6.21
  RAINFALL INTENSITY(INCH/HR) =   2.58
  TOTAL STREAM AREA(ACRES) =     1.65
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.36

****************************************************************************
  FLOW PROCESS FROM NODE    341.00 TO NODE    342.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   176.00
  UPSTREAM ELEVATION(FEET) =   1581.00
  DOWNSTREAM ELEVATION(FEET) =   1576.80
  ELEVATION DIFFERENCE(FEET) =      4.20
  TC = 0.323*[(  176.00**3)/(     4.20)]**.2 =    5.388
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.766
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      1.53
  TOTAL AREA(ACRES) =      0.63   TOTAL RUNOFF(CFS) =      1.53

****************************************************************************
  FLOW PROCESS FROM NODE    342.00 TO NODE    605.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1575.30  DOWNSTREAM(FEET) =  1573.65
  FLOW LENGTH(FEET) =    45.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   4.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.83
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.53
  PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =    5.50
  LONGEST FLOWPATH FROM NODE    341.00 TO NODE    605.00 =     221.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    605.00 TO NODE    605.00 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.) =    5.50
  RAINFALL INTENSITY(INCH/HR) =   2.74
  TOTAL STREAM AREA(ACRES) =     0.63
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.53

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        3.36     6.21        2.576          1.65
      2        1.53     5.50        2.739          0.63

 **********************************WARNING***********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

  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        4.51     5.50       2.739
      2        4.80     6.21       2.576

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       4.80   Tc(MIN.) =    6.21
  TOTAL AREA(ACRES) =        2.3
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    605.00 =     500.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    605.00 TO NODE    615.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1573.55  DOWNSTREAM(FEET) =  1573.20
  FLOW LENGTH(FEET) =    62.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.50
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.80
  PIPE TRAVEL TIME(MIN.) =   0.23    Tc(MIN.) =    6.44
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    615.00 =     562.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    615.00 TO NODE    615.00 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.) =    6.44
  RAINFALL INTENSITY(INCH/HR) =   2.53
  TOTAL STREAM AREA(ACRES) =     2.28
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.80

****************************************************************************
  FLOW PROCESS FROM NODE    331.00 TO NODE    332.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
```

```
==========================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   185.00
  UPSTREAM ELEVATION(FEET) =   1576.30
  DOWNSTREAM ELEVATION(FEET) =   1573.90
  ELEVATION DIFFERENCE(FEET) =      2.40
  TC = 0.323*[(  185.00**3)/(     2.40)]**.2 =    6.210
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.577
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8900
  SUBAREA RUNOFF(CFS) =      1.22
  TOTAL AREA(ACRES) =      0.53   TOTAL RUNOFF(CFS) =      1.22

**************************************************************************
  FLOW PROCESS FROM NODE    332.00 TO NODE    615.00 IS CODE =  31
--------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1573.90  DOWNSTREAM(FEET) =  1573.20
  FLOW LENGTH(FEET) =    15.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   3.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.04
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.22
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =    6.25
  LONGEST FLOWPATH FROM NODE    331.00 TO NODE    615.00 =     200.00 FEET.

**************************************************************************
  FLOW PROCESS FROM NODE    615.00 TO NODE    615.00 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.) =    6.25
  RAINFALL INTENSITY(INCH/HR) =   2.57
  TOTAL STREAM AREA(ACRES) =     0.53
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.22

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        4.80     6.44        2.530          2.28
      2        1.22     6.25        2.569          0.53

 **********************************WARNING**********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ***************************************************************************

  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        5.87     6.25       2.569
      2        6.00     6.44       2.530

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       6.00   Tc(MIN.) =    6.44
  TOTAL AREA(ACRES) =        2.8
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    615.00 =     562.00 FEET.

**************************************************************************
  FLOW PROCESS FROM NODE    615.00 TO NODE    620.00 IS CODE =  31
```

```
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1573.10  DOWNSTREAM(FEET) =  1572.30
  FLOW LENGTH(FEET) =   153.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.56
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.00
  PIPE TRAVEL TIME(MIN.) =   0.56    Tc(MIN.) =    7.00
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    620.00 =     715.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    620.00 TO NODE    620.00 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.) =    7.00
  RAINFALL INTENSITY(INCH/HR) =   2.43
  TOTAL STREAM AREA(ACRES) =     2.81
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.00

****************************************************************************
  FLOW PROCESS FROM NODE    361.00 TO NODE    362.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   242.00
  UPSTREAM ELEVATION(FEET) =   1577.00
  DOWNSTREAM ELEVATION(FEET) =   1572.55
  ELEVATION DIFFERENCE(FEET) =      4.45
  TC = 0.323*[(  242.00**3)/(     4.45)]**.2 =    6.448
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.529
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      1.94
  TOTAL AREA(ACRES) =      0.88   TOTAL RUNOFF(CFS) =      1.94

****************************************************************************
  FLOW PROCESS FROM NODE    362.00 TO NODE    620.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1572.55  DOWNSTREAM(FEET) =  1572.30
  FLOW LENGTH(FEET) =    44.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   7.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.57
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.94
  PIPE TRAVEL TIME(MIN.) =   0.21    Tc(MIN.) =    6.65
  LONGEST FLOWPATH FROM NODE    361.00 TO NODE    620.00 =     286.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    620.00 TO NODE    620.00 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.) =    6.65
  RAINFALL INTENSITY(INCH/HR) =   2.49
  TOTAL STREAM AREA(ACRES) =     0.88
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.94
```

```
 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        6.00     7.00        2.426          2.81
     2        1.94     6.65        2.489          0.88

 ********************************WARNING*********************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

 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        7.64     6.65       2.489
     2        7.89     7.00       2.426

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       7.89   Tc(MIN.) =    7.00
 TOTAL AREA(ACRES) =        3.7
 LONGEST FLOWPATH FROM NODE    301.00 TO NODE    620.00 =     715.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    620.00 TO NODE    352.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1572.20  DOWNSTREAM(FEET) =  1572.01
 FLOW LENGTH(FEET) =    36.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.2 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   4.94
 ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       7.89
 PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =    7.12
 LONGEST FLOWPATH FROM NODE    301.00 TO NODE    352.00 =     751.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    352.00 TO NODE    352.00 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.) =    7.12
 RAINFALL INTENSITY(INCH/HR) =   2.41
 TOTAL STREAM AREA(ACRES) =     3.69
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.89

****************************************************************************
 FLOW PROCESS FROM NODE    351.00 TO NODE    352.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   158.00
 UPSTREAM ELEVATION(FEET) =   1575.50
 DOWNSTREAM ELEVATION(FEET) =   1572.01
 ELEVATION DIFFERENCE(FEET) =      3.49
 TC = 0.323*[(  158.00**3)/(     3.49)]**.2 =    5.241
   10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.805
 *USER SPECIFIED(SUBAREA):
 APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
 SUBAREA RUNOFF(CFS) =      1.01
```

```
  TOTAL AREA(ACRES) =      0.41   TOTAL RUNOFF(CFS) =      1.01

****************************************************************************
  FLOW PROCESS FROM NODE    352.00 TO NODE    352.00 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.) =    5.24
  RAINFALL INTENSITY(INCH/HR) =   2.80
  TOTAL STREAM AREA(ACRES) =     0.41
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.01

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        7.89     7.12        2.406          3.69
      2        1.01     5.24        2.805          0.41

 **********************************WARNING***********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

  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        6.82     5.24       2.805
      2        8.76     7.12       2.406

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       8.76   Tc(MIN.) =    7.12
  TOTAL AREA(ACRES) =        4.1
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    352.00 =     751.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    352.00 TO NODE    625.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1569.34  DOWNSTREAM(FEET) =  1569.00
  FLOW LENGTH(FEET) =    63.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  14.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.09
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       8.76
  PIPE TRAVEL TIME(MIN.) =   0.21    Tc(MIN.) =    7.33
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    625.00 =     814.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    625.00 TO NODE    625.00 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.) =    7.33
  RAINFALL INTENSITY(INCH/HR) =   2.37
  TOTAL STREAM AREA(ACRES) =     4.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.76

****************************************************************************
  FLOW PROCESS FROM NODE    371.00 TO NODE    373.00 IS CODE =  21
----------------------------------------------------------------------------
```

```
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
================================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   301.00
  UPSTREAM ELEVATION(FEET) =   1575.20
  DOWNSTREAM ELEVATION(FEET) =   1572.50
  ELEVATION DIFFERENCE(FEET) =      2.70
  TC = 0.323*[(  301.00**3)/(     2.70)]**.2 =    8.122
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.253
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      1.17
  TOTAL AREA(ACRES) =      0.59   TOTAL RUNOFF(CFS) =      1.17

********************************************************************************
  FLOW PROCESS FROM NODE    373.00 TO NODE    625.00 IS CODE =  31
--------------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1572.50  DOWNSTREAM(FEET) =  1569.00
  FLOW LENGTH(FEET) =    31.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   6.0 INCH PIPE IS   3.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.71
  ESTIMATED PIPE DIAMETER(INCH) =   6.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.17
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =    8.18
  LONGEST FLOWPATH FROM NODE    371.00 TO NODE    625.00 =     332.00 FEET.

********************************************************************************
  FLOW PROCESS FROM NODE    625.00 TO NODE    625.00 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.) =    8.18
  RAINFALL INTENSITY(INCH/HR) =   2.25
  TOTAL STREAM AREA(ACRES) =     0.59
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.17

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        8.76     7.33        2.372          4.10
      2        1.17     8.18        2.245          0.59

 **********************************WARNING***********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

  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        9.81     7.33       2.372
      2        9.46     8.18       2.245

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       9.81   Tc(MIN.) =    7.33
  TOTAL AREA(ACRES) =        4.7
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    625.00 =     814.00 FEET.

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

```
  FLOW PROCESS FROM NODE    625.00 TO NODE    630.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1568.90  DOWNSTREAM(FEET) =  1567.75
  FLOW LENGTH(FEET) =   121.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  12.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.53
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       9.81
  PIPE TRAVEL TIME(MIN.) =   0.31    Tc(MIN.) =    7.64
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    630.00 =     935.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    630.00 TO NODE    630.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    381.00 TO NODE    382.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   189.00
  UPSTREAM ELEVATION(FEET) =   1574.70
  DOWNSTREAM ELEVATION(FEET) =   1570.85
  ELEVATION DIFFERENCE(FEET) =      3.85
  TC = 0.323*[(  189.00**3)/(     3.85)]**.2 =    5.722
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.684
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8600
  SUBAREA RUNOFF(CFS) =      0.83
  TOTAL AREA(ACRES) =      0.36   TOTAL RUNOFF(CFS) =      0.83

****************************************************************************
  FLOW PROCESS FROM NODE    382.00 TO NODE    392.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1570.85  DOWNSTREAM(FEET) =  1570.55
  FLOW LENGTH(FEET) =    53.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   5.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   2.89
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.83
  PIPE TRAVEL TIME(MIN.) =   0.31    Tc(MIN.) =    6.03
  LONGEST FLOWPATH FROM NODE    381.00 TO NODE    392.00 =     242.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    392.00 TO NODE    392.00 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.) =    6.03
  RAINFALL INTENSITY(INCH/HR) =   2.62
  TOTAL STREAM AREA(ACRES) =     0.36
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.83

****************************************************************************
  FLOW PROCESS FROM NODE    391.00 TO NODE    392.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
```

```
        ASSUMED INITIAL SUBAREA UNIFORM
        DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   337.00
  UPSTREAM ELEVATION(FEET) =   1574.60
  DOWNSTREAM ELEVATION(FEET) =   1571.30
  ELEVATION DIFFERENCE(FEET) =      3.30
  TC = 0.323*[(  337.00**3)/(     3.30)]**.2 =    8.350
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.222
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8900
  SUBAREA RUNOFF(CFS) =      1.13
  TOTAL AREA(ACRES) =      0.57   TOTAL RUNOFF(CFS) =      1.13

****************************************************************************
  FLOW PROCESS FROM NODE    392.00 TO NODE    392.00 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.) =    8.35
  RAINFALL INTENSITY(INCH/HR) =   2.22
  TOTAL STREAM AREA(ACRES) =     0.57
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.13

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        0.83     6.03        2.615          0.36
      2        1.13     8.35        2.222          0.57

 *********************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 *************************************************************************

  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        1.64     6.03       2.615
      2        1.83     8.35       2.222

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       1.83   Tc(MIN.) =    8.35
  TOTAL AREA(ACRES) =        0.9
  LONGEST FLOWPATH FROM NODE    391.00 TO NODE    392.00 =     337.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    392.00 TO NODE    630.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1567.88  DOWNSTREAM(FEET) =  1567.75
  FLOW LENGTH(FEET) =    14.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   6.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.26
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.83
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =    8.40
  LONGEST FLOWPATH FROM NODE    391.00 TO NODE    630.00 =     351.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    630.00 TO NODE    630.00 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        1.83     8.40       2.215        0.93
  LONGEST FLOWPATH FROM NODE    391.00 TO NODE    630.00 =     351.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1        9.81     7.64       2.323        4.69
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    630.00 =     935.00 FEET.

 ****************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ********************************************************************

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1      11.47       7.64        2.323
      2      11.18       8.40        2.215

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      11.47   Tc(MIN.) =    7.64
  TOTAL AREA(ACRES) =        5.6

********************************************************************************
  FLOW PROCESS FROM NODE    630.00 TO NODE    640.00 IS CODE =  31
--------------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1567.65  DOWNSTREAM(FEET) =  1563.55
  FLOW LENGTH(FEET) =   288.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  14.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.66
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      11.47
  PIPE TRAVEL TIME(MIN.) =   0.63    Tc(MIN.) =    8.26
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    640.00 =    1223.00 FEET.

********************************************************************************
  FLOW PROCESS FROM NODE    640.00 TO NODE    640.00 IS CODE =  10
--------------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
================================================================================

********************************************************************************
  FLOW PROCESS FROM NODE    401.00 TO NODE    402.00 IS CODE =  21
--------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
================================================================================
          ASSUMED INITIAL SUBAREA UNIFORM
          DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   296.00
  UPSTREAM ELEVATION(FEET) =   1573.00
  DOWNSTREAM ELEVATION(FEET) =   1570.45
  ELEVATION DIFFERENCE(FEET) =      2.55
  TC = 0.323*[(  296.00**3)/(     2.55)]**.2 =    8.133
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.251
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      2.60
  TOTAL AREA(ACRES) =      1.33   TOTAL RUNOFF(CFS) =      2.60
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    402.00 TO NODE    635.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1568.45  DOWNSTREAM(FEET) =  1567.85
  FLOW LENGTH(FEET) =    86.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   9.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.08
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.60
  PIPE TRAVEL TIME(MIN.) =   0.35    Tc(MIN.) =    8.48
  LONGEST FLOWPATH FROM NODE    401.00 TO NODE    635.00 =     382.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    635.00 TO NODE    635.00 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.) =    8.48
  RAINFALL INTENSITY(INCH/HR) =   2.20
  TOTAL STREAM AREA(ACRES) =     1.33
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.60

****************************************************************************
  FLOW PROCESS FROM NODE    411.00 TO NODE    412.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   288.00
  UPSTREAM ELEVATION(FEET) =   1572.40
  DOWNSTREAM ELEVATION(FEET) =   1570.65
  ELEVATION DIFFERENCE(FEET) =      1.75
  TC = 0.323*[(  288.00**3)/(     1.75)]**.2 =    8.626
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.186
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8500
  SUBAREA RUNOFF(CFS) =      0.84
  TOTAL AREA(ACRES) =      0.45   TOTAL RUNOFF(CFS) =      0.84

****************************************************************************
  FLOW PROCESS FROM NODE    412.00 TO NODE    635.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1568.65  DOWNSTREAM(FEET) =  1567.75
  FLOW LENGTH(FEET) =    19.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   6.0 INCH PIPE IS   3.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.43
  ESTIMATED PIPE DIAMETER(INCH) =   6.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.84
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =    8.68
  LONGEST FLOWPATH FROM NODE    411.00 TO NODE    635.00 =     307.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    635.00 TO NODE    635.00 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.) =    8.68
  RAINFALL INTENSITY(INCH/HR) =   2.18
```

```
 TOTAL STREAM AREA(ACRES) =     0.45
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.84

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        2.60     8.48        2.204          1.33
     2        0.84     8.68        2.180          0.45

**********************************WARNING***********************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
*****************************************************************************

 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        3.42     8.48       2.204
     2        3.41     8.68       2.180

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       3.42   Tc(MIN.) =    8.48
 TOTAL AREA(ACRES) =        1.8
 LONGEST FLOWPATH FROM NODE    401.00 TO NODE    635.00 =     382.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    635.00 TO NODE    422.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1567.75  DOWNSTREAM(FEET) =  1567.30
 FLOW LENGTH(FEET) =    89.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  15.0 INCH PIPE IS  10.0 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   3.93
 ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       3.42
 PIPE TRAVEL TIME(MIN.) =   0.38    Tc(MIN.) =    8.86
 LONGEST FLOWPATH FROM NODE    401.00 TO NODE    422.00 =     471.00 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.) =    8.86
 RAINFALL INTENSITY(INCH/HR) =   2.16
 TOTAL STREAM AREA(ACRES) =     1.78
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.42

****************************************************************************
 FLOW PROCESS FROM NODE    421.00 TO NODE    422.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
          ASSUMED INITIAL SUBAREA UNIFORM
          DEVELOPMENT IS APARTMENT
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   285.00
 UPSTREAM ELEVATION(FEET) =   1572.60
 DOWNSTREAM ELEVATION(FEET) =   1570.00
 ELEVATION DIFFERENCE(FEET) =      2.60
 TC = 0.323*[(  285.00**3)/(     2.60)]**.2 =    7.920
   10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.281
 *USER SPECIFIED(SUBAREA):
```

```
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8400
  SUBAREA RUNOFF(CFS) =      1.19
  TOTAL AREA(ACRES) =      0.62   TOTAL RUNOFF(CFS) =      1.19

****************************************************************************
  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.) =    7.92
  RAINFALL INTENSITY(INCH/HR) =   2.28
  TOTAL STREAM AREA(ACRES) =     0.62
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.19

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        3.42     8.86        2.157          1.78
      2        1.19     7.92        2.281          0.62

 **********************************WARNING***********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

  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        4.25     7.92       2.281
      2        4.55     8.86       2.157

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       4.55   Tc(MIN.) =    8.86
  TOTAL AREA(ACRES) =        2.4
  LONGEST FLOWPATH FROM NODE    401.00 TO NODE    422.00 =     471.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    422.00 TO NODE    640.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1563.63  DOWNSTREAM(FEET) =  1563.55
  FLOW LENGTH(FEET) =    18.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.05
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.55
  PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =    8.94
  LONGEST FLOWPATH FROM NODE    401.00 TO NODE    640.00 =     489.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    640.00 TO NODE    640.00 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.) =    8.94
  RAINFALL INTENSITY(INCH/HR) =   2.15
  TOTAL STREAM AREA(ACRES) =     2.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.55

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

```
 FLOW PROCESS FROM NODE    431.00 TO NODE    432.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
        ASSUMED INITIAL SUBAREA UNIFORM
        DEVELOPMENT IS APARTMENT
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   265.00
 UPSTREAM ELEVATION(FEET) =   1570.30
 DOWNSTREAM ELEVATION(FEET) =   1567.95
 ELEVATION DIFFERENCE(FEET) =      2.35
 TC = 0.323*[(  265.00**3)/(     2.35)]**.2 =    7.736
   10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.308
 *USER SPECIFIED(SUBAREA):
 APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8600
 SUBAREA RUNOFF(CFS) =      0.83
 TOTAL AREA(ACRES) =      0.42   TOTAL RUNOFF(CFS) =      0.83

****************************************************************************
 FLOW PROCESS FROM NODE    432.00 TO NODE    640.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1565.37  DOWNSTREAM(FEET) =  1564.40
 FLOW LENGTH(FEET) =    19.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN   6.0 INCH PIPE IS   3.7 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   6.63
 ESTIMATED PIPE DIAMETER(INCH) =   6.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       0.83
 PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =    7.78
 LONGEST FLOWPATH FROM NODE    431.00 TO NODE    640.00 =     284.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    640.00 TO NODE    640.00 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.) =    7.78
 RAINFALL INTENSITY(INCH/HR) =   2.30
 TOTAL STREAM AREA(ACRES) =     0.42
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.83

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        4.55     8.94        2.148          2.40
     2        0.83     7.78        2.301          0.42

 ********************************WARNING*********************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

 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        4.79     7.78       2.301
     2        5.32     8.94       2.148

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       5.32   Tc(MIN.) =    8.94
 TOTAL AREA(ACRES) =        2.8
 LONGEST FLOWPATH FROM NODE    401.00 TO NODE    640.00 =     489.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    640.00 TO NODE    640.00 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        5.32     8.94       2.148        2.82
  LONGEST FLOWPATH FROM NODE    401.00 TO NODE    640.00 =     489.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)   (ACRE)
      1       11.47     8.26       2.233        5.62
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    640.00 =    1223.00 FEET.

 **********************************WARNING**********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1      16.39       8.26        2.233
      2      16.36       8.94        2.148

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      16.39   Tc(MIN.) =    8.26
  TOTAL AREA(ACRES) =        8.4

+----------------------------------------------------------------------------+
| MITIGATED FLOW FROM TANK-B                                                 |
|                                                                            |
|                                                                            |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE    640.00 TO NODE    640.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =  13.26   RAIN INTENSITY(INCH/HOUR) =  1.76
  TOTAL AREA(ACRES) =     8.44   TOTAL RUNOFF(CFS) =      5.41

****************************************************************************
  FLOW PROCESS FROM NODE    640.00 TO NODE    642.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1560.20  DOWNSTREAM(FEET) =  1560.16
  FLOW LENGTH(FEET) =     3.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS   9.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.35
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.41
  PIPE TRAVEL TIME(MIN.) =   0.01    Tc(MIN.) =   13.27
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    642.00 =    1226.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    642.00 TO NODE    642.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
```

```
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   13.27
  RAINFALL INTENSITY(INCH/HR) =   1.76
  TOTAL STREAM AREA(ACRES) =     8.44
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.41

****************************************************************************
  FLOW PROCESS FROM NODE    291.00 TO NODE    292.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   146.00
  UPSTREAM ELEVATION(FEET) =   1572.50
  DOWNSTREAM ELEVATION(FEET) =   1565.20
  ELEVATION DIFFERENCE(FEET) =      7.30
  TC = 0.323*[(  146.00**3)/(     7.30)]**.2 =    4.313
  COMPUTED TIME OF CONCENTRATION INCREASED TO 5 MIN.
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.872
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8500
  SUBAREA RUNOFF(CFS) =      0.76
  TOTAL AREA(ACRES) =      0.31   TOTAL RUNOFF(CFS) =      0.76

****************************************************************************
  FLOW PROCESS FROM NODE    292.00 TO NODE    642.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1561.66  DOWNSTREAM(FEET) =  1560.16
  FLOW LENGTH(FEET) =   297.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   5.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   2.72
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.76
  PIPE TRAVEL TIME(MIN.) =   1.82    Tc(MIN.) =    6.82
  LONGEST FLOWPATH FROM NODE    291.00 TO NODE    642.00 =     443.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    642.00 TO NODE    642.00 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.) =    6.82
  RAINFALL INTENSITY(INCH/HR) =   2.46
  TOTAL STREAM AREA(ACRES) =     0.31
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.76

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        5.41    13.27        1.762          8.44
      2        0.76     6.82        2.459          0.31

 **********************************WARNING**********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ***************************************************************************

  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        3.54      6.82       2.459
      2        5.95     13.27       1.762

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       5.95   Tc(MIN.) =   13.27
  TOTAL AREA(ACRES) =        8.8
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    642.00 =    1226.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    642.00 TO NODE    645.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1560.16  DOWNSTREAM(FEET) =  1559.75
  FLOW LENGTH(FEET) =    70.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.77
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.95
  PIPE TRAVEL TIME(MIN.) =   0.24    Tc(MIN.) =   13.51
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    645.00 =    1296.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    102.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   655.00
  UPSTREAM ELEVATION(FEET) =   1586.50
  DOWNSTREAM ELEVATION(FEET) =   1581.24
  ELEVATION DIFFERENCE(FEET) =      5.26
  TC = 0.323*[(  655.00**3)/(     5.26)]**.2 =   11.333
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.907
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8900
  SUBAREA RUNOFF(CFS) =      1.66
  TOTAL AREA(ACRES) =      0.98   TOTAL RUNOFF(CFS) =      1.66

****************************************************************************
  FLOW PROCESS FROM NODE    102.00 TO NODE    103.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1577.74  DOWNSTREAM(FEET) =  1571.94
  FLOW LENGTH(FEET) =    66.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   3.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.63
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.66
  PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =   11.45
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    103.00 =     721.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    110.00 TO NODE    111.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   410.00
  UPSTREAM ELEVATION(FEET) =   1566.10
  DOWNSTREAM ELEVATION(FEET) =   1562.10
  ELEVATION DIFFERENCE(FEET) =      4.00
  TC = 0.323*[(  410.00**3)/(     4.00)]**.2 =    9.038
```

```
   10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.136
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      0.58
  TOTAL AREA(ACRES) =      0.31   TOTAL RUNOFF(CFS) =      0.58

****************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    106.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1125.00
  UPSTREAM ELEVATION(FEET) =   1586.50
  DOWNSTREAM ELEVATION(FEET) =   1564.87
  ELEVATION DIFFERENCE(FEET) =     21.63
  TC = 0.323*[( 1125.00**3)/(    21.63)]**.2 =   11.816
   10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.867
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      1.43
  TOTAL AREA(ACRES) =      0.87   TOTAL RUNOFF(CFS) =      1.43

****************************************************************************
  FLOW PROCESS FROM NODE    106.00 TO NODE    107.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1562.20  DOWNSTREAM(FEET) =  1560.00
  FLOW LENGTH(FEET) =   232.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   6.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.94
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.43
  PIPE TRAVEL TIME(MIN.) =   0.98    Tc(MIN.) =   12.80
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    107.00 =    1357.00 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        0.9  TC(MIN.) =     12.80
  PEAK FLOW RATE(CFS)   =       1.43
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

POST-DEVELOPMENT AES

DETAINED

(100-YEAR STORM EVENT)

```
******************************************************************************
          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
        RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                    (RCFC&WCD)  1978 HYDROLOGY MANUAL
         (c) Copyright 1982-2016 Advanced Engineering Software (aes)
                    (Rational Tabling Version 23.0)
                Release Date: 07/01/2016  License ID 1452

                         Analysis prepared by:
```

```
 ************************** DESCRIPTION OF STUDY **************************
* 3816 ROCAS GRANDE II                                                    *
* MITIGATED CONDITION                                                     *
* 100-YR STORM                                                            *
 *************************************************************************

  FILE NAME: 3816PD00.DAT
  TIME/DATE OF STUDY: 12:15 02/14/2025
-----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
-----------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =   6.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  10-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  2.010
  10-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  0.820
  100-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  2.940
  100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.200
  SLOPE OF 10-YEAR INTENSITY-DURATION CURVE =  0.5003939
  SLOPE OF 100-YEAR INTENSITY-DURATION CURVE =  0.5001161
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =  100.00   1-HOUR INTENSITY(INCH/HOUR) =   1.200
  SLOPE OF INTENSITY DURATION CURVE = 0.5001
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: COMPUTE CONFLUENCE VALUES ACCORDING TO RCFC&WCD HYDROLOGY MANUAL
        AND IGNORE OTHER CONFLUENCE COMBINATIONS FOR DOWNSTREAM ANALYSES
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   22.0     14.0    0.020/0.020/0.018   0.50    2.00 0.0312 0.167 0.0150
  2   46.0     38.0    0.020/0.020/0.020   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    201.00 TO NODE    202.00 IS CODE =  21
------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   341.00
  UPSTREAM ELEVATION(FEET) =   1582.50
  DOWNSTREAM ELEVATION(FEET) =   1579.60
  ELEVATION DIFFERENCE(FEET) =      2.90
  TC = 0.323*[(  341.00**3)/(     2.90)]**.2 =    8.629
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.165
```

```
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      1.73
  TOTAL AREA(ACRES) =      0.63   TOTAL RUNOFF(CFS) =      1.73

****************************************************************************
  FLOW PROCESS FROM NODE    202.00 TO NODE    500.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1579.60  DOWNSTREAM(FEET) =  1574.55
  FLOW LENGTH(FEET) =   122.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   4.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.36
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.73
  PIPE TRAVEL TIME(MIN.) =   0.28    Tc(MIN.) =    8.91
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    500.00 =     463.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    500.00 TO NODE    500.00 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.) =    8.91
  RAINFALL INTENSITY(INCH/HR) =   3.12
  TOTAL STREAM AREA(ACRES) =     0.63
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.73

****************************************************************************
  FLOW PROCESS FROM NODE    211.00 TO NODE    212.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   154.00
  UPSTREAM ELEVATION(FEET) =   1580.40
  DOWNSTREAM ELEVATION(FEET) =   1577.65
  ELEVATION DIFFERENCE(FEET) =      2.75
  TC = 0.323*[(  154.00**3)/(     2.75)]**.2 =    5.413
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.996
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8900
  SUBAREA RUNOFF(CFS) =      4.27
  TOTAL AREA(ACRES) =      1.20   TOTAL RUNOFF(CFS) =      4.27

****************************************************************************
  FLOW PROCESS FROM NODE    212.00 TO NODE    500.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1575.65  DOWNSTREAM(FEET) =  1574.55
  FLOW LENGTH(FEET) =   165.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS  10.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.58
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.27
  PIPE TRAVEL TIME(MIN.) =   0.60    Tc(MIN.) =    6.01
  LONGEST FLOWPATH FROM NODE    211.00 TO NODE    500.00 =     319.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    500.00 TO NODE    500.00 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.) =    6.01
  RAINFALL INTENSITY(INCH/HR) =   3.79
  TOTAL STREAM AREA(ACRES) =     1.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.27

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        1.73     8.91        3.115          0.63
      2        4.27     6.01        3.792          1.20

 **********************************WARNING***********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ********************************************************************************

  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        5.44     6.01       3.792
      2        5.24     8.91       3.115

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       5.44   Tc(MIN.) =    6.01
  TOTAL AREA(ACRES) =        1.8
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    500.00 =     463.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    500.00 TO NODE    505.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1574.45  DOWNSTREAM(FEET) =  1573.90
  FLOW LENGTH(FEET) =   106.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.47
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.44
  PIPE TRAVEL TIME(MIN.) =   0.40    Tc(MIN.) =    6.41
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    505.00 =     569.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    505.00 TO NODE    505.00 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.) =    6.41
  RAINFALL INTENSITY(INCH/HR) =   3.67
  TOTAL STREAM AREA(ACRES) =     1.83
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.44

****************************************************************************
  FLOW PROCESS FROM NODE    221.00 TO NODE    222.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
          ASSUMED INITIAL SUBAREA UNIFORM
          DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   328.00
  UPSTREAM ELEVATION(FEET) =   1577.80
```

```
  DOWNSTREAM ELEVATION(FEET) =   1574.90
  ELEVATION DIFFERENCE(FEET) =      2.90
  TC = 0.323*[(  328.00**3)/(     2.90)]**.2 =    8.430
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.202
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      1.58
  TOTAL AREA(ACRES) =      0.56   TOTAL RUNOFF(CFS) =      1.58

****************************************************************************
  FLOW PROCESS FROM NODE    222.00 TO NODE    505.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1574.90  DOWNSTREAM(FEET) =  1573.90
  FLOW LENGTH(FEET) =    44.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   5.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.74
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.58
  PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =    8.56
  LONGEST FLOWPATH FROM NODE    221.00 TO NODE    505.00 =     372.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    505.00 TO NODE    505.00 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.) =    8.56
  RAINFALL INTENSITY(INCH/HR) =   3.18
  TOTAL STREAM AREA(ACRES) =     0.56
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.58

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        5.44     6.41        3.673          1.83
      2        1.58     8.56        3.178          0.56

 **********************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

  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        6.62     6.41       3.673
      2        6.28     8.56       3.178

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       6.62   Tc(MIN.) =    6.41
  TOTAL AREA(ACRES) =        2.4
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    505.00 =     569.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    505.00 TO NODE    510.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1573.80  DOWNSTREAM(FEET) =  1572.85
  FLOW LENGTH(FEET) =   159.00   MANNING'S N =  0.013
```

```
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.90
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.62
  PIPE TRAVEL TIME(MIN.) =   0.54    Tc(MIN.) =    6.95
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    510.00 =     728.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    510.00 TO NODE    510.00 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.) =    6.95
  RAINFALL INTENSITY(INCH/HR) =   3.53
  TOTAL STREAM AREA(ACRES) =     2.39
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.62

****************************************************************************
  FLOW PROCESS FROM NODE    231.00 TO NODE    233.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
          ASSUMED INITIAL SUBAREA UNIFORM
          DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   327.00
  UPSTREAM ELEVATION(FEET) =   1577.00
  DOWNSTREAM ELEVATION(FEET) =   1573.75
  ELEVATION DIFFERENCE(FEET) =      3.25
  TC = 0.323*[(  327.00**3)/(     3.25)]**.2 =    8.225
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.242
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8900
  SUBAREA RUNOFF(CFS) =      3.49
  TOTAL AREA(ACRES) =      1.21   TOTAL RUNOFF(CFS) =      3.49

****************************************************************************
  FLOW PROCESS FROM NODE    233.00 TO NODE    510.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1573.75  DOWNSTREAM(FEET) =  1572.85
  FLOW LENGTH(FEET) =    44.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   7.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.70
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.49
  PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =    8.33
  LONGEST FLOWPATH FROM NODE    231.00 TO NODE    510.00 =     371.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    510.00 TO NODE    510.00 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.) =    8.33
  RAINFALL INTENSITY(INCH/HR) =   3.22
  TOTAL STREAM AREA(ACRES) =     1.21
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.49

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        6.62     6.95        3.527          2.39
      2        3.49     8.33        3.220          1.21
```

```
 ***********************************WARNING************************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ******************************************************************************

  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        9.53     6.95       3.527
      2        9.54     8.33       3.220

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       9.53   Tc(MIN.) =    6.95
  TOTAL AREA(ACRES) =        3.6
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    510.00 =     728.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    510.00 TO NODE    515.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1572.75  DOWNSTREAM(FEET) =  1572.25
  FLOW LENGTH(FEET) =    92.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.18
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       9.53
  PIPE TRAVEL TIME(MIN.) =   0.30    Tc(MIN.) =    7.25
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    515.00 =     820.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    515.00 TO NODE    515.00 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.) =    7.25
  RAINFALL INTENSITY(INCH/HR) =   3.45
  TOTAL STREAM AREA(ACRES) =     3.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.53

****************************************************************************
  FLOW PROCESS FROM NODE    251.00 TO NODE    252.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
          ASSUMED INITIAL SUBAREA UNIFORM
          DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   115.00
  UPSTREAM ELEVATION(FEET) =   1575.70
  DOWNSTREAM ELEVATION(FEET) =   1573.95
  ELEVATION DIFFERENCE(FEET) =      1.75
  TC = 0.323*[(  115.00**3)/(     1.75)]**.2 =    4.973
  COMPUTED TIME OF CONCENTRATION INCREASED TO 5 MIN.
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.158
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      1.84
  TOTAL AREA(ACRES) =      0.51   TOTAL RUNOFF(CFS) =      1.84

****************************************************************************
  FLOW PROCESS FROM NODE    252.00 TO NODE    515.00 IS CODE =  31
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1573.95  DOWNSTREAM(FEET) =  1572.25
  FLOW LENGTH(FEET) =    41.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   4.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.48
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.84
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =    5.09
  LONGEST FLOWPATH FROM NODE    251.00 TO NODE    515.00 =     156.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    515.00 TO NODE    515.00 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.) =    5.09
  RAINFALL INTENSITY(INCH/HR) =   4.12
  TOTAL STREAM AREA(ACRES) =     0.51
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.84

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        9.53     7.25        3.454          3.60
      2        1.84     5.09        4.121          0.51

 **********************************WARNING**********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ***************************************************************************

  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        8.54     5.09       4.121
      2       11.08     7.25       3.454

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      11.08   Tc(MIN.) =    7.25
  TOTAL AREA(ACRES) =        4.1
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    515.00 =     820.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    515.00 TO NODE    520.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1572.15  DOWNSTREAM(FEET) =  1569.15
  FLOW LENGTH(FEET) =   323.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.63
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      11.08
  PIPE TRAVEL TIME(MIN.) =   0.81    Tc(MIN.) =    8.06
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    520.00 =    1143.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    520.00 TO NODE    520.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 3 <<<<<
============================================================================
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    271.00 TO NODE    272.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   246.00
  UPSTREAM ELEVATION(FEET) =   1573.50
  DOWNSTREAM ELEVATION(FEET) =   1569.85
  ELEVATION DIFFERENCE(FEET) =      3.65
  TC = 0.323*[(  246.00**3)/(     3.65)]**.2 =    6.775
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.572
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      4.69
  TOTAL AREA(ACRES) =      1.51   TOTAL RUNOFF(CFS) =      4.69

****************************************************************************
  FLOW PROCESS FROM NODE    272.00 TO NODE    272.00 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.) =    6.77
  RAINFALL INTENSITY(INCH/HR) =   3.57
  TOTAL STREAM AREA(ACRES) =     1.51
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.69

****************************************************************************
  FLOW PROCESS FROM NODE    241.00 TO NODE    242.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   169.00
  UPSTREAM ELEVATION(FEET) =   1575.80
  DOWNSTREAM ELEVATION(FEET) =   1573.30
  ELEVATION DIFFERENCE(FEET) =      2.50
  TC = 0.323*[(  169.00**3)/(     2.50)]**.2 =    5.834
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.849
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8500
  SUBAREA RUNOFF(CFS) =      1.64
  TOTAL AREA(ACRES) =      0.50   TOTAL RUNOFF(CFS) =      1.64

****************************************************************************
  FLOW PROCESS FROM NODE    242.00 TO NODE    272.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1571.30  DOWNSTREAM(FEET) =  1569.85
  FLOW LENGTH(FEET) =   290.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   7.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.28
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.64
  PIPE TRAVEL TIME(MIN.) =   1.47    Tc(MIN.) =    7.31
  LONGEST FLOWPATH FROM NODE    241.00 TO NODE    272.00 =     459.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    272.00 TO NODE    272.00 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.) =    7.31
  RAINFALL INTENSITY(INCH/HR) =   3.44
  TOTAL STREAM AREA(ACRES) =     0.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.64

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        4.69     6.77        3.572          1.51
      2        1.64     7.31        3.439          0.50

 **********************************WARNING**********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ***************************************************************************

  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        6.21     6.77       3.572
      2        6.15     7.31       3.439

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       6.21   Tc(MIN.) =    6.77
  TOTAL AREA(ACRES) =        2.0
  LONGEST FLOWPATH FROM NODE    241.00 TO NODE    272.00 =     459.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    272.00 TO NODE    520.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1569.85  DOWNSTREAM(FEET) =  1569.15
  FLOW LENGTH(FEET) =   141.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.48
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.21
  PIPE TRAVEL TIME(MIN.) =   0.52    Tc(MIN.) =    7.30
  LONGEST FLOWPATH FROM NODE    241.00 TO NODE    520.00 =     600.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    520.00 TO NODE    520.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1        6.21     7.30       3.441        2.01
  LONGEST FLOWPATH FROM NODE    241.00 TO NODE    520.00 =     600.00 FEET.

  ** MEMORY BANK #  3 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1       11.08     8.06       3.275        4.11
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    520.00 =    1143.00 FEET.

 **********************************WARNING**********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
```

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

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1      16.25       7.30        3.441
      2      16.99       8.06        3.275

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      16.99   Tc(MIN.) =    8.06
  TOTAL AREA(ACRES) =        6.1

****************************************************************************
  FLOW PROCESS FROM NODE    520.00 TO NODE    262.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1569.85  DOWNSTREAM(FEET) =  1568.95
  FLOW LENGTH(FEET) =   180.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  18.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.83
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      16.99
  PIPE TRAVEL TIME(MIN.) =   0.51    Tc(MIN.) =    8.57
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    262.00 =    1323.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    262.00 TO NODE    262.00 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.) =    8.57
  RAINFALL INTENSITY(INCH/HR) =   3.18
  TOTAL STREAM AREA(ACRES) =     6.12
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     16.99

****************************************************************************
  FLOW PROCESS FROM NODE    261.00 TO NODE    262.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   478.00
  UPSTREAM ELEVATION(FEET) =   1575.50
  DOWNSTREAM ELEVATION(FEET) =   1569.45
  ELEVATION DIFFERENCE(FEET) =      6.05
  TC = 0.323*[(  478.00**3)/(     6.05)]**.2 =    9.122
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.078
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      3.80
  TOTAL AREA(ACRES) =      1.42   TOTAL RUNOFF(CFS) =      3.80

****************************************************************************
  FLOW PROCESS FROM NODE    262.00 TO NODE    262.00 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.) =    9.12
  RAINFALL INTENSITY(INCH/HR) =   3.08
  TOTAL STREAM AREA(ACRES) =     1.42
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.80
```

```
 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1       16.99     8.57        3.176          6.12
     2        3.80     9.12        3.078          1.42

 ********************************WARNING***********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 **************************************************************************

  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       20.56     8.57       3.176
      2       20.27     9.12       3.078

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      20.56   Tc(MIN.) =    8.57
  TOTAL AREA(ACRES) =        7.5
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    262.00 =    1323.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    262.00 TO NODE    530.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1566.28  DOWNSTREAM(FEET) =  1565.40
  FLOW LENGTH(FEET) =    13.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  16.27
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      20.56
  PIPE TRAVEL TIME(MIN.) =   0.01    Tc(MIN.) =    8.58
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    530.00 =    1336.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    530.00 TO NODE    530.00 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.) =    8.58
  RAINFALL INTENSITY(INCH/HR) =   3.17
  TOTAL STREAM AREA(ACRES) =     7.54
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     20.56

****************************************************************************
  FLOW PROCESS FROM NODE    281.00 TO NODE    282.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
          ASSUMED INITIAL SUBAREA UNIFORM
          DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   344.00
  UPSTREAM ELEVATION(FEET) =   1571.00
  DOWNSTREAM ELEVATION(FEET) =   1568.18
  ELEVATION DIFFERENCE(FEET) =      2.82
  TC = 0.323*[(  344.00**3)/(     2.82)]**.2 =    8.723
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.148
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      3.29
  TOTAL AREA(ACRES) =      1.20   TOTAL RUNOFF(CFS) =      3.29
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    282.00 TO NODE    530.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1565.51  DOWNSTREAM(FEET) =  1565.40
  FLOW LENGTH(FEET) =    20.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS   9.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.03
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.29
  PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =    8.81
  LONGEST FLOWPATH FROM NODE    281.00 TO NODE    530.00 =     364.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    530.00 TO NODE    530.00 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.) =    8.81
  RAINFALL INTENSITY(INCH/HR) =   3.13
  TOTAL STREAM AREA(ACRES) =     1.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.29

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       20.56     8.58        3.173          7.54
      2        3.29     8.81        3.133          1.20

 **********************************WARNING***********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

  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       23.77     8.58       3.173
      2       23.59     8.81       3.133

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      23.77   Tc(MIN.) =    8.58
  TOTAL AREA(ACRES) =        8.7
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    530.00 =    1336.00 FEET.

+--------------------------------------------------------------------------+
| MITIGATED FLOW FROM TANK-A                                               |
|                                                                          |
|                                                                          |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE    530.00 TO NODE    530.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =  18.58   RAIN INTENSITY(INCH/HOUR) =  2.16
  TOTAL AREA(ACRES) =     8.74   TOTAL RUNOFF(CFS) =      5.28

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

```
  FLOW PROCESS FROM NODE    535.00 TO NODE    540.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1563.70  DOWNSTREAM(FEET) =  1563.44
  FLOW LENGTH(FEET) =    34.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS  12.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.98
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.28
  PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =   18.69
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    540.00 =    1370.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    540.00 TO NODE    541.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1563.40  DOWNSTREAM(FEET) =   1561.53
  CHANNEL LENGTH THRU SUBAREA(FEET) =   133.00   CHANNEL SLOPE =  0.0141
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   0.018
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   0.07

         ==>>WARNING: FLOW IN CHANNEL EXCEEDS CHANNEL
             CAPACITY( NORMAL DEPTH EQUAL TO SPECIFIED MAXIMUM
             ALLOWABLE DEPTH).
             AS AN APPROXIMATION, FLOWDEPTH IS SET AT MAXIMUM
             ALLOWABLE DEPTH AND IS USED FOR TRAVELTIME CALCULATIONS.

  CHANNEL FLOW THRU SUBAREA(CFS) =       5.28
  FLOW VELOCITY(FEET/SEC.) =   9.43   FLOW DEPTH(FEET) =   0.07
  TRAVEL TIME(MIN.) =   0.24   Tc(MIN.) =   18.93
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    541.00 =    1503.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    541.00 TO NODE    541.00 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.) =   18.93
  RAINFALL INTENSITY(INCH/HR) =   2.14
  TOTAL STREAM AREA(ACRES) =     8.74
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.28

****************************************************************************
  FLOW PROCESS FROM NODE    110.00 TO NODE    541.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
          ASSUMED INITIAL SUBAREA UNIFORM
          DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   252.00
  UPSTREAM ELEVATION(FEET) =   1566.10
  DOWNSTREAM ELEVATION(FEET) =   1561.53
  ELEVATION DIFFERENCE(FEET) =      4.57
  TC = 0.323*[(  252.00**3)/(     4.57)]**.2 =    6.571
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.627
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8200
  SUBAREA RUNOFF(CFS) =      0.59
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.59

****************************************************************************
  FLOW PROCESS FROM NODE    541.00 TO NODE    541.00 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.) =    6.57
  RAINFALL INTENSITY(INCH/HR) =   3.63
  TOTAL STREAM AREA(ACRES) =     0.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.59

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        5.28    18.93        2.137          8.74
      2        0.59     6.57        3.627          0.20

 ********************************WARNING**********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 *************************************************************************

  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        2.43     6.57       3.627
      2        5.63    18.93       2.137

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       5.63   Tc(MIN.) =   18.93
  TOTAL AREA(ACRES) =        8.9
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    541.00 =    1503.00 FEET.

****************************************************************************
  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) =   1561.53  DOWNSTREAM(FEET) =   1561.10
  CHANNEL LENGTH THRU SUBAREA(FEET) =    61.00   CHANNEL SLOPE =  0.0071
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   0.018
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   0.07

         ==>>WARNING: FLOW IN CHANNEL EXCEEDS CHANNEL
             CAPACITY( NORMAL DEPTH EQUAL TO SPECIFIED MAXIMUM
             ALLOWABLE DEPTH).
             AS AN APPROXIMATION, FLOWDEPTH IS SET AT MAXIMUM
             ALLOWABLE DEPTH AND IS USED FOR TRAVELTIME CALCULATIONS.

  CHANNEL FLOW THRU SUBAREA(CFS) =       5.63
  FLOW VELOCITY(FEET/SEC.) =  10.05   FLOW DEPTH(FEET) =   0.07
  TRAVEL TIME(MIN.) =   0.10   Tc(MIN.) =   19.03
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    542.00 =    1564.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    301.00 TO NODE    302.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   176.00
  UPSTREAM ELEVATION(FEET) =   1581.00
  DOWNSTREAM ELEVATION(FEET) =   1580.00
  ELEVATION DIFFERENCE(FEET) =      1.00
  TC = 0.323*[(  176.00**3)/(     1.00)]**.2 =    7.180
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.470
```

```
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      1.40
  TOTAL AREA(ACRES) =      0.46   TOTAL RUNOFF(CFS) =      1.40

****************************************************************************
  FLOW PROCESS FROM NODE    302.00 TO NODE    600.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1578.40  DOWNSTREAM(FEET) =  1574.45
  FLOW LENGTH(FEET) =   187.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   5.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.42
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.40
  PIPE TRAVEL TIME(MIN.) =   0.57    Tc(MIN.) =    7.75
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    600.00 =     363.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    600.00 TO NODE    600.00 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.) =    7.75
  RAINFALL INTENSITY(INCH/HR) =   3.34
  TOTAL STREAM AREA(ACRES) =     0.46
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.40

****************************************************************************
  FLOW PROCESS FROM NODE    311.00 TO NODE    312.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   157.00
  UPSTREAM ELEVATION(FEET) =   1580.80
  DOWNSTREAM ELEVATION(FEET) =   1577.70
  ELEVATION DIFFERENCE(FEET) =      3.10
  TC = 0.323*[(  157.00**3)/(     3.10)]**.2 =    5.346
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.021
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      2.19
  TOTAL AREA(ACRES) =      0.62   TOTAL RUNOFF(CFS) =      2.19

****************************************************************************
  FLOW PROCESS FROM NODE    312.00 TO NODE    600.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1575.70  DOWNSTREAM(FEET) =  1574.45
  FLOW LENGTH(FEET) =    89.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   6.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.21
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.19
  PIPE TRAVEL TIME(MIN.) =   0.28    Tc(MIN.) =    5.63
  LONGEST FLOWPATH FROM NODE    311.00 TO NODE    600.00 =     246.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    600.00 TO NODE    600.00 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.) =    5.63
  RAINFALL INTENSITY(INCH/HR) =   3.92
  TOTAL STREAM AREA(ACRES) =     0.62
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.19

****************************************************************************
  FLOW PROCESS FROM NODE    321.00 TO NODE    322.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   190.00
  UPSTREAM ELEVATION(FEET) =   1578.50
  DOWNSTREAM ELEVATION(FEET) =   1576.10
  ELEVATION DIFFERENCE(FEET) =      2.40
  TC = 0.323*[(  190.00**3)/(     2.40)]**.2 =    6.310
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.701
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      1.86
  TOTAL AREA(ACRES) =      0.57   TOTAL RUNOFF(CFS) =      1.86

****************************************************************************
  FLOW PROCESS FROM NODE    322.00 TO NODE    600.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1576.10  DOWNSTREAM(FEET) =  1574.45
  FLOW LENGTH(FEET) =    21.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   4.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.54
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.86
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =    6.35
  LONGEST FLOWPATH FROM NODE    321.00 TO NODE    600.00 =     211.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    600.00 TO NODE    600.00 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.) =    6.35
  RAINFALL INTENSITY(INCH/HR) =   3.69
  TOTAL STREAM AREA(ACRES) =     0.57
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.86

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        1.40     7.75        3.339          0.46
      2        2.19     5.63        3.918          0.62
      3        1.86     6.35        3.691          0.57

 **********************************WARNING**********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

  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        4.86     5.63       3.918
      2        5.07     6.35       3.691
      3        4.95     7.75       3.339

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       4.86   Tc(MIN.) =    5.63
  TOTAL AREA(ACRES) =        1.7
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    600.00 =     363.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    600.00 TO NODE    605.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1574.45  DOWNSTREAM(FEET) =  1573.65
  FLOW LENGTH(FEET) =   137.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.57
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.86
  PIPE TRAVEL TIME(MIN.) =   0.50    Tc(MIN.) =    6.13
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    605.00 =     500.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    605.00 TO NODE    605.00 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.) =    6.13
  RAINFALL INTENSITY(INCH/HR) =   3.76
  TOTAL STREAM AREA(ACRES) =     1.65
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.86

****************************************************************************
  FLOW PROCESS FROM NODE    341.00 TO NODE    342.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   176.00
  UPSTREAM ELEVATION(FEET) =   1581.00
  DOWNSTREAM ELEVATION(FEET) =   1576.80
  ELEVATION DIFFERENCE(FEET) =      4.20
  TC = 0.323*[(  176.00**3)/(     4.20)]**.2 =    5.388
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.005
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      2.22
  TOTAL AREA(ACRES) =      0.63   TOTAL RUNOFF(CFS) =      2.22

****************************************************************************
  FLOW PROCESS FROM NODE    342.00 TO NODE    605.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1575.30  DOWNSTREAM(FEET) =  1573.65
  FLOW LENGTH(FEET) =    45.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   5.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.45
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.22
  PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =    5.49
  LONGEST FLOWPATH FROM NODE    341.00 TO NODE    605.00 =     221.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    605.00 TO NODE    605.00 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.) =    5.49
  RAINFALL INTENSITY(INCH/HR) =   3.97
  TOTAL STREAM AREA(ACRES) =     0.63
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.22

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        4.86     6.13        3.755          1.65
      2        2.22     5.49        3.969          0.63

 **********************************WARNING***********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

  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        6.57     5.49       3.969
      2        6.96     6.13       3.755

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       6.96   Tc(MIN.) =    6.13
  TOTAL AREA(ACRES) =        2.3
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    605.00 =     500.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    605.00 TO NODE    615.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1573.55  DOWNSTREAM(FEET) =  1573.20
  FLOW LENGTH(FEET) =    62.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.81
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.96
  PIPE TRAVEL TIME(MIN.) =   0.21    Tc(MIN.) =    6.35
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    615.00 =     562.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    615.00 TO NODE    615.00 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.) =    6.35
  RAINFALL INTENSITY(INCH/HR) =   3.69
  TOTAL STREAM AREA(ACRES) =     2.28
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.96

****************************************************************************
  FLOW PROCESS FROM NODE    331.00 TO NODE    332.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
```

```
==========================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   185.00
  UPSTREAM ELEVATION(FEET) =   1576.30
  DOWNSTREAM ELEVATION(FEET) =   1573.90
  ELEVATION DIFFERENCE(FEET) =      2.40
  TC = 0.323*[(  185.00**3)/(     2.40)]**.2 =    6.210
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.731
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8900
  SUBAREA RUNOFF(CFS) =      1.76
  TOTAL AREA(ACRES) =      0.53   TOTAL RUNOFF(CFS) =      1.76

**************************************************************************
  FLOW PROCESS FROM NODE    332.00 TO NODE    615.00 IS CODE =  31
--------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1573.90  DOWNSTREAM(FEET) =  1573.20
  FLOW LENGTH(FEET) =    15.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   4.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.76
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.76
  PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =    6.24
  LONGEST FLOWPATH FROM NODE    331.00 TO NODE    615.00 =     200.00 FEET.

**************************************************************************
  FLOW PROCESS FROM NODE    615.00 TO NODE    615.00 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.) =    6.24
  RAINFALL INTENSITY(INCH/HR) =   3.72
  TOTAL STREAM AREA(ACRES) =     0.53
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.76

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        6.96     6.35        3.691          2.28
      2        1.76     6.24        3.721          0.53

 **********************************WARNING**********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ***************************************************************************

  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        8.61     6.24       3.721
      2        8.71     6.35       3.691

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       8.71   Tc(MIN.) =    6.35
  TOTAL AREA(ACRES) =        2.8
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    615.00 =     562.00 FEET.

**************************************************************************
  FLOW PROCESS FROM NODE    615.00 TO NODE    620.00 IS CODE =  31
```

```
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1573.10  DOWNSTREAM(FEET) =  1572.30
  FLOW LENGTH(FEET) =   153.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  14.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.02
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       8.71
  PIPE TRAVEL TIME(MIN.) =   0.51    Tc(MIN.) =    6.85
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    620.00 =     715.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    620.00 TO NODE    620.00 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.) =    6.85
  RAINFALL INTENSITY(INCH/HR) =   3.55
  TOTAL STREAM AREA(ACRES) =     2.81
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.71

****************************************************************************
  FLOW PROCESS FROM NODE    361.00 TO NODE    362.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   242.00
  UPSTREAM ELEVATION(FEET) =   1577.00
  DOWNSTREAM ELEVATION(FEET) =   1572.55
  ELEVATION DIFFERENCE(FEET) =      4.45
  TC = 0.323*[(  242.00**3)/(     4.45)]**.2 =    6.448
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.662
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      2.80
  TOTAL AREA(ACRES) =      0.88   TOTAL RUNOFF(CFS) =      2.80

****************************************************************************
  FLOW PROCESS FROM NODE    362.00 TO NODE    620.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1572.55  DOWNSTREAM(FEET) =  1572.30
  FLOW LENGTH(FEET) =    44.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS   8.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.94
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.80
  PIPE TRAVEL TIME(MIN.) =   0.19    Tc(MIN.) =    6.63
  LONGEST FLOWPATH FROM NODE    361.00 TO NODE    620.00 =     286.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    620.00 TO NODE    620.00 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.) =    6.63
  RAINFALL INTENSITY(INCH/HR) =   3.61
  TOTAL STREAM AREA(ACRES) =     0.88
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.80
```

```
 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        8.71     6.85        3.551          2.81
     2        2.80     6.63        3.610          0.88

 ********************************WARNING*********************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

 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       11.23     6.63       3.610
     2       11.47     6.85       3.551

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      11.47   Tc(MIN.) =    6.85
 TOTAL AREA(ACRES) =        3.7
 LONGEST FLOWPATH FROM NODE    301.00 TO NODE    620.00 =     715.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    620.00 TO NODE    352.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1572.20  DOWNSTREAM(FEET) =  1572.01
 FLOW LENGTH(FEET) =    36.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.3 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   5.42
 ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      11.47
 PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =    6.96
 LONGEST FLOWPATH FROM NODE    301.00 TO NODE    352.00 =     751.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    352.00 TO NODE    352.00 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.) =    6.96
 RAINFALL INTENSITY(INCH/HR) =   3.52
 TOTAL STREAM AREA(ACRES) =     3.69
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.47

****************************************************************************
 FLOW PROCESS FROM NODE    351.00 TO NODE    352.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   158.00
 UPSTREAM ELEVATION(FEET) =   1575.50
 DOWNSTREAM ELEVATION(FEET) =   1572.01
 ELEVATION DIFFERENCE(FEET) =      3.49
 TC = 0.323*[(  158.00**3)/(     3.49)]**.2 =    5.241
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.061
 *USER SPECIFIED(SUBAREA):
 APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
 SUBAREA RUNOFF(CFS) =      1.47
```

```
  TOTAL AREA(ACRES) =      0.41   TOTAL RUNOFF(CFS) =      1.47

****************************************************************************
  FLOW PROCESS FROM NODE    352.00 TO NODE    352.00 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.) =    5.24
  RAINFALL INTENSITY(INCH/HR) =   4.06
  TOTAL STREAM AREA(ACRES) =     0.41
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.47

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       11.47     6.96        3.523          3.69
      2        1.47     5.24        4.061          0.41

 **********************************WARNING***********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

  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       10.09     5.24       4.061
      2       12.74     6.96       3.523

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      12.74   Tc(MIN.) =    6.96
  TOTAL AREA(ACRES) =        4.1
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    352.00 =     751.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    352.00 TO NODE    625.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1569.34  DOWNSTREAM(FEET) =  1569.00
  FLOW LENGTH(FEET) =    63.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.58
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      12.74
  PIPE TRAVEL TIME(MIN.) =   0.19    Tc(MIN.) =    7.15
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    625.00 =     814.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    625.00 TO NODE    625.00 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.) =    7.15
  RAINFALL INTENSITY(INCH/HR) =   3.48
  TOTAL STREAM AREA(ACRES) =     4.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.74

****************************************************************************
  FLOW PROCESS FROM NODE    371.00 TO NODE    373.00 IS CODE =  21
----------------------------------------------------------------------------
```

```
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
================================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   301.00
  UPSTREAM ELEVATION(FEET) =   1575.20
  DOWNSTREAM ELEVATION(FEET) =   1572.50
  ELEVATION DIFFERENCE(FEET) =      2.70
  TC = 0.323*[(  301.00**3)/(     2.70)]**.2 =    8.122
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.262
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
  SUBAREA RUNOFF(CFS) =      1.69
  TOTAL AREA(ACRES) =      0.59   TOTAL RUNOFF(CFS) =      1.69

********************************************************************************
  FLOW PROCESS FROM NODE    373.00 TO NODE    625.00 IS CODE =  31
--------------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1572.50  DOWNSTREAM(FEET) =  1569.00
  FLOW LENGTH(FEET) =    31.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   6.0 INCH PIPE IS   4.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.35
  ESTIMATED PIPE DIAMETER(INCH) =   6.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.69
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =    8.17
  LONGEST FLOWPATH FROM NODE    371.00 TO NODE    625.00 =     332.00 FEET.

********************************************************************************
  FLOW PROCESS FROM NODE    625.00 TO NODE    625.00 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.) =    8.17
  RAINFALL INTENSITY(INCH/HR) =   3.25
  TOTAL STREAM AREA(ACRES) =     0.59
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.69

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       12.74     7.15        3.476          4.10
      2        1.69     8.17        3.252          0.59

 **********************************WARNING***********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

  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       14.22     7.15       3.476
      2       13.61     8.17       3.252

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      14.22   Tc(MIN.) =    7.15
  TOTAL AREA(ACRES) =        4.7
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    625.00 =     814.00 FEET.

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

```
  FLOW PROCESS FROM NODE    625.00 TO NODE    630.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1568.90  DOWNSTREAM(FEET) =  1567.75
  FLOW LENGTH(FEET) =   121.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  16.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.94
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      14.22
  PIPE TRAVEL TIME(MIN.) =   0.29    Tc(MIN.) =    7.44
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    630.00 =     935.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    630.00 TO NODE    630.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    381.00 TO NODE    382.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   189.00
  UPSTREAM ELEVATION(FEET) =   1574.70
  DOWNSTREAM ELEVATION(FEET) =   1570.85
  ELEVATION DIFFERENCE(FEET) =      3.85
  TC = 0.323*[(  189.00**3)/(     3.85)]**.2 =    5.722
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.887
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8600
  SUBAREA RUNOFF(CFS) =      1.20
  TOTAL AREA(ACRES) =      0.36   TOTAL RUNOFF(CFS) =      1.20

****************************************************************************
  FLOW PROCESS FROM NODE    382.00 TO NODE    392.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1570.85  DOWNSTREAM(FEET) =  1570.55
  FLOW LENGTH(FEET) =    53.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   5.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.19
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.20
  PIPE TRAVEL TIME(MIN.) =   0.28    Tc(MIN.) =    6.00
  LONGEST FLOWPATH FROM NODE    381.00 TO NODE    392.00 =     242.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    392.00 TO NODE    392.00 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.) =    6.00
  RAINFALL INTENSITY(INCH/HR) =   3.80
  TOTAL STREAM AREA(ACRES) =     0.36
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.20

****************************************************************************
  FLOW PROCESS FROM NODE    391.00 TO NODE    392.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
```

```
        ASSUMED INITIAL SUBAREA UNIFORM
        DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   337.00
  UPSTREAM ELEVATION(FEET) =   1574.60
  DOWNSTREAM ELEVATION(FEET) =   1571.30
  ELEVATION DIFFERENCE(FEET) =      3.30
  TC = 0.323*[(  337.00**3)/(     3.30)]**.2 =    8.350
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.217
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8900
  SUBAREA RUNOFF(CFS) =      1.63
  TOTAL AREA(ACRES) =      0.57   TOTAL RUNOFF(CFS) =      1.63

****************************************************************************
  FLOW PROCESS FROM NODE    392.00 TO NODE    392.00 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.) =    8.35
  RAINFALL INTENSITY(INCH/HR) =   3.22
  TOTAL STREAM AREA(ACRES) =     0.57
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.63

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        1.20     6.00        3.796          0.36
      2        1.63     8.35        3.217          0.57

 **********************************WARNING**********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ***************************************************************************

  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        2.38     6.00       3.796
      2        2.65     8.35       3.217

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       2.65   Tc(MIN.) =    8.35
  TOTAL AREA(ACRES) =        0.9
  LONGEST FLOWPATH FROM NODE    391.00 TO NODE    392.00 =     337.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    392.00 TO NODE    630.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1567.88  DOWNSTREAM(FEET) =  1567.75
  FLOW LENGTH(FEET) =    14.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   8.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.62
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.65
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =    8.40
  LONGEST FLOWPATH FROM NODE    391.00 TO NODE    630.00 =     351.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    630.00 TO NODE    630.00 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        2.65     8.40       3.208        0.93
  LONGEST FLOWPATH FROM NODE    391.00 TO NODE    630.00 =     351.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1       14.22     7.44       3.408        4.69
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    630.00 =     935.00 FEET.

 ****************************************WARNING*****************************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1      16.57       7.44        3.408
      2      16.04       8.40        3.208

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      16.57   Tc(MIN.) =    7.44
  TOTAL AREA(ACRES) =        5.6

****************************************************************************
  FLOW PROCESS FROM NODE    630.00 TO NODE    640.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1567.65  DOWNSTREAM(FEET) =  1563.55
  FLOW LENGTH(FEET) =   288.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.47
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      16.57
  PIPE TRAVEL TIME(MIN.) =   0.57    Tc(MIN.) =    8.01
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    640.00 =    1223.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    640.00 TO NODE    640.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    401.00 TO NODE    402.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
          ASSUMED INITIAL SUBAREA UNIFORM
          DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   296.00
  UPSTREAM ELEVATION(FEET) =   1573.00
  DOWNSTREAM ELEVATION(FEET) =   1570.45
  ELEVATION DIFFERENCE(FEET) =      2.55
  TC = 0.323*[(  296.00**3)/(     2.55)]**.2 =    8.133
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.260
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
  SUBAREA RUNOFF(CFS) =      3.77
  TOTAL AREA(ACRES) =      1.33   TOTAL RUNOFF(CFS) =      3.77
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    402.00 TO NODE    635.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1568.45  DOWNSTREAM(FEET) =  1567.85
  FLOW LENGTH(FEET) =    86.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS   9.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.56
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.77
  PIPE TRAVEL TIME(MIN.) =   0.31    Tc(MIN.) =    8.45
  LONGEST FLOWPATH FROM NODE    401.00 TO NODE    635.00 =     382.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    635.00 TO NODE    635.00 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.) =    8.45
  RAINFALL INTENSITY(INCH/HR) =   3.20
  TOTAL STREAM AREA(ACRES) =     1.33
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.77

****************************************************************************
  FLOW PROCESS FROM NODE    411.00 TO NODE    412.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   288.00
  UPSTREAM ELEVATION(FEET) =   1572.40
  DOWNSTREAM ELEVATION(FEET) =   1570.65
  ELEVATION DIFFERENCE(FEET) =      1.75
  TC = 0.323*[(  288.00**3)/(     1.75)]**.2 =    8.626
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.165
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8500
  SUBAREA RUNOFF(CFS) =      1.21
  TOTAL AREA(ACRES) =      0.45   TOTAL RUNOFF(CFS) =      1.21

****************************************************************************
  FLOW PROCESS FROM NODE    412.00 TO NODE    635.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1568.65  DOWNSTREAM(FEET) =  1567.75
  FLOW LENGTH(FEET) =    19.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   3.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.06
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.21
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =    8.67
  LONGEST FLOWPATH FROM NODE    411.00 TO NODE    635.00 =     307.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    635.00 TO NODE    635.00 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.) =    8.67
  RAINFALL INTENSITY(INCH/HR) =   3.16
```

```
 TOTAL STREAM AREA(ACRES) =     0.45
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.21

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        3.77     8.45        3.199          1.33
     2        1.21     8.67        3.157          0.45

 ***********************************WARNING************************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ******************************************************************************

 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        4.95     8.45       3.199
     2        4.93     8.67       3.157

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       4.95   Tc(MIN.) =    8.45
 TOTAL AREA(ACRES) =        1.8
 LONGEST FLOWPATH FROM NODE    401.00 TO NODE    635.00 =     382.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    635.00 TO NODE    422.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1567.75  DOWNSTREAM(FEET) =  1567.30
 FLOW LENGTH(FEET) =    89.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.1 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   4.34
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       4.95
 PIPE TRAVEL TIME(MIN.) =   0.34    Tc(MIN.) =    8.79
 LONGEST FLOWPATH FROM NODE    401.00 TO NODE    422.00 =     471.00 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.) =    8.79
 RAINFALL INTENSITY(INCH/HR) =   3.14
 TOTAL STREAM AREA(ACRES) =     1.78
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.95

****************************************************************************
 FLOW PROCESS FROM NODE    421.00 TO NODE    422.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
          ASSUMED INITIAL SUBAREA UNIFORM
          DEVELOPMENT IS APARTMENT
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   285.00
 UPSTREAM ELEVATION(FEET) =   1572.60
 DOWNSTREAM ELEVATION(FEET) =   1570.00
 ELEVATION DIFFERENCE(FEET) =      2.60
 TC = 0.323*[(  285.00**3)/(     2.60)]**.2 =    7.920
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.304
 *USER SPECIFIED(SUBAREA):
```

```
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8400
  SUBAREA RUNOFF(CFS) =      1.72
  TOTAL AREA(ACRES) =      0.62   TOTAL RUNOFF(CFS) =      1.72

****************************************************************************
  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.) =    7.92
  RAINFALL INTENSITY(INCH/HR) =   3.30
  TOTAL STREAM AREA(ACRES) =     0.62
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.72

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        4.95     8.79        3.136          1.78
      2        1.72     7.92        3.304          0.62

 **********************************WARNING***********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

  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        6.18     7.92       3.304
      2        6.58     8.79       3.136

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       6.58   Tc(MIN.) =    8.79
  TOTAL AREA(ACRES) =        2.4
  LONGEST FLOWPATH FROM NODE    401.00 TO NODE    422.00 =     471.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    422.00 TO NODE    640.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1563.63  DOWNSTREAM(FEET) =  1563.55
  FLOW LENGTH(FEET) =    18.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  14.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.28
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.58
  PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =    8.86
  LONGEST FLOWPATH FROM NODE    401.00 TO NODE    640.00 =     489.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    640.00 TO NODE    640.00 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.) =    8.86
  RAINFALL INTENSITY(INCH/HR) =   3.12
  TOTAL STREAM AREA(ACRES) =     2.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.58

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

```
 FLOW PROCESS FROM NODE    431.00 TO NODE    432.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
        ASSUMED INITIAL SUBAREA UNIFORM
        DEVELOPMENT IS APARTMENT
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   265.00
 UPSTREAM ELEVATION(FEET) =   1570.30
 DOWNSTREAM ELEVATION(FEET) =   1567.95
 ELEVATION DIFFERENCE(FEET) =      2.35
 TC = 0.323*[(  265.00**3)/(     2.35)]**.2 =    7.736
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.343
 *USER SPECIFIED(SUBAREA):
 APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8600
 SUBAREA RUNOFF(CFS) =      1.21
 TOTAL AREA(ACRES) =      0.42   TOTAL RUNOFF(CFS) =      1.21

****************************************************************************
 FLOW PROCESS FROM NODE    432.00 TO NODE    640.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1565.37  DOWNSTREAM(FEET) =  1564.40
 FLOW LENGTH(FEET) =    19.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN   9.0 INCH PIPE IS   3.6 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   7.25
 ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       1.21
 PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =    7.78
 LONGEST FLOWPATH FROM NODE    431.00 TO NODE    640.00 =     284.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    640.00 TO NODE    640.00 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.) =    7.78
 RAINFALL INTENSITY(INCH/HR) =   3.33
 TOTAL STREAM AREA(ACRES) =     0.42
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.21

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        6.58     8.86        3.124          2.40
     2        1.21     7.78        3.333          0.42

 *********************************WARNING*********************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 *************************************************************************

 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        6.99     7.78       3.333
     2        7.72     8.86       3.124

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       7.72   Tc(MIN.) =    8.86
 TOTAL AREA(ACRES) =        2.8
 LONGEST FLOWPATH FROM NODE    401.00 TO NODE    640.00 =     489.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    640.00 TO NODE    640.00 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        7.72     8.86       3.124        2.82
  LONGEST FLOWPATH FROM NODE    401.00 TO NODE    640.00 =     489.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)   (ACRE)
      1       16.57     8.01       3.285        5.62
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    640.00 =    1223.00 FEET.

 ****************************WARNING*************************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1      23.55       8.01        3.285
      2      23.47       8.86        3.124

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      23.55   Tc(MIN.) =    8.01
  TOTAL AREA(ACRES) =        8.4

+----------------------------------------------------------------------------+
| MITIGATED FLOW FROM TANK-B                                                 |
|                                                                            |
|                                                                            |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE    640.00 TO NODE    640.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =  12.91   RAIN INTENSITY(INCH/HOUR) =  2.59
  TOTAL AREA(ACRES) =     8.44   TOTAL RUNOFF(CFS) =      9.77

****************************************************************************
  FLOW PROCESS FROM NODE    640.00 TO NODE    642.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1560.20  DOWNSTREAM(FEET) =  1560.16
  FLOW LENGTH(FEET) =     3.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.30
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       9.77
  PIPE TRAVEL TIME(MIN.) =   0.01    Tc(MIN.) =   12.92
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    642.00 =    1226.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    642.00 TO NODE    642.00 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.) =   12.92
  RAINFALL INTENSITY(INCH/HR) =   2.59
  TOTAL STREAM AREA(ACRES) =     8.44
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.77

****************************************************************************
  FLOW PROCESS FROM NODE    291.00 TO NODE    292.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   146.00
  UPSTREAM ELEVATION(FEET) =   1572.50
  DOWNSTREAM ELEVATION(FEET) =   1565.20
  ELEVATION DIFFERENCE(FEET) =      7.30
  TC = 0.323*[(  146.00**3)/(     7.30)]**.2 =    4.313
  COMPUTED TIME OF CONCENTRATION INCREASED TO 5 MIN.
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.158
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8500
  SUBAREA RUNOFF(CFS) =      1.10
  TOTAL AREA(ACRES) =      0.31   TOTAL RUNOFF(CFS) =      1.10

****************************************************************************
  FLOW PROCESS FROM NODE    292.00 TO NODE    642.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1561.66  DOWNSTREAM(FEET) =  1560.16
  FLOW LENGTH(FEET) =   297.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   7.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   2.87
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.10
  PIPE TRAVEL TIME(MIN.) =   1.72    Tc(MIN.) =    6.72
  LONGEST FLOWPATH FROM NODE    291.00 TO NODE    642.00 =     443.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    642.00 TO NODE    642.00 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.) =    6.72
  RAINFALL INTENSITY(INCH/HR) =   3.59
  TOTAL STREAM AREA(ACRES) =     0.31
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.10

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        9.77    12.92        2.587          8.44
      2        1.10     6.72        3.586          0.31

 **********************************WARNING**********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

  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        6.18      6.72       3.586
      2       10.56     12.92       2.587

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      10.56   Tc(MIN.) =   12.92
  TOTAL AREA(ACRES) =        8.8
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    642.00 =    1226.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    642.00 TO NODE    645.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1560.16  DOWNSTREAM(FEET) =  1559.75
  FLOW LENGTH(FEET) =    70.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.43
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.56
  PIPE TRAVEL TIME(MIN.) =   0.21    Tc(MIN.) =   13.13
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    645.00 =    1296.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    102.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   655.00
  UPSTREAM ELEVATION(FEET) =   1586.50
  DOWNSTREAM ELEVATION(FEET) =   1581.24
  ELEVATION DIFFERENCE(FEET) =      5.26
  TC = 0.323*[(  655.00**3)/(     5.26)]**.2 =   11.333
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.762
  *USER SPECIFIED(SUBAREA):
  APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8900
  SUBAREA RUNOFF(CFS) =      2.41
  TOTAL AREA(ACRES) =      0.98   TOTAL RUNOFF(CFS) =      2.41

****************************************************************************
  FLOW PROCESS FROM NODE    102.00 TO NODE    103.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1577.74  DOWNSTREAM(FEET) =  1571.94
  FLOW LENGTH(FEET) =    66.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   4.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.62
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.41
  PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =   11.44
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    103.00 =     721.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    110.00 TO NODE    111.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS APARTMENT
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   410.00
  UPSTREAM ELEVATION(FEET) =   1566.10
  DOWNSTREAM ELEVATION(FEET) =   1562.10
  ELEVATION DIFFERENCE(FEET) =      4.00
  TC = 0.323*[(  410.00**3)/(     4.00)]**.2 =    9.038
```

```
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.093
 *USER SPECIFIED(SUBAREA):
 APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8700
 SUBAREA RUNOFF(CFS) =      0.83
 TOTAL AREA(ACRES) =      0.31   TOTAL RUNOFF(CFS) =      0.83

****************************************************************************
 FLOW PROCESS FROM NODE    100.00 TO NODE    106.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
        ASSUMED INITIAL SUBAREA UNIFORM
        DEVELOPMENT IS APARTMENT
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH(FEET) =  1125.00
 UPSTREAM ELEVATION(FEET) =   1586.50
 DOWNSTREAM ELEVATION(FEET) =   1564.87
 ELEVATION DIFFERENCE(FEET) =     21.63
 TC = 0.323*[( 1125.00**3)/(    21.63)]**.2 =   11.816
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.705
 *USER SPECIFIED(SUBAREA):
 APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8800
 SUBAREA RUNOFF(CFS) =      2.07
 TOTAL AREA(ACRES) =      0.87   TOTAL RUNOFF(CFS) =      2.07

****************************************************************************
 FLOW PROCESS FROM NODE    106.00 TO NODE    107.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1562.20  DOWNSTREAM(FEET) =  1560.00
 FLOW LENGTH(FEET) =   232.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  12.0 INCH PIPE IS   6.9 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   4.43
 ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       2.07
 PIPE TRAVEL TIME(MIN.) =   0.87    Tc(MIN.) =   12.69
 LONGEST FLOWPATH FROM NODE    100.00 TO NODE    107.00 =    1357.00 FEET.
============================================================================
 END OF STUDY SUMMARY:
 TOTAL AREA(ACRES)     =        0.9  TC(MIN.) =     12.69
 PEAK FLOW RATE(CFS)   =       2.07
============================================================================
============================================================================
 END OF RATIONAL METHOD ANALYSIS
```

APPENDIX D

DETENTION ANALYSIS

Existing Condition Node 202
2-yr Storm Event

Total Area	Total Impervious Area	%Imp	Fp (infiltration rate based on RI, Plate E-6.2)
8.64	0	0.00	0.49

Constant Loss Rate

F= Fp(1-0.9Ai)
F= 0.4900

For 24-hr storms, Ft is variable loss rate

Ft= C[24-(T/60)]^1.55+Fm
Ft= 0.8653

C= (F-Fm)/54
C= 0.0045

Fm= 0.5F
Fm= 0.2450

T= 7.5

RCFC & WCD HYDROLOGY MANUAL	SYNTHETIC UNIT HYDROGRAPH METHOD UNIT HYDROGRAPH AND EFFECTIVE RAIN CALCULATION FORM	PROJECT: ROCAS GRANDES 2 JOB #: 3816 PAGE

[1] CONCENTRATION POINT						[2] AREA DESIGNATION					
[3] DRAINAGE AREA - ACRES			8.64	ACRES		[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])				N/A	
[5] UNIT TIME - MINUTES			5	MIN PER E-1.2		[6] LAG TIME-MINUTES					MIN
[7] UNIT TIME-PERCENT OF LAG			N/A			[8] S-CURVE				N/A	
[9] STORM FREQUENCY & DURATION			2 YEAR	1 HOUR		[10] TOTAL ADJUSTED STORM RAIN-INCHES				0.475	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR			N/A			[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR				N/A	
[13] CONSTANT LOSS RATE-IN/HR			0.4900		IN/HR	[14] LOW LOSS RATE-PERCENT				0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.00	0	0.000	0.00
5					4.2	0.239	0.49	0.192	0.048	0.42
10					4.3	0.245	0.49	0.196	0.049	0.43
15					5	0.285	0.49	0.228	0.057	0.50
20					5	0.285	0.49	0.228	0.057	0.50
25					5.8	0.331	0.49	0.264	0.066	0.58
30					6.5	0.371	0.49	0.296	0.074	0.65
35					7.4	0.422	0.49	0.337	0.084	0.73
40					8.6	0.490	0.49	0.392	0.000	0.00
45					12.3	0.701	0.49	0.561	0.211	1.84
50					29.1	1.659	0.49	1.327	1.169	10.18
55					6.8	0.388	0.49	0.310	0.078	0.68
60					5	0.285	0.49	0.228	0.057	0.50
				Σ[20] -	100			Σ[23] -	1.95	16.99

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[1] CONCENTRATION POINT			[2] AREA DESIGNATION				
[3] DRAINAGE AREA - ACRES	8.64	ACRES		[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])		N/A	
[5] UNIT TIME - MINUTES	5	MIN PER E-1.2		[6] LAG TIME-MINUTES			MIN
[7] UNIT TIME-PERCENT OF LAG	N/A			[8] S-CURVE		N/A	
[9] STORM FREQUENCY & DURATION	2 YEAR	3 HOUR		[10] TOTAL ADJUSTED STORM RAIN-INCHES		0.833	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR	N/A			[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR		N/A	
[13] CONSTANT LOSS RATE-IN/HR	0.4900	IN/HR		[14] LOW LOSS RATE-PERCENT		0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.49	0	0.000	0.00
5					1.3	0.129948	0.49	0.10396	0.026	0.22
10					1.3	0.129948	0.49	0.10396	0.026	0.22
15					1.1	0.109956	0.49	0.08796	0.022	0.19
20					1.5	0.14994	0.49	0.11995	0.030	0.26
25					1.5	0.14994	0.49	0.11995	0.030	0.26
30					1.8	0.179928	0.49	0.14394	0.036	0.31
35					1.5	0.14994	0.49	0.11995	0.030	0.26
40					1.8	0.179928	0.49	0.14394	0.036	0.31
45					1.8	0.179928	0.49	0.14394	0.036	0.31
50					1.5	0.14994	0.49	0.11995	0.030	0.26
55					1.6	0.159936	0.49	0.12795	0.032	0.28
60					1.8	0.179928	0.49	0.14394	0.036	0.31
65					2.2	0.219912	0.49	0.17593	0.044	0.38
70					2.2	0.219912	0.49	0.17593	0.044	0.38
75					2.2	0.219912	0.49	0.17593	0.044	0.38
80					2	0.19992	0.49	0.15994	0.040	0.35
85					2.6	0.259896	0.49	0.20792	0.052	0.45
90					2.7	0.269892	0.49	0.21591	0.054	0.47
95					2.4	0.239904	0.49	0.19192	0.048	0.41
100					2.7	0.269892	0.49	0.21591	0.054	0.47
105					3.3	0.329868	0.49	0.26389	0.066	0.57
110					3.1	0.309876	0.49	0.2479	0.062	0.54
115					2.9	0.289884	0.49	0.23191	0.058	0.50
120					3	0.29988	0.49	0.2399	0.060	0.52
125					3.1	0.309876	0.49	0.2479	0.062	0.54
130					4.2	0.419832	0.49	0.33587	0.084	0.73
135					5	0.4998	0.49	0.39984	0.010	0.08
140					3.5	0.34986	0.49	0.27989	0.070	0.60
145					6.8	0.679728	0.49	0.54378	0.190	1.64
150					7.3	0.729708	0.49	0.58377	0.240	2.07
155					8.2	0.819672	0.49	0.65574	0.330	2.85
160					5.9	0.589764	0.49	0.47181	0.100	0.86
165					2	0.19992	0.49	0.15994	0.040	0.35
170					1.8	0.179928	0.49	0.14394	0.036	0.31
175					1.8	0.179928	0.49	0.14394	0.036	0.31
180					0.6	0.059976	0.49	0.04798	0.012	0.10
				Σ[20] -	100			Σ[23] -	2.20	19.04

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[1] CONCENTRATION POINT			[2] AREA DESIGNATION				
[3] DRAINAGE AREA - ACRES	8.64	ACRES	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])				
[5] UNIT TIME - MINUTES	5	MIN PER E-1.2	[6] LAG TIME-MINUTES				MIN
[7] UNIT TIME-PERCENT OF LAG	N/A		[8] S-CURVE			N/A	
[9] STORM FREQUENCY & DURATION	2 YEAR	6 HOUR	[10] TOTAL ADJUSTED STORM RAIN-INCHES			1.16	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR	N/A		[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR			N/A	
[13] CONSTANT LOSS RATE-IN/HR	0.4900	IN/HR	[14] LOW LOSS RATE-PERCENT			0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.49	0	0.000	0.00
5					0.5	0.0696	0.49	0.05568	0.014	0.12
10					0.6	0.08352	0.49	0.06682	0.017	0.14
15					0.6	0.08352	0.49	0.06682	0.017	0.14
20					0.6	0.08352	0.49	0.06682	0.017	0.14
25					0.6	0.08352	0.49	0.06682	0.017	0.14
30					0.7	0.09744	0.49	0.07795	0.019	0.17
35					0.7	0.09744	0.49	0.07795	0.019	0.17
40					0.7	0.09744	0.49	0.07795	0.019	0.17
45					0.7	0.09744	0.49	0.07795	0.019	0.17
50					0.7	0.09744	0.49	0.07795	0.019	0.17
55					0.7	0.09744	0.49	0.07795	0.019	0.17
60					0.8	0.11136	0.49	0.08909	0.022	0.19
65					0.8	0.11136	0.49	0.08909	0.022	0.19
70					0.8	0.11136	0.49	0.08909	0.022	0.19
75					0.8	0.11136	0.49	0.08909	0.022	0.19
80					0.8	0.11136	0.49	0.08909	0.022	0.19
85					0.8	0.11136	0.49	0.08909	0.022	0.19
90					0.8	0.11136	0.49	0.08909	0.022	0.19
95					0.8	0.11136	0.49	0.08909	0.022	0.19
100					0.8	0.11136	0.49	0.08909	0.022	0.19
105					0.8	0.11136	0.49	0.08909	0.022	0.19
110					0.8	0.11136	0.49	0.08909	0.022	0.19
115					0.8	0.11136	0.49	0.08909	0.022	0.19
120					0.9	0.12528	0.49	0.10022	0.025	0.22
125					0.8	0.11136	0.49	0.08909	0.022	0.19
130					0.9	0.12528	0.49	0.10022	0.025	0.22
135					0.9	0.12528	0.49	0.10022	0.025	0.22
140					0.9	0.12528	0.49	0.10022	0.025	0.22
145					0.9	0.12528	0.49	0.10022	0.025	0.22
150					0.9	0.12528	0.49	0.10022	0.025	0.22
155					0.9	0.12528	0.49	0.10022	0.025	0.22
160					0.9	0.12528	0.49	0.10022	0.025	0.22
165					1	0.1392	0.49	0.11136	0.028	0.24
170					1	0.1392	0.49	0.11136	0.028	0.24
175					1	0.1392	0.49	0.11136	0.028	0.24
180					1	0.1392	0.49	0.11136	0.028	0.24
185					1	0.1392	0.49	0.11136	0.028	0.24
190					1.1	0.15312	0.49	0.1225	0.031	0.26
195					1.1	0.15312	0.49	0.1225	0.031	0.26
200					1.1	0.15312	0.49	0.1225	0.031	0.26
205					1.2	0.16704	0.49	0.13363	0.033	0.29

210						1.3	0.18096	0.49	0.14477	0.036	0.31
215						1.4	0.19488	0.49	0.1559	0.039	0.34
220						1.4	0.19488	0.49	0.1559	0.039	0.34
225						1.5	0.2088	0.49	0.16704	0.042	0.36
230						1.5	0.2088	0.49	0.16704	0.042	0.36
235						1.6	0.22272	0.49	0.17818	0.045	0.38
240						1.6	0.22272	0.49	0.17818	0.045	0.38
245						1.7	0.23664	0.49	0.18931	0.047	0.41
250						1.8	0.25056	0.49	0.20045	0.050	0.43
255						1.9	0.26448	0.49	0.21158	0.053	0.46
260						2	0.2784	0.49	0.22272	0.056	0.48
265						2.1	0.29232	0.49	0.23386	0.058	0.51
270						2.1	0.29232	0.49	0.23386	0.058	0.51
275						2.2	0.30624	0.49	0.24499	0.061	0.53
280						2.3	0.32016	0.49	0.25613	0.064	0.55
285						2.4	0.33408	0.49	0.26726	0.067	0.58
290						2.4	0.33408	0.49	0.26726	0.067	0.58
295						2.5	0.348	0.49	0.2784	0.070	0.60
300						2.6	0.36192	0.49	0.28954	0.072	0.63
305						3.1	0.43152	0.49	0.34522	0.086	0.75
310						3.6	0.50112	0.49	0.4009	0.011	0.10
315						3.9	0.54288	0.49	0.4343	0.053	0.46
320						4.2	0.58464	0.49	0.46771	0.095	0.82
325						4.7	0.65424	0.49	0.52339	0.164	1.42
330						5.6	0.77952	0.49	0.62362	0.290	2.50
335						1.9	0.26448	0.49	0.21158	0.053	0.46
340						0.9	0.12528	0.49	0.10022	0.025	0.22
345						0.6	0.08352	0.49	0.06682	0.017	0.14
350						0.5	0.0696	0.49	0.05568	0.014	0.12
355						0.3	0.04176	0.49	0.03341	0.008	0.07
360						0.2	0.02784	0.49	0.02227	0.006	0.05
					Σ[20] -	100			Σ[23] -	2.78	24.05

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[1] CONCENTRATION POINT						[2] AREA DESIGNATION					
[3] DRAINAGE AREA - ACRES			8.64	ACRES		[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])					
[5] UNIT TIME - MINUTES			15	MIN PER E-1.2		[6] LAG TIME-MINUTES					MIN
[7] UNIT TIME-PERCENT OF LAG			N/A			[8] S-CURVE				N/A	
[9] STORM FREQUENCY & DURATION			2 YEAR	24 HOUR		[10] TOTAL ADJUSTED STORM RAIN-INCHES				1.96	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR			0.8653			[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR					
[13] CONSTANT LOSS RATE-IN/HR					IN/HR	[14] LOW LOSS RATE-PERCENT				0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.00	0	0.000	0.00
15					0.2	0.016	0.860	0.01254	0.003	0.03
30					0.3	0.024	0.850	0.01882	0.005	0.04
45					0.3	0.024	0.840	0.01882	0.005	0.04
60					0.4	0.031	0.831	0.02509	0.006	0.05
75					0.3	0.024	0.821	0.01882	0.005	0.04
90					0.3	0.024	0.811	0.01882	0.005	0.04
105					0.3	0.024	0.801	0.01882	0.005	0.04
120					0.4	0.031	0.792	0.02509	0.006	0.05
135					0.4	0.031	0.782	0.02509	0.006	0.05
150					0.4	0.031	0.773	0.02509	0.006	0.05
165					0.5	0.039	0.763	0.03136	0.008	0.07
180					0.5	0.039	0.754	0.03136	0.008	0.07
195					0.5	0.039	0.745	0.03136	0.008	0.07
210					0.5	0.039	0.735	0.03136	0.008	0.07
225					0.5	0.039	0.726	0.03136	0.008	0.07
240					0.6	0.047	0.717	0.03763	0.009	0.08
255					0.6	0.047	0.708	0.03763	0.009	0.08
270					0.7	0.055	0.699	0.0439	0.011	0.09
285					0.7	0.055	0.690	0.0439	0.011	0.09
300					0.8	0.063	0.681	0.05018	0.013	0.11
315					0.6	0.047	0.672	0.03763	0.009	0.08
330					0.7	0.055	0.664	0.0439	0.011	0.09
345					0.8	0.063	0.655	0.05018	0.013	0.11
360					0.8	0.063	0.646	0.05018	0.013	0.11
375					0.9	0.071	0.638	0.05645	0.014	0.12
390					0.9	0.071	0.629	0.05645	0.014	0.12
405					1	0.078	0.621	0.06272	0.016	0.14
420					1	0.078	0.613	0.06272	0.016	0.14
435					1	0.078	0.604	0.06272	0.016	0.14
450					1.1	0.086	0.596	0.06899	0.017	0.15
465					1.2	0.094	0.588	0.07526	0.019	0.16
480					1.3	0.102	0.580	0.08154	0.020	0.18
495					1.5	0.118	0.572	0.09408	0.024	0.20
510					1.5	0.118	0.564	0.09408	0.024	0.20
525					1.6	0.125	0.556	0.10035	0.025	0.22
540					1.7	0.133	0.548	0.10662	0.027	0.23
555					1.9	0.149	0.540	0.11917	0.030	0.26
570					2	0.157	0.533	0.12544	0.031	0.27
585					2.1	0.165	0.525	0.13171	0.033	0.28

600					2.2	0.172	0.518	0.13798	0.034	0.30
615					1.5	0.118	0.510	0.09408	0.024	0.20
630					1.5	0.118	0.503	0.09408	0.024	0.20
645					2	0.157	0.496	0.12544	0.031	0.27
660					2	0.157	0.488	0.12544	0.031	0.27
675					1.9	0.149	0.481	0.11917	0.030	0.26
690					1.9	0.149	0.474	0.11917	0.030	0.26
705					1.7	0.133	0.467	0.10662	0.027	0.23
720					1.8	0.141	0.460	0.1129	0.028	0.24
735					2.5	0.196	0.453	0.1568	0.039	0.34
750					2.6	0.204	0.447	0.16307	0.041	0.35
765					2.8	0.220	0.440	0.17562	0.044	0.38
780					2.9	0.227	0.433	0.18189	0.045	0.39
795					3.4	0.267	0.427	0.21325	0.053	0.46
810					3.4	0.267	0.420	0.21325	0.053	0.46
825					2.3	0.180	0.414	0.14426	0.036	0.31
840					2.3	0.180	0.408	0.14426	0.036	0.31
855					2.7	0.212	0.402	0.16934	0.042	0.37
870					2.6	0.204	0.395	0.16307	0.041	0.35
885					2.6	0.204	0.389	0.16307	0.041	0.35
900					2.5	0.196	0.384	0.1568	0.039	0.34
915					2.4	0.188	0.378	0.15053	0.038	0.33
930					2.3	0.180	0.372	0.14426	0.036	0.31
945					1.9	0.149	0.366	0.11917	0.030	0.26
960					1.9	0.149	0.361	0.11917	0.030	0.26
975					0.4	0.031	0.355	0.02509	0.006	0.05
990					0.4	0.031	0.350	0.02509	0.006	0.05
1005					0.3	0.024	0.345	0.01882	0.005	0.04
1020					0.3	0.024	0.339	0.01882	0.005	0.04
1035					0.5	0.039	0.334	0.03136	0.008	0.07
1050					0.5	0.039	0.329	0.03136	0.008	0.07
1065					0.5	0.039	0.324	0.03136	0.008	0.07
1080					0.4	0.031	0.320	0.02509	0.006	0.05
1095					0.4	0.031	0.315	0.02509	0.006	0.05
1110					0.4	0.031	0.310	0.02509	0.006	0.05
1125					0.3	0.024	0.306	0.01882	0.005	0.04
1140					0.2	0.016	0.302	0.01254	0.003	0.03
1155					0.3	0.024	0.297	0.01882	0.005	0.04
1170					0.4	0.031	0.293	0.02509	0.006	0.05
1185					0.3	0.024	0.289	0.01882	0.005	0.04
1200					0.2	0.016	0.285	0.01254	0.003	0.03
1215					0.3	0.024	0.282	0.01882	0.005	0.04
1230					0.3	0.024	0.278	0.01882	0.005	0.04
1245					0.3	0.024	0.275	0.01882	0.005	0.04
1260					0.2	0.016	0.271	0.01254	0.003	0.03
1275					0.3	0.024	0.268	0.01882	0.005	0.04
1290					0.2	0.016	0.265	0.01254	0.003	0.03
1305					0.3	0.024	0.262	0.01882	0.005	0.04
1320					0.2	0.016	0.259	0.01254	0.003	0.03
1335					0.3	0.024	0.257	0.01882	0.005	0.04
1350					0.2	0.016	0.255	0.01254	0.003	0.03
1365					0.2	0.016	0.252	0.01254	0.003	0.03
1380					0.2	0.016	0.250	0.01254	0.003	0.03
1395					0.2	0.016	0.249	0.01254	0.003	0.03
1410					0.2	0.016	0.247	0.01254	0.003	0.03
1425					0.2	0.016	0.246	0.01254	0.003	0.03
1440					0.2	0.016	0.245	0.01254	0.003	0.03
				Σ[20] -	100			Σ[23] -	1.568	13.548

Existing Condition Node 202
5-yr Storm Event

Total Area	Total Impervious Area	%Imp	Fp (infiltration rate based on RI, Plate E-6.2)
8.64	0	0.00	0.49

Constant Loss Rate

F= Fp(1-0.9Ai)
F= 0.4900

For 24-hr storms, Ft is variable loss rate

Ft= C[24-(T/60)]^1.55+Fm
Ft= 0.8653

C= (F-Fm)/54
C= 0.0045

Fm= 0.5F
Fm= 0.2450

T= 7.5

RCFC & WCD HYDROLOGY MANUAL	SYNTHETIC UNIT HYDROGRAPH METHOD UNIT HYDROGRAPH AND EFFECTIVE RAIN CALCULATION FORM	PROJECT: ROCAS GRANDES 2 JOB #: 3816 PAGE

[1] CONCENTRATION POINT						[2] AREA DESIGNATION					
[3] DRAINAGE AREA - ACRES			8.64	ACRES		[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])				N/A	
[5] UNIT TIME - MINUTES			5	MIN PER E-1.2		[6] LAG TIME-MINUTES					MIN
[7] UNIT TIME-PERCENT OF LAG			N/A			[8] S-CURVE				N/A	
[9] STORM FREQUENCY & DURATION			5 YEAR	1 HOUR		[10] TOTAL ADJUSTED STORM RAIN-INCHES				0.641	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR			N/A			[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR				N/A	
[13] CONSTANT LOSS RATE-IN/HR			0.4900		IN/HR	[14] LOW LOSS RATE-PERCENT				0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.00	0	0.000	0.00
5					4.2	0.323	0.49	0.258	0.065	0.56
10					4.3	0.331	0.49	0.265	0.066	0.58
15					5	0.385	0.49	0.308	0.077	0.67
20					5	0.385	0.49	0.308	0.077	0.67
25					5.8	0.446	0.49	0.357	0.089	0.78
30					6.5	0.500	0.49	0.400	0.010	0.09
35					7.4	0.569	0.49	0.455	0.079	0.69
40					8.6	0.662	0.49	0.529	0.172	1.49
45					12.3	0.946	0.49	0.757	0.456	3.97
50					29.1	2.238	0.49	1.791	1.748	15.23
55					6.8	0.523	0.49	0.418	0.033	0.29
60					5	0.385	0.49	0.308	0.077	0.67
				Σ[20] -	100			Σ[23] -	2.95	25.69

RCFC & WCD HYDROLOGY MANUAL	SYNTHETIC UNIT HYDROGRAPH METHOD UNIT HYDROGRAPH AND EFFECTIVE RAIN CALCULATION FORM	PROJECT: ROCAS GRANDES 2 JOB #: 3816 PAGE

[1] CONCENTRATION POINT			[2] AREA DESIGNATION				
[3] DRAINAGE AREA - ACRES	8.64	ACRES		[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])		N/A	
[5] UNIT TIME - MINUTES	5	MIN PER E-1.2		[6] LAG TIME-MINUTES			MIN
[7] UNIT TIME-PERCENT OF LAG	N/A			[8] S-CURVE		N/A	
[9] STORM FREQUENCY & DURATION	5 YEAR	3 HOUR		[10] TOTAL ADJUSTED STORM RAIN-INCHES		1.08	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR	N/A			[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR		N/A	
[13] CONSTANT LOSS RATE-IN/HR	0.4900	IN/HR		[14] LOW LOSS RATE-PERCENT		0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.49	0	0.000	0.00
5					1.3	0.16848	0.49	0.13478	0.034	0.29
10					1.3	0.16848	0.49	0.13478	0.034	0.29
15					1.1	0.14256	0.49	0.11405	0.029	0.25
20					1.5	0.1944	0.49	0.15552	0.039	0.34
25					1.5	0.1944	0.49	0.15552	0.039	0.34
30					1.8	0.23328	0.49	0.18662	0.047	0.40
35					1.5	0.1944	0.49	0.15552	0.039	0.34
40					1.8	0.23328	0.49	0.18662	0.047	0.40
45					1.8	0.23328	0.49	0.18662	0.047	0.40
50					1.5	0.1944	0.49	0.15552	0.039	0.34
55					1.6	0.20736	0.49	0.16589	0.041	0.36
60					1.8	0.23328	0.49	0.18662	0.047	0.40
65					2.2	0.28512	0.49	0.2281	0.057	0.49
70					2.2	0.28512	0.49	0.2281	0.057	0.49
75					2.2	0.28512	0.49	0.2281	0.057	0.49
80					2	0.2592	0.49	0.20736	0.052	0.45
85					2.6	0.33696	0.49	0.26957	0.067	0.58
90					2.7	0.34992	0.49	0.27994	0.070	0.60
95					2.4	0.31104	0.49	0.24883	0.062	0.54
100					2.7	0.34992	0.49	0.27994	0.070	0.60
105					3.3	0.42768	0.49	0.34214	0.086	0.74
110					3.1	0.40176	0.49	0.32141	0.080	0.69
115					2.9	0.37584	0.49	0.30067	0.075	0.65
120					3	0.3888	0.49	0.31104	0.078	0.67
125					3.1	0.40176	0.49	0.32141	0.080	0.69
130					4.2	0.54432	0.49	0.43546	0.054	0.47
135					5	0.648	0.49	0.5184	0.158	1.37
140					3.5	0.4536	0.49	0.36288	0.091	0.78
145					6.8	0.88128	0.49	0.70502	0.391	3.38
150					7.3	0.94608	0.49	0.75686	0.456	3.94
155					8.2	1.06272	0.49	0.85018	0.573	4.95
160					5.9	0.76464	0.49	0.61171	0.275	2.37
165					2	0.2592	0.49	0.20736	0.052	0.45
170					1.8	0.23328	0.49	0.18662	0.047	0.40
175					1.8	0.23328	0.49	0.18662	0.047	0.40
180					0.6	0.07776	0.49	0.06221	0.016	0.13
				Σ[20] -	100			Σ[23] -	3.53	30.50

RCFC & WCD HYDROLOGY MANUAL	SYNTHETIC UNIT HYDROGRAPH METHOD UNIT HYDROGRAPH AND EFFECTIVE RAIN CALCULATION FORM	PROJECT: ROCAS GRANDES 2 JOB #: 3816 PAGE

[1] CONCENTRATION POINT			[2] AREA DESIGNATION				
[3] DRAINAGE AREA - ACRES	8.64	ACRES	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])				
[5] UNIT TIME - MINUTES	5	MIN PER E-1.2	[6] LAG TIME-MINUTES				MIN
[7] UNIT TIME-PERCENT OF LAG	N/A		[8] S-CURVE			N/A	
[9] STORM FREQUENCY & DURATION	5 YEAR	6 HOUR	[10] TOTAL ADJUSTED STORM RAIN-INCHES			1.49	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR	N/A		[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR			N/A	
[13] CONSTANT LOSS RATE-IN/HR	0.4900	IN/HR	[14] LOW LOSS RATE-PERCENT			0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.49	0	0.000	0.00
5					0.5	0.0894	0.49	0.07152	0.018	0.15
10					0.6	0.10728	0.49	0.08582	0.021	0.19
15					0.6	0.10728	0.49	0.08582	0.021	0.19
20					0.6	0.10728	0.49	0.08582	0.021	0.19
25					0.6	0.10728	0.49	0.08582	0.021	0.19
30					0.7	0.12516	0.49	0.10013	0.025	0.22
35					0.7	0.12516	0.49	0.10013	0.025	0.22
40					0.7	0.12516	0.49	0.10013	0.025	0.22
45					0.7	0.12516	0.49	0.10013	0.025	0.22
50					0.7	0.12516	0.49	0.10013	0.025	0.22
55					0.7	0.12516	0.49	0.10013	0.025	0.22
60					0.8	0.14304	0.49	0.11443	0.029	0.25
65					0.8	0.14304	0.49	0.11443	0.029	0.25
70					0.8	0.14304	0.49	0.11443	0.029	0.25
75					0.8	0.14304	0.49	0.11443	0.029	0.25
80					0.8	0.14304	0.49	0.11443	0.029	0.25
85					0.8	0.14304	0.49	0.11443	0.029	0.25
90					0.8	0.14304	0.49	0.11443	0.029	0.25
95					0.8	0.14304	0.49	0.11443	0.029	0.25
100					0.8	0.14304	0.49	0.11443	0.029	0.25
105					0.8	0.14304	0.49	0.11443	0.029	0.25
110					0.8	0.14304	0.49	0.11443	0.029	0.25
115					0.8	0.14304	0.49	0.11443	0.029	0.25
120					0.9	0.16092	0.49	0.12874	0.032	0.28
125					0.8	0.14304	0.49	0.11443	0.029	0.25
130					0.9	0.16092	0.49	0.12874	0.032	0.28
135					0.9	0.16092	0.49	0.12874	0.032	0.28
140					0.9	0.16092	0.49	0.12874	0.032	0.28
145					0.9	0.16092	0.49	0.12874	0.032	0.28
150					0.9	0.16092	0.49	0.12874	0.032	0.28
155					0.9	0.16092	0.49	0.12874	0.032	0.28
160					0.9	0.16092	0.49	0.12874	0.032	0.28
165					1	0.1788	0.49	0.14304	0.036	0.31
170					1	0.1788	0.49	0.14304	0.036	0.31
175					1	0.1788	0.49	0.14304	0.036	0.31
180					1	0.1788	0.49	0.14304	0.036	0.31
185					1	0.1788	0.49	0.14304	0.036	0.31
190					1.1	0.19668	0.49	0.15734	0.039	0.34
195					1.1	0.19668	0.49	0.15734	0.039	0.34
200					1.1	0.19668	0.49	0.15734	0.039	0.34
205					1.2	0.21456	0.49	0.17165	0.043	0.37

210						1.3	0.23244	0.49	0.18595	0.046	0.40
215						1.4	0.25032	0.49	0.20026	0.050	0.43
220						1.4	0.25032	0.49	0.20026	0.050	0.43
225						1.5	0.2682	0.49	0.21456	0.054	0.46
230						1.5	0.2682	0.49	0.21456	0.054	0.46
235						1.6	0.28608	0.49	0.22886	0.057	0.49
240						1.6	0.28608	0.49	0.22886	0.057	0.49
245						1.7	0.30396	0.49	0.24317	0.061	0.53
250						1.8	0.32184	0.49	0.25747	0.064	0.56
255						1.9	0.33972	0.49	0.27178	0.068	0.59
260						2	0.3576	0.49	0.28608	0.072	0.62
265						2.1	0.37548	0.49	0.30038	0.075	0.65
270						2.1	0.37548	0.49	0.30038	0.075	0.65
275						2.2	0.39336	0.49	0.31469	0.079	0.68
280						2.3	0.41124	0.49	0.32899	0.082	0.71
285						2.4	0.42912	0.49	0.3433	0.086	0.74
290						2.4	0.42912	0.49	0.3433	0.086	0.74
295						2.5	0.447	0.49	0.3576	0.089	0.77
300						2.6	0.46488	0.49	0.3719	0.093	0.80
305						3.1	0.55428	0.49	0.44342	0.064	0.56
310						3.6	0.64368	0.49	0.51494	0.154	1.33
315						3.9	0.69732	0.49	0.55786	0.207	1.79
320						4.2	0.75096	0.49	0.60077	0.261	2.25
325						4.7	0.84036	0.49	0.67229	0.350	3.03
330						5.6	1.00128	0.49	0.80102	0.511	4.42
335						1.9	0.33972	0.49	0.27178	0.068	0.59
340						0.9	0.16092	0.49	0.12874	0.032	0.28
345						0.6	0.10728	0.49	0.08582	0.021	0.19
350						0.5	0.0894	0.49	0.07152	0.018	0.15
355						0.3	0.05364	0.49	0.04291	0.011	0.09
360						0.2	0.03576	0.49	0.02861	0.007	0.06
					Σ[20] -	100			Σ[23] -	4.23	36.52

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[1] CONCENTRATION POINT			[2] AREA DESIGNATION					
[3] DRAINAGE AREA - ACRES	8.64	ACRES	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])					
[5] UNIT TIME - MINUTES	15	MIN PER E-1.2	[6] LAG TIME-MINUTES					MIN
[7] UNIT TIME-PERCENT OF LAG	N/A		[8] S-CURVE				N/A	
[9] STORM FREQUENCY & DURATION	5 YEAR	24 HOUR	[10] TOTAL ADJUSTED STORM RAIN-INCHES				2.59	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR	0.8653		[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR					
[13] CONSTANT LOSS RATE-IN/HR		IN/HR	[14] LOW LOSS RATE-PERCENT				0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.00	0	0.000	0.00
15					0.2	0.021	0.860	0.01658	0.004	0.04
30					0.3	0.031	0.850	0.02486	0.006	0.05
45					0.3	0.031	0.840	0.02486	0.006	0.05
60					0.4	0.041	0.831	0.03315	0.008	0.07
75					0.3	0.031	0.821	0.02486	0.006	0.05
90					0.3	0.031	0.811	0.02486	0.006	0.05
105					0.3	0.031	0.801	0.02486	0.006	0.05
120					0.4	0.041	0.792	0.03315	0.008	0.07
135					0.4	0.041	0.782	0.03315	0.008	0.07
150					0.4	0.041	0.773	0.03315	0.008	0.07
165					0.5	0.052	0.763	0.04144	0.010	0.09
180					0.5	0.052	0.754	0.04144	0.010	0.09
195					0.5	0.052	0.745	0.04144	0.010	0.09
210					0.5	0.052	0.735	0.04144	0.010	0.09
225					0.5	0.052	0.726	0.04144	0.010	0.09
240					0.6	0.062	0.717	0.04973	0.012	0.11
255					0.6	0.062	0.708	0.04973	0.012	0.11
270					0.7	0.073	0.699	0.05802	0.015	0.13
285					0.7	0.073	0.690	0.05802	0.015	0.13
300					0.8	0.083	0.681	0.0663	0.017	0.14
315					0.6	0.062	0.672	0.04973	0.012	0.11
330					0.7	0.073	0.664	0.05802	0.015	0.13
345					0.8	0.083	0.655	0.0663	0.017	0.14
360					0.8	0.083	0.646	0.0663	0.017	0.14
375					0.9	0.093	0.638	0.07459	0.019	0.16
390					0.9	0.093	0.629	0.07459	0.019	0.16
405					1	0.104	0.621	0.08288	0.021	0.18
420					1	0.104	0.613	0.08288	0.021	0.18
435					1	0.104	0.604	0.08288	0.021	0.18
450					1.1	0.114	0.596	0.09117	0.023	0.20
465					1.2	0.124	0.588	0.09946	0.025	0.21
480					1.3	0.135	0.580	0.10774	0.027	0.23
495					1.5	0.155	0.572	0.12432	0.031	0.27
510					1.5	0.155	0.564	0.12432	0.031	0.27
525					1.6	0.166	0.556	0.13261	0.033	0.29
540					1.7	0.176	0.548	0.1409	0.035	0.30
555					1.9	0.197	0.540	0.15747	0.039	0.34
570					2	0.207	0.533	0.16576	0.041	0.36
585					2.1	0.218	0.525	0.17405	0.044	0.38
600					2.2	0.228	0.518	0.18234	0.046	0.39
615					1.5	0.155	0.510	0.12432	0.031	0.27

630					1.5	0.155	0.503	0.12432	0.031	0.27
645					2	0.207	0.496	0.16576	0.041	0.36
660					2	0.207	0.488	0.16576	0.041	0.36
675					1.9	0.197	0.481	0.15747	0.039	0.34
690					1.9	0.197	0.474	0.15747	0.039	0.34
705					1.7	0.176	0.467	0.1409	0.035	0.30
720					1.8	0.186	0.460	0.14918	0.037	0.32
735					2.5	0.259	0.453	0.2072	0.052	0.45
750					2.6	0.269	0.447	0.21549	0.054	0.47
765					2.8	0.290	0.440	0.23206	0.058	0.50
780					2.9	0.300	0.433	0.24035	0.060	0.52
795					3.4	0.352	0.427	0.28179	0.070	0.61
810					3.4	0.352	0.420	0.28179	0.070	0.61
825					2.3	0.238	0.414	0.19062	0.048	0.41
840					2.3	0.238	0.408	0.19062	0.048	0.41
855					2.7	0.280	0.402	0.22378	0.056	0.48
870					2.6	0.269	0.395	0.21549	0.054	0.47
885					2.6	0.269	0.389	0.21549	0.054	0.47
900					2.5	0.259	0.384	0.2072	0.052	0.45
915					2.4	0.249	0.378	0.19891	0.050	0.43
930					2.3	0.238	0.372	0.19062	0.048	0.41
945					1.9	0.197	0.366	0.15747	0.039	0.34
960					1.9	0.197	0.361	0.15747	0.039	0.34
975					0.4	0.041	0.355	0.03315	0.008	0.07
990					0.4	0.041	0.350	0.03315	0.008	0.07
1005					0.3	0.031	0.345	0.02486	0.006	0.05
1020					0.3	0.031	0.339	0.02486	0.006	0.05
1035					0.5	0.052	0.334	0.04144	0.010	0.09
1050					0.5	0.052	0.329	0.04144	0.010	0.09
1065					0.5	0.052	0.324	0.04144	0.010	0.09
1080					0.4	0.041	0.320	0.03315	0.008	0.07
1095					0.4	0.041	0.315	0.03315	0.008	0.07
1110					0.4	0.041	0.310	0.03315	0.008	0.07
1125					0.3	0.031	0.306	0.02486	0.006	0.05
1140					0.2	0.021	0.302	0.01658	0.004	0.04
1155					0.3	0.031	0.297	0.02486	0.006	0.05
1170					0.4	0.041	0.293	0.03315	0.008	0.07
1185					0.3	0.031	0.289	0.02486	0.006	0.05
1200					0.2	0.021	0.285	0.01658	0.004	0.04
1215					0.3	0.031	0.282	0.02486	0.006	0.05
1230					0.3	0.031	0.278	0.02486	0.006	0.05
1245					0.3	0.031	0.275	0.02486	0.006	0.05
1260					0.2	0.021	0.271	0.01658	0.004	0.04
1275					0.3	0.031	0.268	0.02486	0.006	0.05
1290					0.2	0.021	0.265	0.01658	0.004	0.04
1305					0.3	0.031	0.262	0.02486	0.006	0.05
1320					0.2	0.021	0.259	0.01658	0.004	0.04
1335					0.3	0.031	0.257	0.02486	0.006	0.05
1350					0.2	0.021	0.255	0.01658	0.004	0.04
1365					0.2	0.021	0.252	0.01658	0.004	0.04
1380					0.2	0.021	0.250	0.01658	0.004	0.04
1395					0.2	0.021	0.249	0.01658	0.004	0.04
1410					0.2	0.021	0.247	0.01658	0.004	0.04
1425					0.2	0.021	0.246	0.01658	0.004	0.04
1440					0.2	0.021	0.245	0.01658	0.004	0.04
				Σ[20] -	100			Σ[23] -	2.072	17.902

Existing Condition Node 202
10-yr Storm Event

Total Area	Total Impervious Area	%Imp	Fp (infiltration rate based on RI, Plate E-6.2)
8.64	0	0.00	0.14

Constant Loss Rate

F= Fp(1-0.9Ai)
F= 0.1400

For 24-hr storms, Ft is variable loss rate

Ft= C[24-(T/60)]^1.55+Fm
Ft= 0.2472

C= (F-Fm)/54
C= 0.0013

Fm= 0.5F
Fm= 0.0700

T= 7.5

RCFC & WCD HYDROLOGY MANUAL	SYNTHETIC UNIT HYDROGRAPH METHOD UNIT HYDROGRAPH AND EFFECTIVE RAIN CALCULATION FORM	PROJECT: ROCAS GRANDES 2 JOB #: 3816 PAGE

[1] CONCENTRATION POINT			[2] AREA DESIGNATION					
[3] DRAINAGE AREA - ACRES	8.64	ACRES		[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])			N/A	
[5] UNIT TIME - MINUTES	5	MIN PER E-1.2		[6] LAG TIME-MINUTES				MIN
[7] UNIT TIME-PERCENT OF LAG	N/A			[8] S-CURVE			N/A	
[9] STORM FREQUENCY & DURATION	10 YEAR	1 HOUR		[10] TOTAL ADJUSTED STORM RAIN-INCHES			0.778	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR	N/A			[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR			N/A	
[13] CONSTANT LOSS RATE-IN/HR	0.1400	IN/HR		[14] LOW LOSS RATE-PERCENT			0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.00	0	0.000	0.00
5					4.2	0.392	0.14	0.314	0.252	2.20
10					4.3	0.401	0.14	0.321	0.261	2.28
15					5	0.467	0.14	0.373	0.327	2.85
20					5	0.467	0.14	0.373	0.327	2.85
25					5.8	0.541	0.14	0.433	0.401	3.50
30					6.5	0.607	0.14	0.485	0.467	4.07
35					7.4	0.691	0.14	0.553	0.551	4.80
40					8.6	0.803	0.14	0.642	0.663	5.78
45					12.3	1.148	0.14	0.919	1.008	8.78
50					29.1	2.717	0.14	2.173	2.577	22.45
55					6.8	0.635	0.14	0.508	0.495	4.31
60					5	0.467	0.14	0.373	0.327	2.85
				Σ[20] -	100			Σ[23] -	7.66	66.70

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[1] CONCENTRATION POINT			[2] AREA DESIGNATION				
[3] DRAINAGE AREA - ACRES	8.64	ACRES		[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])		N/A	
[5] UNIT TIME - MINUTES	5	MIN PER E-1.2		[6] LAG TIME-MINUTES			MIN
[7] UNIT TIME-PERCENT OF LAG	N/A			[8] S-CURVE		N/A	
[9] STORM FREQUENCY & DURATION	10 YEAR	3 HOUR		[10] TOTAL ADJUSTED STORM RAIN-INCHES		1.29	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR	N/A			[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR		N/A	
[13] CONSTANT LOSS RATE-IN/HR	0.1400	IN/HR		[14] LOW LOSS RATE-PERCENT		0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.14	0	0.000	0.00
5					1.3	0.20124	0.14	0.16099	0.061	0.53
10					1.3	0.20124	0.14	0.16099	0.061	0.53
15					1.1	0.17028	0.14	0.13622	0.030	0.26
20					1.5	0.2322	0.14	0.18576	0.092	0.80
25					1.5	0.2322	0.14	0.18576	0.092	0.80
30					1.8	0.27864	0.14	0.22291	0.139	1.20
35					1.5	0.2322	0.14	0.18576	0.092	0.80
40					1.8	0.27864	0.14	0.22291	0.139	1.20
45					1.8	0.27864	0.14	0.22291	0.139	1.20
50					1.5	0.2322	0.14	0.18576	0.092	0.80
55					1.6	0.24768	0.14	0.19814	0.108	0.93
60					1.8	0.27864	0.14	0.22291	0.139	1.20
65					2.2	0.34056	0.14	0.27245	0.201	1.73
70					2.2	0.34056	0.14	0.27245	0.201	1.73
75					2.2	0.34056	0.14	0.27245	0.201	1.73
80					2	0.3096	0.14	0.24768	0.170	1.47
85					2.6	0.40248	0.14	0.32198	0.262	2.27
90					2.7	0.41796	0.14	0.33437	0.278	2.40
95					2.4	0.37152	0.14	0.29722	0.232	2.00
100					2.7	0.41796	0.14	0.33437	0.278	2.40
105					3.3	0.51084	0.14	0.40867	0.371	3.20
110					3.1	0.47988	0.14	0.3839	0.340	2.94
115					2.9	0.44892	0.14	0.35914	0.309	2.67
120					3	0.4644	0.14	0.37152	0.324	2.80
125					3.1	0.47988	0.14	0.3839	0.340	2.94
130					4.2	0.65016	0.14	0.52013	0.510	4.41
135					5	0.774	0.14	0.6192	0.634	5.48
140					3.5	0.5418	0.14	0.43344	0.402	3.47
145					6.8	1.05264	0.14	0.84211	0.913	7.89
150					7.3	1.13004	0.14	0.90403	0.990	8.55
155					8.2	1.26936	0.14	1.01549	1.129	9.76
160					5.9	0.91332	0.14	0.73066	0.773	6.68
165					2	0.3096	0.14	0.24768	0.170	1.47
170					1.8	0.27864	0.14	0.22291	0.139	1.20
175					1.8	0.27864	0.14	0.22291	0.139	1.20
180					0.6	0.09288	0.14	0.0743	0.019	0.16
				Σ[20] -	100			Σ[23] -	10.51	90.77

RCFC & WCD HYDROLOGY MANUAL	SYNTHETIC UNIT HYDROGRAPH METHOD UNIT HYDROGRAPH AND EFFECTIVE RAIN CALCULATION FORM	PROJECT: ROCAS GRANDES 2 JOB #: 3816 PAGE

[1] CONCENTRATION POINT			[2] AREA DESIGNATION				
[3] DRAINAGE AREA - ACRES	8.64	ACRES	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])				
[5] UNIT TIME - MINUTES	5	MIN PER E-1.2	[6] LAG TIME-MINUTES				MIN
[7] UNIT TIME-PERCENT OF LAG	N/A		[8] S-CURVE			N/A	
[9] STORM FREQUENCY & DURATION	10 YEAR	6 HOUR	[10] TOTAL ADJUSTED STORM RAIN-INCHES			1.77	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR	N/A		[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR			N/A	
[13] CONSTANT LOSS RATE-IN/HR	0.1400	IN/HR	[14] LOW LOSS RATE-PERCENT			0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.14	0	0.000	0.00
5					0.5	0.1062	0.14	0.08496	0.021	0.18
10					0.6	0.12744	0.14	0.10195	0.025	0.22
15					0.6	0.12744	0.14	0.10195	0.025	0.22
20					0.6	0.12744	0.14	0.10195	0.025	0.22
25					0.6	0.12744	0.14	0.10195	0.025	0.22
30					0.7	0.14868	0.14	0.11894	0.009	0.07
35					0.7	0.14868	0.14	0.11894	0.009	0.07
40					0.7	0.14868	0.14	0.11894	0.009	0.07
45					0.7	0.14868	0.14	0.11894	0.009	0.07
50					0.7	0.14868	0.14	0.11894	0.009	0.07
55					0.7	0.14868	0.14	0.11894	0.009	0.07
60					0.8	0.16992	0.14	0.13594	0.030	0.26
65					0.8	0.16992	0.14	0.13594	0.030	0.26
70					0.8	0.16992	0.14	0.13594	0.030	0.26
75					0.8	0.16992	0.14	0.13594	0.030	0.26
80					0.8	0.16992	0.14	0.13594	0.030	0.26
85					0.8	0.16992	0.14	0.13594	0.030	0.26
90					0.8	0.16992	0.14	0.13594	0.030	0.26
95					0.8	0.16992	0.14	0.13594	0.030	0.26
100					0.8	0.16992	0.14	0.13594	0.030	0.26
105					0.8	0.16992	0.14	0.13594	0.030	0.26
110					0.8	0.16992	0.14	0.13594	0.030	0.26
115					0.8	0.16992	0.14	0.13594	0.030	0.26
120					0.9	0.19116	0.14	0.15293	0.051	0.44
125					0.8	0.16992	0.14	0.13594	0.030	0.26
130					0.9	0.19116	0.14	0.15293	0.051	0.44
135					0.9	0.19116	0.14	0.15293	0.051	0.44
140					0.9	0.19116	0.14	0.15293	0.051	0.44
145					0.9	0.19116	0.14	0.15293	0.051	0.44
150					0.9	0.19116	0.14	0.15293	0.051	0.44
155					0.9	0.19116	0.14	0.15293	0.051	0.44
160					0.9	0.19116	0.14	0.15293	0.051	0.44
165					1	0.2124	0.14	0.16992	0.072	0.63
170					1	0.2124	0.14	0.16992	0.072	0.63
175					1	0.2124	0.14	0.16992	0.072	0.63
180					1	0.2124	0.14	0.16992	0.072	0.63
185					1	0.2124	0.14	0.16992	0.072	0.63
190					1.1	0.23364	0.14	0.18691	0.094	0.81
195					1.1	0.23364	0.14	0.18691	0.094	0.81
200					1.1	0.23364	0.14	0.18691	0.094	0.81
205					1.2	0.25488	0.14	0.2039	0.115	0.99

210						1.3	0.27612	0.14	0.2209	0.136	1.18
215						1.4	0.29736	0.14	0.23789	0.157	1.36
220						1.4	0.29736	0.14	0.23789	0.157	1.36
225						1.5	0.3186	0.14	0.25488	0.179	1.54
230						1.5	0.3186	0.14	0.25488	0.179	1.54
235						1.6	0.33984	0.14	0.27187	0.200	1.73
240						1.6	0.33984	0.14	0.27187	0.200	1.73
245						1.7	0.36108	0.14	0.28886	0.221	1.91
250						1.8	0.38232	0.14	0.30586	0.242	2.09
255						1.9	0.40356	0.14	0.32285	0.264	2.28
260						2	0.4248	0.14	0.33984	0.285	2.46
265						2.1	0.44604	0.14	0.35683	0.306	2.64
270						2.1	0.44604	0.14	0.35683	0.306	2.64
275						2.2	0.46728	0.14	0.37382	0.327	2.83
280						2.3	0.48852	0.14	0.39082	0.349	3.01
285						2.4	0.50976	0.14	0.40781	0.370	3.19
290						2.4	0.50976	0.14	0.40781	0.370	3.19
295						2.5	0.531	0.14	0.4248	0.391	3.38
300						2.6	0.55224	0.14	0.44179	0.412	3.56
305						3.1	0.65844	0.14	0.52675	0.518	4.48
310						3.6	0.76464	0.14	0.61171	0.625	5.40
315						3.9	0.82836	0.14	0.66269	0.688	5.95
320						4.2	0.89208	0.14	0.71366	0.752	6.50
325						4.7	0.99828	0.14	0.79862	0.858	7.42
330						5.6	1.18944	0.14	0.95155	1.049	9.07
335						1.9	0.40356	0.14	0.32285	0.264	2.28
340						0.9	0.19116	0.14	0.15293	0.051	0.44
345						0.6	0.12744	0.14	0.10195	0.025	0.22
350						0.5	0.1062	0.14	0.08496	0.021	0.18
355						0.3	0.06372	0.14	0.05098	0.013	0.11
360						0.2	0.04248	0.14	0.03398	0.008	0.07
					Σ[20] -	100			Σ[23] -	11.66	100.70

RCFC & WCD HYDROLOGY MANUAL	SYNTHETIC UNIT HYDROGRAPH METHOD UNIT HYDROGRAPH AND EFFECTIVE RAIN CALCULATION FORM	PROJECT: ROCAS GRANDES 2 JOB #: 3816 PAGE

[1] CONCENTRATION POINT			[2] AREA DESIGNATION					
[3] DRAINAGE AREA - ACRES	8.64	ACRES	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])					
[5] UNIT TIME - MINUTES	15	MIN PER E-1.2	[6] LAG TIME-MINUTES					MIN
[7] UNIT TIME-PERCENT OF LAG	N/A		[8] S-CURVE				N/A	
[9] STORM FREQUENCY & DURATION	10 YEAR	24 HOUR	[10] TOTAL ADJUSTED STORM RAIN-INCHES				3.1	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR	0.2472		[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR					
[13] CONSTANT LOSS RATE-IN/HR		IN/HR	[14] LOW LOSS RATE-PERCENT				0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.00	0	0.000	0.00
15					0.2	0.025	0.248	0.01984	0.005	0.04
30					0.3	0.037	0.245	0.02976	0.007	0.06
45					0.3	0.037	0.242	0.02976	0.007	0.06
60					0.4	0.050	0.239	0.03968	0.010	0.09
75					0.3	0.037	0.236	0.02976	0.007	0.06
90					0.3	0.037	0.234	0.02976	0.007	0.06
105					0.3	0.037	0.231	0.02976	0.007	0.06
120					0.4	0.050	0.228	0.03968	0.010	0.09
135					0.4	0.050	0.225	0.03968	0.010	0.09
150					0.4	0.050	0.222	0.03968	0.010	0.09
165					0.5	0.062	0.220	0.0496	0.012	0.11
180					0.5	0.062	0.217	0.0496	0.012	0.11
195					0.5	0.062	0.214	0.0496	0.012	0.11
210					0.5	0.062	0.212	0.0496	0.012	0.11
225					0.5	0.062	0.209	0.0496	0.012	0.11
240					0.6	0.074	0.206	0.05952	0.015	0.13
255					0.6	0.074	0.204	0.05952	0.015	0.13
270					0.7	0.087	0.201	0.06944	0.017	0.15
285					0.7	0.087	0.199	0.06944	0.017	0.15
300					0.8	0.099	0.196	0.07936	0.020	0.17
315					0.6	0.074	0.193	0.05952	0.015	0.13
330					0.7	0.087	0.191	0.06944	0.017	0.15
345					0.8	0.099	0.188	0.07936	0.020	0.17
360					0.8	0.099	0.186	0.07936	0.020	0.17
375					0.9	0.112	0.183	0.08928	0.022	0.19
390					0.9	0.112	0.181	0.08928	0.022	0.19
405					1	0.124	0.179	0.0992	0.025	0.21
420					1	0.124	0.176	0.0992	0.025	0.21
435					1	0.124	0.174	0.0992	0.025	0.21
450					1.1	0.136	0.171	0.10912	0.027	0.24
465					1.2	0.149	0.169	0.11904	0.030	0.26
480					1.3	0.161	0.167	0.12896	0.032	0.28
495					1.5	0.186	0.164	0.1488	0.022	0.19
510					1.5	0.186	0.162	0.1488	0.024	0.21
525					1.6	0.198	0.160	0.15872	0.039	0.33
540					1.7	0.211	0.158	0.16864	0.053	0.46
555					1.9	0.236	0.155	0.18848	0.080	0.69
570					2	0.248	0.153	0.1984	0.095	0.82
585					2.1	0.260	0.151	0.20832	0.109	0.95
600					2.2	0.273	0.149	0.21824	0.124	1.07
615					1.5	0.186	0.147	0.1488	0.039	0.34

630					1.5	0.186	0.145	0.1488	0.041	0.36
645					2	0.248	0.142	0.1984	0.106	0.91
660					2	0.248	0.140	0.1984	0.108	0.93
675					1.9	0.236	0.138	0.18848	0.097	0.84
690					1.9	0.236	0.136	0.18848	0.099	0.86
705					1.7	0.211	0.134	0.16864	0.077	0.66
720					1.8	0.223	0.132	0.17856	0.091	0.79
735					2.5	0.310	0.130	0.248	0.180	1.55
750					2.6	0.322	0.128	0.25792	0.194	1.68
765					2.8	0.347	0.126	0.27776	0.221	1.91
780					2.9	0.360	0.124	0.28768	0.235	2.03
795					3.4	0.422	0.123	0.33728	0.299	2.58
810					3.4	0.422	0.121	0.33728	0.301	2.60
825					2.3	0.285	0.119	0.22816	0.166	1.44
840					2.3	0.285	0.117	0.22816	0.168	1.45
855					2.7	0.335	0.115	0.26784	0.220	1.90
870					2.6	0.322	0.113	0.25792	0.209	1.81
885					2.6	0.322	0.112	0.25792	0.211	1.82
900					2.5	0.310	0.110	0.248	0.200	1.73
915					2.4	0.298	0.108	0.23808	0.189	1.64
930					2.3	0.285	0.107	0.22816	0.179	1.54
945					1.9	0.236	0.105	0.18848	0.131	1.13
960					1.9	0.236	0.103	0.18848	0.132	1.14
975					0.4	0.050	0.102	0.03968	0.010	0.09
990					0.4	0.050	0.100	0.03968	0.010	0.09
1005					0.3	0.037	0.099	0.02976	0.007	0.06
1020					0.3	0.037	0.097	0.02976	0.007	0.06
1035					0.5	0.062	0.096	0.0496	0.012	0.11
1050					0.5	0.062	0.094	0.0496	0.012	0.11
1065					0.5	0.062	0.093	0.0496	0.012	0.11
1080					0.4	0.050	0.092	0.03968	0.010	0.09
1095					0.4	0.050	0.090	0.03968	0.010	0.09
1110					0.4	0.050	0.089	0.03968	0.010	0.09
1125					0.3	0.037	0.088	0.02976	0.007	0.06
1140					0.2	0.025	0.086	0.01984	0.005	0.04
1155					0.3	0.037	0.085	0.02976	0.007	0.06
1170					0.4	0.050	0.084	0.03968	0.010	0.09
1185					0.3	0.037	0.083	0.02976	0.007	0.06
1200					0.2	0.025	0.082	0.01984	0.005	0.04
1215					0.3	0.037	0.081	0.02976	0.007	0.06
1230					0.3	0.037	0.080	0.02976	0.007	0.06
1245					0.3	0.037	0.079	0.02976	0.007	0.06
1260					0.2	0.025	0.078	0.01984	0.005	0.04
1275					0.3	0.037	0.077	0.02976	0.007	0.06
1290					0.2	0.025	0.076	0.01984	0.005	0.04
1305					0.3	0.037	0.075	0.02976	0.007	0.06
1320					0.2	0.025	0.074	0.01984	0.005	0.04
1335					0.3	0.037	0.073	0.02976	0.007	0.06
1350					0.2	0.025	0.073	0.01984	0.005	0.04
1365					0.2	0.025	0.072	0.01984	0.005	0.04
1380					0.2	0.025	0.072	0.01984	0.005	0.04
1395					0.2	0.025	0.071	0.01984	0.005	0.04
1410					0.2	0.025	0.071	0.01984	0.005	0.04
1425					0.2	0.025	0.070	0.01984	0.005	0.04
1440					0.2	0.025	0.070	0.01984	0.005	0.04
				Σ[20] -	100			Σ[23] -	5.185	44.799

Existing Condition Node 202
100-yr Storm Event

Total Area	Total Impervious Area	%Imp	Fp (infiltration rate based on RI, Plate E-6.2)
8.64	0	0.00	0.14

Constant Loss Rate

F= Fp(1-0.9Ai)
F= 0.1400

For 24-hr storms, Ft is variable loss rate

Ft= C[24-(T/60)]^1.55+Fm
Ft= 0.2472

C= (F-Fm)/54
C= 0.0013

Fm= 0.5F
Fm= 0.0700

T= 7.5

RCFC & WCD HYDROLOGY MANUAL	SYNTHETIC UNIT HYDROGRAPH METHOD UNIT HYDROGRAPH AND EFFECTIVE RAIN CALCULATION FORM	PROJECT: ROCAS GRANDES 2 JOB #: 3816 PAGE

[1] CONCENTRATION POINT						[2] AREA DESIGNATION					
[3] DRAINAGE AREA - ACRES			8.64	ACRES		[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])				N/A	
[5] UNIT TIME - MINUTES			5	MIN PER E-1.2		[6] LAG TIME-MINUTES					MIN
[7] UNIT TIME-PERCENT OF LAG			N/A			[8] S-CURVE				N/A	
[9] STORM FREQUENCY & DURATION			100 YEAR	1 HOUR		[10] TOTAL ADJUSTED STORM RAIN-INCHES				1.27	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR			N/A			[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR				N/A	
[13] CONSTANT LOSS RATE-IN/HR			0.1400		IN/HR	[14] LOW LOSS RATE-PERCENT				0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.00	0	0.000	0.00
5					4.2	0.640	0.14	0.512	0.500	4.36
10					4.3	0.655	0.14	0.524	0.515	4.49
15					5	0.762	0.14	0.610	0.622	5.42
20					5	0.762	0.14	0.610	0.622	5.42
25					5.8	0.884	0.14	0.707	0.744	6.48
30					6.5	0.991	0.14	0.792	0.851	7.41
35					7.4	1.128	0.14	0.902	0.988	8.61
40					8.6	1.311	0.14	1.049	1.171	10.20
45					12.3	1.875	0.14	1.500	1.735	15.11
50					29.1	4.435	0.14	3.548	4.295	37.42
55					6.8	1.036	0.14	0.829	0.896	7.81
60					5	0.762	0.14	0.610	0.622	5.42
				Σ[20] -	100			Σ[23] -	13.56	118.13

RCFC & WCD HYDROLOGY MANUAL	SYNTHETIC UNIT HYDROGRAPH METHOD UNIT HYDROGRAPH AND EFFECTIVE RAIN CALCULATION FORM	PROJECT: ROCAS GRANDES 2 JOB #: 3816 PAGE

[1] CONCENTRATION POINT			[2] AREA DESIGNATION				
[3] DRAINAGE AREA - ACRES	8.64	ACRES		[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])		N/A	
[5] UNIT TIME - MINUTES	5	MIN PER E-1.2		[6] LAG TIME-MINUTES			MIN
[7] UNIT TIME-PERCENT OF LAG	N/A			[8] S-CURVE		N/A	
[9] STORM FREQUENCY & DURATION	100 YEAR	3 HOUR		[10] TOTAL ADJUSTED STORM RAIN-INCHES		2.01	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR	N/A			[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR		N/A	
[13] CONSTANT LOSS RATE-IN/HR	0.1400	IN/HR		[14] LOW LOSS RATE-PERCENT		0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.14	0	0.000	0.00
5					1.3	0.31356	0.14	0.25085	0.174	1.50
10					1.3	0.31356	0.14	0.25085	0.174	1.50
15					1.1	0.26532	0.14	0.21226	0.125	1.08
20					1.5	0.3618	0.14	0.28944	0.222	1.92
25					1.5	0.3618	0.14	0.28944	0.222	1.92
30					1.8	0.43416	0.14	0.34733	0.294	2.54
35					1.5	0.3618	0.14	0.28944	0.222	1.92
40					1.8	0.43416	0.14	0.34733	0.294	2.54
45					1.8	0.43416	0.14	0.34733	0.294	2.54
50					1.5	0.3618	0.14	0.28944	0.222	1.92
55					1.6	0.38592	0.14	0.30874	0.246	2.12
60					1.8	0.43416	0.14	0.34733	0.294	2.54
65					2.2	0.53064	0.14	0.42451	0.391	3.38
70					2.2	0.53064	0.14	0.42451	0.391	3.38
75					2.2	0.53064	0.14	0.42451	0.391	3.38
80					2	0.4824	0.14	0.38592	0.342	2.96
85					2.6	0.62712	0.14	0.5017	0.487	4.21
90					2.7	0.65124	0.14	0.52099	0.511	4.42
95					2.4	0.57888	0.14	0.4631	0.439	3.79
100					2.7	0.65124	0.14	0.52099	0.511	4.42
105					3.3	0.79596	0.14	0.63677	0.656	5.67
110					3.1	0.74772	0.14	0.59818	0.608	5.25
115					2.9	0.69948	0.14	0.55958	0.559	4.83
120					3	0.7236	0.14	0.57888	0.584	5.04
125					3.1	0.74772	0.14	0.59818	0.608	5.25
130					4.2	1.01304	0.14	0.81043	0.873	7.54
135					5	1.206	0.14	0.9648	1.066	9.21
140					3.5	0.8442	0.14	0.67536	0.704	6.08
145					6.8	1.64016	0.14	1.31213	1.500	12.96
150					7.3	1.76076	0.14	1.40861	1.621	14.00
155					8.2	1.97784	0.14	1.58227	1.838	15.88
160					5.9	1.42308	0.14	1.13846	1.283	11.09
165					2	0.4824	0.14	0.38592	0.342	2.96
170					1.8	0.43416	0.14	0.34733	0.294	2.54
175					1.8	0.43416	0.14	0.34733	0.294	2.54
180					0.6	0.14472	0.14	0.11578	0.005	0.04
				Σ[20] -	100			Σ[23] -	19.08	164.85

RCFC & WCD HYDROLOGY MANUAL	SYNTHETIC UNIT HYDROGRAPH METHOD UNIT HYDROGRAPH AND EFFECTIVE RAIN CALCULATION FORM	PROJECT: ROCAS GRANDES 2 JOB #: 3816 PAGE

[1] CONCENTRATION POINT			[2] AREA DESIGNATION				
[3] DRAINAGE AREA - ACRES	8.64	ACRES	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])				
[5] UNIT TIME - MINUTES	5	MIN PER E-1.2	[6] LAG TIME-MINUTES				MIN
[7] UNIT TIME-PERCENT OF LAG	N/A		[8] S-CURVE			N/A	
[9] STORM FREQUENCY & DURATION	100 YEAR	6 HOUR	[10] TOTAL ADJUSTED STORM RAIN-INCHES			2.72	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR	N/A		[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR			N/A	
[13] CONSTANT LOSS RATE-IN/HR	0.1400	IN/HR	[14] LOW LOSS RATE-PERCENT			0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.14	0	0.000	0.00
5					0.5	0.1632	0.14	0.13056	0.023	0.20
10					0.6	0.19584	0.14	0.15667	0.056	0.48
15					0.6	0.19584	0.14	0.15667	0.056	0.48
20					0.6	0.19584	0.14	0.15667	0.056	0.48
25					0.6	0.19584	0.14	0.15667	0.056	0.48
30					0.7	0.22848	0.14	0.18278	0.088	0.76
35					0.7	0.22848	0.14	0.18278	0.088	0.76
40					0.7	0.22848	0.14	0.18278	0.088	0.76
45					0.7	0.22848	0.14	0.18278	0.088	0.76
50					0.7	0.22848	0.14	0.18278	0.088	0.76
55					0.7	0.22848	0.14	0.18278	0.088	0.76
60					0.8	0.26112	0.14	0.2089	0.121	1.05
65					0.8	0.26112	0.14	0.2089	0.121	1.05
70					0.8	0.26112	0.14	0.2089	0.121	1.05
75					0.8	0.26112	0.14	0.2089	0.121	1.05
80					0.8	0.26112	0.14	0.2089	0.121	1.05
85					0.8	0.26112	0.14	0.2089	0.121	1.05
90					0.8	0.26112	0.14	0.2089	0.121	1.05
95					0.8	0.26112	0.14	0.2089	0.121	1.05
100					0.8	0.26112	0.14	0.2089	0.121	1.05
105					0.8	0.26112	0.14	0.2089	0.121	1.05
110					0.8	0.26112	0.14	0.2089	0.121	1.05
115					0.8	0.26112	0.14	0.2089	0.121	1.05
120					0.9	0.29376	0.14	0.23501	0.154	1.33
125					0.8	0.26112	0.14	0.2089	0.121	1.05
130					0.9	0.29376	0.14	0.23501	0.154	1.33
135					0.9	0.29376	0.14	0.23501	0.154	1.33
140					0.9	0.29376	0.14	0.23501	0.154	1.33
145					0.9	0.29376	0.14	0.23501	0.154	1.33
150					0.9	0.29376	0.14	0.23501	0.154	1.33
155					0.9	0.29376	0.14	0.23501	0.154	1.33
160					0.9	0.29376	0.14	0.23501	0.154	1.33
165					1	0.3264	0.14	0.26112	0.186	1.61
170					1	0.3264	0.14	0.26112	0.186	1.61
175					1	0.3264	0.14	0.26112	0.186	1.61
180					1	0.3264	0.14	0.26112	0.186	1.61
185					1	0.3264	0.14	0.26112	0.186	1.61
190					1.1	0.35904	0.14	0.28723	0.219	1.89
195					1.1	0.35904	0.14	0.28723	0.219	1.89
200					1.1	0.35904	0.14	0.28723	0.219	1.89
205					1.2	0.39168	0.14	0.31334	0.252	2.17

210						1.3	0.42432	0.14	0.33946	0.284	2.46
215						1.4	0.45696	0.14	0.36557	0.317	2.74
220						1.4	0.45696	0.14	0.36557	0.317	2.74
225						1.5	0.4896	0.14	0.39168	0.350	3.02
230						1.5	0.4896	0.14	0.39168	0.350	3.02
235						1.6	0.52224	0.14	0.41779	0.382	3.30
240						1.6	0.52224	0.14	0.41779	0.382	3.30
245						1.7	0.55488	0.14	0.4439	0.415	3.58
250						1.8	0.58752	0.14	0.47002	0.448	3.87
255						1.9	0.62016	0.14	0.49613	0.480	4.15
260						2	0.6528	0.14	0.52224	0.513	4.43
265						2.1	0.68544	0.14	0.54835	0.545	4.71
270						2.1	0.68544	0.14	0.54835	0.545	4.71
275						2.2	0.71808	0.14	0.57446	0.578	4.99
280						2.3	0.75072	0.14	0.60058	0.611	5.28
285						2.4	0.78336	0.14	0.62669	0.643	5.56
290						2.4	0.78336	0.14	0.62669	0.643	5.56
295						2.5	0.816	0.14	0.6528	0.676	5.84
300						2.6	0.84864	0.14	0.67891	0.709	6.12
305						3.1	1.01184	0.14	0.80947	0.872	7.53
310						3.6	1.17504	0.14	0.94003	1.035	8.94
315						3.9	1.27296	0.14	1.01837	1.133	9.79
320						4.2	1.37088	0.14	1.0967	1.231	10.63
325						4.7	1.53408	0.14	1.22726	1.394	12.04
330						5.6	1.82784	0.14	1.46227	1.688	14.58
335						1.9	0.62016	0.14	0.49613	0.480	4.15
340						0.9	0.29376	0.14	0.23501	0.154	1.33
345						0.6	0.19584	0.14	0.15667	0.056	0.48
350						0.5	0.1632	0.14	0.13056	0.023	0.20
355						0.3	0.09792	0.14	0.07834	0.020	0.17
360						0.2	0.06528	0.14	0.05222	0.013	0.11
					Σ[20] -	100			Σ[23] -	22.71	196.21

RCFC & WCD HYDROLOGY MANUAL	SYNTHETIC UNIT HYDROGRAPH METHOD UNIT HYDROGRAPH AND EFFECTIVE RAIN CALCULATION FORM	PROJECT: ROCAS GRANDES 2 JOB #: 3816 PAGE

[1] CONCENTRATION POINT			[2] AREA DESIGNATION					
[3] DRAINAGE AREA - ACRES	8.64	ACRES	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])					
[5] UNIT TIME - MINUTES	15	MIN PER E-1.2	[6] LAG TIME-MINUTES					MIN
[7] UNIT TIME-PERCENT OF LAG	N/A		[8] S-CURVE				N/A	
[9] STORM FREQUENCY & DURATION	100 YEAR	24 HOUR	[10] TOTAL ADJUSTED STORM RAIN-INCHES				4.83	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR	0.2472		[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR					
[13] CONSTANT LOSS RATE-IN/HR		IN/HR	[14] LOW LOSS RATE-PERCENT				0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.00	0	0.000	0.00
15					0.2	0.039	0.248	0.03091	0.008	0.07
30					0.3	0.058	0.245	0.04637	0.012	0.10
45					0.3	0.058	0.242	0.04637	0.012	0.10
60					0.4	0.077	0.239	0.06182	0.015	0.13
75					0.3	0.058	0.236	0.04637	0.012	0.10
90					0.3	0.058	0.234	0.04637	0.012	0.10
105					0.3	0.058	0.231	0.04637	0.012	0.10
120					0.4	0.077	0.228	0.06182	0.015	0.13
135					0.4	0.077	0.225	0.06182	0.015	0.13
150					0.4	0.077	0.222	0.06182	0.015	0.13
165					0.5	0.097	0.220	0.07728	0.019	0.17
180					0.5	0.097	0.217	0.07728	0.019	0.17
195					0.5	0.097	0.214	0.07728	0.019	0.17
210					0.5	0.097	0.212	0.07728	0.019	0.17
225					0.5	0.097	0.209	0.07728	0.019	0.17
240					0.6	0.116	0.206	0.09274	0.023	0.20
255					0.6	0.116	0.204	0.09274	0.023	0.20
270					0.7	0.135	0.201	0.10819	0.027	0.23
285					0.7	0.135	0.199	0.10819	0.027	0.23
300					0.8	0.155	0.196	0.12365	0.031	0.27
315					0.6	0.116	0.193	0.09274	0.023	0.20
330					0.7	0.135	0.191	0.10819	0.027	0.23
345					0.8	0.155	0.188	0.12365	0.031	0.27
360					0.8	0.155	0.186	0.12365	0.031	0.27
375					0.9	0.174	0.183	0.1391	0.035	0.30
390					0.9	0.174	0.181	0.1391	0.035	0.30
405					1	0.193	0.179	0.15456	0.015	0.13
420					1	0.193	0.176	0.15456	0.017	0.15
435					1	0.193	0.174	0.15456	0.019	0.17
450					1.1	0.213	0.171	0.17002	0.041	0.36
465					1.2	0.232	0.169	0.18547	0.063	0.54
480					1.3	0.251	0.167	0.20093	0.084	0.73
495					1.5	0.290	0.164	0.23184	0.125	1.08
510					1.5	0.290	0.162	0.23184	0.128	1.10
525					1.6	0.309	0.160	0.2473	0.149	1.29
540					1.7	0.328	0.158	0.26275	0.171	1.48
555					1.9	0.367	0.155	0.29366	0.212	1.83
570					2	0.386	0.153	0.30912	0.233	2.02
585					2.1	0.406	0.151	0.32458	0.255	2.20
600					2.2	0.425	0.149	0.34003	0.276	2.39
615					1.5	0.290	0.147	0.23184	0.143	1.24

630					1.5	0.290	0.145	0.23184	0.145	1.26
645					2	0.386	0.142	0.30912	0.244	2.11
660					2	0.386	0.140	0.30912	0.246	2.13
675					1.9	0.367	0.138	0.29366	0.229	1.98
690					1.9	0.367	0.136	0.29366	0.231	1.99
705					1.7	0.328	0.134	0.26275	0.194	1.68
720					1.8	0.348	0.132	0.27821	0.216	1.86
735					2.5	0.483	0.130	0.3864	0.353	3.05
750					2.6	0.502	0.128	0.40186	0.374	3.23
765					2.8	0.541	0.126	0.43277	0.415	3.58
780					2.9	0.560	0.124	0.44822	0.436	3.77
795					3.4	0.657	0.123	0.5255	0.534	4.62
810					3.4	0.657	0.121	0.5255	0.536	4.63
825					2.3	0.444	0.119	0.35549	0.326	2.81
840					2.3	0.444	0.117	0.35549	0.327	2.83
855					2.7	0.522	0.115	0.41731	0.406	3.51
870					2.6	0.502	0.113	0.40186	0.389	3.36
885					2.6	0.502	0.112	0.40186	0.391	3.37
900					2.5	0.483	0.110	0.3864	0.373	3.22
915					2.4	0.464	0.108	0.37094	0.355	3.07
930					2.3	0.444	0.107	0.35549	0.338	2.92
945					1.9	0.367	0.105	0.29366	0.262	2.26
960					1.9	0.367	0.103	0.29366	0.264	2.28
975					0.4	0.077	0.102	0.06182	0.015	0.13
990					0.4	0.077	0.100	0.06182	0.015	0.13
1005					0.3	0.058	0.099	0.04637	0.012	0.10
1020					0.3	0.058	0.097	0.04637	0.012	0.10
1035					0.5	0.097	0.096	0.07728	0.001	0.01
1050					0.5	0.097	0.094	0.07728	0.002	0.02
1065					0.5	0.097	0.093	0.07728	0.004	0.03
1080					0.4	0.077	0.092	0.06182	0.015	0.13
1095					0.4	0.077	0.090	0.06182	0.015	0.13
1110					0.4	0.077	0.089	0.06182	0.015	0.13
1125					0.3	0.058	0.088	0.04637	0.012	0.10
1140					0.2	0.039	0.086	0.03091	0.008	0.07
1155					0.3	0.058	0.085	0.04637	0.012	0.10
1170					0.4	0.077	0.084	0.06182	0.015	0.13
1185					0.3	0.058	0.083	0.04637	0.012	0.10
1200					0.2	0.039	0.082	0.03091	0.008	0.07
1215					0.3	0.058	0.081	0.04637	0.012	0.10
1230					0.3	0.058	0.080	0.04637	0.012	0.10
1245					0.3	0.058	0.079	0.04637	0.012	0.10
1260					0.2	0.039	0.078	0.03091	0.008	0.07
1275					0.3	0.058	0.077	0.04637	0.012	0.10
1290					0.2	0.039	0.076	0.03091	0.008	0.07
1305					0.3	0.058	0.075	0.04637	0.012	0.10
1320					0.2	0.039	0.074	0.03091	0.008	0.07
1335					0.3	0.058	0.073	0.04637	0.012	0.10
1350					0.2	0.039	0.073	0.03091	0.008	0.07
1365					0.2	0.039	0.072	0.03091	0.008	0.07
1380					0.2	0.039	0.072	0.03091	0.008	0.07
1395					0.2	0.039	0.071	0.03091	0.008	0.07
1410					0.2	0.039	0.071	0.03091	0.008	0.07
1425					0.2	0.039	0.070	0.03091	0.008	0.07
1440					0.2	0.039	0.070	0.03091	0.008	0.07
				Σ[20] -	100			Σ[23] -	10.372	89.612

Proposed Condition Tank A
2-yr Storm Event

Total Area	Total Impervious Area	%Imp	Fp (infiltration rate based on RI, Plate E-6.2)
8.74	7.325	0.84	0.76

Constant Loss Rate

F= Fp(1-0.9Ai)
F= 0.1867

For 24-hr storms, Ft is variable loss rate

Ft= C[24-(T/60)]^1.55+Fm
Ft= 0.3298

C= (F-Fm)/54
C= 0.0017

Fm= 0.5F
Fm= 0.0934

T= 7.5

RCFC & WCD HYDROLOGY MANUAL	SYNTHETIC UNIT HYDROGRAPH METHOD UNIT HYDROGRAPH AND EFFECTIVE RAIN CALCULATION FORM	PROJECT: ROCAS GRANDES 2 JOB #: 3816 PAGE

[1] CONCENTRATION POINT						[2] AREA DESIGNATION					
[3] DRAINAGE AREA - ACRES			8.74	ACRES		[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])				N/A	
[5] UNIT TIME - MINUTES			5	MIN PER E-1.2		[6] LAG TIME-MINUTES					MIN
[7] UNIT TIME-PERCENT OF LAG			N/A			[8] S-CURVE				N/A	
[9] STORM FREQUENCY & DURATION			2 YEAR	1 HOUR		[10] TOTAL ADJUSTED STORM RAIN-INCHES				0.475	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR			N/A			[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR				N/A	
[13] CONSTANT LOSS RATE-IN/HR			0.1867		IN/HR	[14] LOW LOSS RATE-PERCENT				0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.00	0	0.000	0.00
5					4.2	0.239	0.19	0.192	0.053	0.46
10					4.3	0.245	0.19	0.196	0.058	0.51
15					5	0.285	0.19	0.228	0.098	0.87
20					5	0.285	0.19	0.228	0.098	0.87
25					5.8	0.331	0.19	0.264	0.144	1.27
30					6.5	0.371	0.19	0.296	0.184	1.62
35					7.4	0.422	0.19	0.337	0.235	2.07
40					8.6	0.490	0.19	0.392	0.304	2.67
45					12.3	0.701	0.19	0.561	0.514	4.53
50					29.1	1.659	0.19	1.327	1.472	12.97
55					6.8	0.388	0.19	0.310	0.201	1.77
60					5	0.285	0.19	0.228	0.098	0.87
				Σ[20] -	100			Σ[23] -	3.46	30.49

RCFC & WCD HYDROLOGY MANUAL	SYNTHETIC UNIT HYDROGRAPH METHOD UNIT HYDROGRAPH AND EFFECTIVE RAIN CALCULATION FORM	PROJECT: ROCAS GRANDES 2 JOB #: 3816 PAGE

[1] CONCENTRATION POINT			[2] AREA DESIGNATION				
[3] DRAINAGE AREA - ACRES	8.74	ACRES	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])			N/A	
[5] UNIT TIME - MINUTES	5	MIN PER E-1.2	[6] LAG TIME-MINUTES				MIN
[7] UNIT TIME-PERCENT OF LAG	N/A		[8] S-CURVE			N/A	
[9] STORM FREQUENCY & DURATION	2 YEAR	3 HOUR	[10] TOTAL ADJUSTED STORM RAIN-INCHES			0.833	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR	N/A		[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR			N/A	
[13] CONSTANT LOSS RATE-IN/HR	0.1867	IN/HR	[14] LOW LOSS RATE-PERCENT			0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.19	0	0.000	0.00
5					1.3	0.129948	0.19	0.10396	0.026	0.23
10					1.3	0.129948	0.19	0.10396	0.026	0.23
15					1.1	0.109956	0.19	0.08796	0.022	0.19
20					1.5	0.14994	0.19	0.11995	0.030	0.26
25					1.5	0.14994	0.19	0.11995	0.030	0.26
30					1.8	0.179928	0.19	0.14394	0.036	0.31
35					1.5	0.14994	0.19	0.11995	0.030	0.26
40					1.8	0.179928	0.19	0.14394	0.036	0.31
45					1.8	0.179928	0.19	0.14394	0.036	0.31
50					1.5	0.14994	0.19	0.11995	0.030	0.26
55					1.6	0.159936	0.19	0.12795	0.032	0.28
60					1.8	0.179928	0.19	0.14394	0.036	0.31
65					2.2	0.219912	0.19	0.17593	0.033	0.29
70					2.2	0.219912	0.19	0.17593	0.033	0.29
75					2.2	0.219912	0.19	0.17593	0.033	0.29
80					2	0.19992	0.19	0.15994	0.013	0.12
85					2.6	0.259896	0.19	0.20792	0.073	0.64
90					2.7	0.269892	0.19	0.21591	0.083	0.73
95					2.4	0.239904	0.19	0.19192	0.053	0.47
100					2.7	0.269892	0.19	0.21591	0.083	0.73
105					3.3	0.329868	0.19	0.26389	0.143	1.25
110					3.1	0.309876	0.19	0.2479	0.123	1.08
115					2.9	0.289884	0.19	0.23191	0.103	0.90
120					3	0.29988	0.19	0.2399	0.113	0.99
125					3.1	0.309876	0.19	0.2479	0.123	1.08
130					4.2	0.419832	0.19	0.33587	0.233	2.04
135					5	0.4998	0.19	0.39984	0.313	2.74
140					3.5	0.34986	0.19	0.27989	0.163	1.43
145					6.8	0.679728	0.19	0.54378	0.493	4.31
150					7.3	0.729708	0.19	0.58377	0.543	4.75
155					8.2	0.819672	0.19	0.65574	0.633	5.53
160					5.9	0.589764	0.19	0.47181	0.403	3.52
165					2	0.19992	0.19	0.15994	0.013	0.12
170					1.8	0.179928	0.19	0.14394	0.036	0.31
175					1.8	0.179928	0.19	0.14394	0.036	0.31
180					0.6	0.059976	0.19	0.04798	0.012	0.10
				Σ[20] -	100			Σ[23] -	4.26	37.23

RCFC & WCD HYDROLOGY MANUAL	SYNTHETIC UNIT HYDROGRAPH METHOD UNIT HYDROGRAPH AND EFFECTIVE RAIN CALCULATION FORM	PROJECT: ROCAS GRANDES 2 JOB #: 3816 PAGE

[1] CONCENTRATION POINT			[2] AREA DESIGNATION				
[3] DRAINAGE AREA - ACRES	8.74	ACRES	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])				
[5] UNIT TIME - MINUTES	5	MIN PER E-1.2	[6] LAG TIME-MINUTES				MIN
[7] UNIT TIME-PERCENT OF LAG	N/A		[8] S-CURVE			N/A	
[9] STORM FREQUENCY & DURATION	2 YEAR	6 HOUR	[10] TOTAL ADJUSTED STORM RAIN-INCHES			1.16	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR	N/A		[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR			N/A	
[13] CONSTANT LOSS RATE-IN/HR	0.1867	IN/HR	[14] LOW LOSS RATE-PERCENT			0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.19	0	0.000	0.00
5					0.5	0.0696	0.19	0.05568	0.014	0.12
10					0.6	0.08352	0.19	0.06682	0.017	0.15
15					0.6	0.08352	0.19	0.06682	0.017	0.15
20					0.6	0.08352	0.19	0.06682	0.017	0.15
25					0.6	0.08352	0.19	0.06682	0.017	0.15
30					0.7	0.09744	0.19	0.07795	0.019	0.17
35					0.7	0.09744	0.19	0.07795	0.019	0.17
40					0.7	0.09744	0.19	0.07795	0.019	0.17
45					0.7	0.09744	0.19	0.07795	0.019	0.17
50					0.7	0.09744	0.19	0.07795	0.019	0.17
55					0.7	0.09744	0.19	0.07795	0.019	0.17
60					0.8	0.11136	0.19	0.08909	0.022	0.19
65					0.8	0.11136	0.19	0.08909	0.022	0.19
70					0.8	0.11136	0.19	0.08909	0.022	0.19
75					0.8	0.11136	0.19	0.08909	0.022	0.19
80					0.8	0.11136	0.19	0.08909	0.022	0.19
85					0.8	0.11136	0.19	0.08909	0.022	0.19
90					0.8	0.11136	0.19	0.08909	0.022	0.19
95					0.8	0.11136	0.19	0.08909	0.022	0.19
100					0.8	0.11136	0.19	0.08909	0.022	0.19
105					0.8	0.11136	0.19	0.08909	0.022	0.19
110					0.8	0.11136	0.19	0.08909	0.022	0.19
115					0.8	0.11136	0.19	0.08909	0.022	0.19
120					0.9	0.12528	0.19	0.10022	0.025	0.22
125					0.8	0.11136	0.19	0.08909	0.022	0.19
130					0.9	0.12528	0.19	0.10022	0.025	0.22
135					0.9	0.12528	0.19	0.10022	0.025	0.22
140					0.9	0.12528	0.19	0.10022	0.025	0.22
145					0.9	0.12528	0.19	0.10022	0.025	0.22
150					0.9	0.12528	0.19	0.10022	0.025	0.22
155					0.9	0.12528	0.19	0.10022	0.025	0.22
160					0.9	0.12528	0.19	0.10022	0.025	0.22
165					1	0.1392	0.19	0.11136	0.028	0.24
170					1	0.1392	0.19	0.11136	0.028	0.24
175					1	0.1392	0.19	0.11136	0.028	0.24
180					1	0.1392	0.19	0.11136	0.028	0.24
185					1	0.1392	0.19	0.11136	0.028	0.24
190					1.1	0.15312	0.19	0.1225	0.031	0.27
195					1.1	0.15312	0.19	0.1225	0.031	0.27
200					1.1	0.15312	0.19	0.1225	0.031	0.27
205					1.2	0.16704	0.19	0.13363	0.033	0.29

210						1.3	0.18096	0.19	0.14477	0.036	0.32
215						1.4	0.19488	0.19	0.1559	0.008	0.07
220						1.4	0.19488	0.19	0.1559	0.008	0.07
225						1.5	0.2088	0.19	0.16704	0.022	0.19
230						1.5	0.2088	0.19	0.16704	0.022	0.19
235						1.6	0.22272	0.19	0.17818	0.036	0.31
240						1.6	0.22272	0.19	0.17818	0.036	0.31
245						1.7	0.23664	0.19	0.18931	0.050	0.44
250						1.8	0.25056	0.19	0.20045	0.064	0.56
255						1.9	0.26448	0.19	0.21158	0.078	0.68
260						2	0.2784	0.19	0.22272	0.092	0.80
265						2.1	0.29232	0.19	0.23386	0.106	0.92
270						2.1	0.29232	0.19	0.23386	0.106	0.92
275						2.2	0.30624	0.19	0.24499	0.120	1.04
280						2.3	0.32016	0.19	0.25613	0.133	1.17
285						2.4	0.33408	0.19	0.26726	0.147	1.29
290						2.4	0.33408	0.19	0.26726	0.147	1.29
295						2.5	0.348	0.19	0.2784	0.161	1.41
300						2.6	0.36192	0.19	0.28954	0.175	1.53
305						3.1	0.43152	0.19	0.34522	0.245	2.14
310						3.6	0.50112	0.19	0.4009	0.314	2.75
315						3.9	0.54288	0.19	0.4343	0.356	3.11
320						4.2	0.58464	0.19	0.46771	0.398	3.48
325						4.7	0.65424	0.19	0.52339	0.468	4.09
330						5.6	0.77952	0.19	0.62362	0.593	5.18
335						1.9	0.26448	0.19	0.21158	0.078	0.68
340						0.9	0.12528	0.19	0.10022	0.025	0.22
345						0.6	0.08352	0.19	0.06682	0.017	0.15
350						0.5	0.0696	0.19	0.05568	0.014	0.12
355						0.3	0.04176	0.19	0.03341	0.008	0.07
360						0.2	0.02784	0.19	0.02227	0.006	0.05
					Σ[20] -	100			Σ[23] -	5.02	43.88

RCFC & WCD HYDROLOGY MANUAL	SYNTHETIC UNIT HYDROGRAPH METHOD UNIT HYDROGRAPH AND EFFECTIVE RAIN CALCULATION FORM	PROJECT: ROCAS GRANDES 2 JOB #: 3816 PAGE

[1] CONCENTRATION POINT			[2] AREA DESIGNATION				
[3] DRAINAGE AREA - ACRES	8.74	ACRES	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])				
[5] UNIT TIME - MINUTES	15	MIN PER E-1.2	[6] LAG TIME-MINUTES				MIN
[7] UNIT TIME-PERCENT OF LAG	N/A		[8] S-CURVE			N/A	
[9] STORM FREQUENCY & DURATION	2 YEAR	24 HOUR	[10] TOTAL ADJUSTED STORM RAIN-INCHES			1.96	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR	0.3298		[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR				
[13] CONSTANT LOSS RATE-IN/HR		IN/HR	[14] LOW LOSS RATE-PERCENT			0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.00	0	0.000	0.00
15					0.2	0.016	0.326	0.01254	0.003	0.03
30					0.3	0.024	0.322	0.01882	0.005	0.04
45					0.3	0.024	0.318	0.01882	0.005	0.04
60					0.4	0.031	0.315	0.02509	0.006	0.05
75					0.3	0.024	0.311	0.01882	0.005	0.04
90					0.3	0.024	0.307	0.01882	0.005	0.04
105					0.3	0.024	0.304	0.01882	0.005	0.04
120					0.4	0.031	0.300	0.02509	0.006	0.05
135					0.4	0.031	0.296	0.02509	0.006	0.05
150					0.4	0.031	0.293	0.02509	0.006	0.05
165					0.5	0.039	0.289	0.03136	0.008	0.07
180					0.5	0.039	0.286	0.03136	0.008	0.07
195					0.5	0.039	0.282	0.03136	0.008	0.07
210					0.5	0.039	0.279	0.03136	0.008	0.07
225					0.5	0.039	0.275	0.03136	0.008	0.07
240					0.6	0.047	0.272	0.03763	0.009	0.08
255					0.6	0.047	0.268	0.03763	0.009	0.08
270					0.7	0.055	0.265	0.0439	0.011	0.10
285					0.7	0.055	0.262	0.0439	0.011	0.10
300					0.8	0.063	0.258	0.05018	0.013	0.11
315					0.6	0.047	0.255	0.03763	0.009	0.08
330					0.7	0.055	0.252	0.0439	0.011	0.10
345					0.8	0.063	0.248	0.05018	0.013	0.11
360					0.8	0.063	0.245	0.05018	0.013	0.11
375					0.9	0.071	0.242	0.05645	0.014	0.12
390					0.9	0.071	0.239	0.05645	0.014	0.12
405					1	0.078	0.235	0.06272	0.016	0.14
420					1	0.078	0.232	0.06272	0.016	0.14
435					1	0.078	0.229	0.06272	0.016	0.14
450					1.1	0.086	0.226	0.06899	0.017	0.15
465					1.2	0.094	0.223	0.07526	0.019	0.16
480					1.3	0.102	0.220	0.08154	0.020	0.18
495					1.5	0.118	0.217	0.09408	0.024	0.21
510					1.5	0.118	0.214	0.09408	0.024	0.21
525					1.6	0.125	0.211	0.10035	0.025	0.22
540					1.7	0.133	0.208	0.10662	0.027	0.23
555					1.9	0.149	0.205	0.11917	0.030	0.26
570					2	0.157	0.202	0.12544	0.031	0.27
585					2.1	0.165	0.199	0.13171	0.033	0.29
600					2.2	0.172	0.196	0.13798	0.034	0.30
615					1.5	0.118	0.194	0.09408	0.024	0.21

630					1.5	0.118	0.191	0.09408	0.024	0.21
645					2	0.157	0.188	0.12544	0.031	0.27
660					2	0.157	0.185	0.12544	0.031	0.27
675					1.9	0.149	0.183	0.11917	0.030	0.26
690					1.9	0.149	0.180	0.11917	0.030	0.26
705					1.7	0.133	0.177	0.10662	0.027	0.23
720					1.8	0.141	0.175	0.1129	0.028	0.25
735					2.5	0.196	0.172	0.1568	0.024	0.21
750					2.6	0.204	0.170	0.16307	0.034	0.30
765					2.8	0.220	0.167	0.17562	0.052	0.46
780					2.9	0.227	0.165	0.18189	0.063	0.55
795					3.4	0.267	0.162	0.21325	0.104	0.91
810					3.4	0.267	0.160	0.21325	0.107	0.93
825					2.3	0.180	0.157	0.14426	0.023	0.20
840					2.3	0.180	0.155	0.14426	0.025	0.22
855					2.7	0.212	0.153	0.16934	0.059	0.52
870					2.6	0.204	0.150	0.16307	0.054	0.47
885					2.6	0.204	0.148	0.16307	0.056	0.49
900					2.5	0.196	0.146	0.1568	0.050	0.44
915					2.4	0.188	0.144	0.15053	0.045	0.39
930					2.3	0.180	0.141	0.14426	0.039	0.34
945					1.9	0.149	0.139	0.11917	0.010	0.09
960					1.9	0.149	0.137	0.11917	0.012	0.10
975					0.4	0.031	0.135	0.02509	0.006	0.05
990					0.4	0.031	0.133	0.02509	0.006	0.05
1005					0.3	0.024	0.131	0.01882	0.005	0.04
1020					0.3	0.024	0.129	0.01882	0.005	0.04
1035					0.5	0.039	0.127	0.03136	0.008	0.07
1050					0.5	0.039	0.125	0.03136	0.008	0.07
1065					0.5	0.039	0.123	0.03136	0.008	0.07
1080					0.4	0.031	0.122	0.02509	0.006	0.05
1095					0.4	0.031	0.120	0.02509	0.006	0.05
1110					0.4	0.031	0.118	0.02509	0.006	0.05
1125					0.3	0.024	0.116	0.01882	0.005	0.04
1140					0.2	0.016	0.115	0.01254	0.003	0.03
1155					0.3	0.024	0.113	0.01882	0.005	0.04
1170					0.4	0.031	0.112	0.02509	0.006	0.05
1185					0.3	0.024	0.110	0.01882	0.005	0.04
1200					0.2	0.016	0.109	0.01254	0.003	0.03
1215					0.3	0.024	0.107	0.01882	0.005	0.04
1230					0.3	0.024	0.106	0.01882	0.005	0.04
1245					0.3	0.024	0.105	0.01882	0.005	0.04
1260					0.2	0.016	0.103	0.01254	0.003	0.03
1275					0.3	0.024	0.102	0.01882	0.005	0.04
1290					0.2	0.016	0.101	0.01254	0.003	0.03
1305					0.3	0.024	0.100	0.01882	0.005	0.04
1320					0.2	0.016	0.099	0.01254	0.003	0.03
1335					0.3	0.024	0.098	0.01882	0.005	0.04
1350					0.2	0.016	0.097	0.01254	0.003	0.03
1365					0.2	0.016	0.096	0.01254	0.003	0.03
1380					0.2	0.016	0.095	0.01254	0.003	0.03
1395					0.2	0.016	0.095	0.01254	0.003	0.03
1410					0.2	0.016	0.094	0.01254	0.003	0.03
1425					0.2	0.016	0.094	0.01254	0.003	0.03
1440					0.2	0.016	0.093	0.01254	0.003	0.03
				Σ[20] -	100			Σ[23] -	1.681	14.690

Proposed Condition Tank A
5-yr Storm Event

Total Area	Total Impervious Area	%Imp	Fp (infiltration rate based on RI, Plate E-6.2)
8.74	7.325	0.84	0.76

Constant Loss Rate

F= Fp(1-0.9Ai)
F= 0.1867

For 24-hr storms, Ft is variable loss rate

Ft= C[24-(T/60)]^1.55+Fm
Ft= 0.3298

C= (F-Fm)/54
C= 0.0017

Fm= 0.5F
Fm= 0.0934

T= 7.5

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[1] CONCENTRATION POINT						[2] AREA DESIGNATION					
[3] DRAINAGE AREA - ACRES			8.74	ACRES		[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])				N/A	
[5] UNIT TIME - MINUTES			5	MIN PER E-1.2		[6] LAG TIME-MINUTES					MIN
[7] UNIT TIME-PERCENT OF LAG			N/A			[8] S-CURVE				N/A	
[9] STORM FREQUENCY & DURATION			5 YEAR	1 HOUR		[10] TOTAL ADJUSTED STORM RAIN-INCHES				0.641	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR			N/A			[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR				N/A	
[13] CONSTANT LOSS RATE-IN/HR			0.1867		IN/HR	[14] LOW LOSS RATE-PERCENT				0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.00	0	0.000	0.00
5					4.2	0.323	0.19	0.258	0.136	1.20
10					4.3	0.331	0.19	0.265	0.144	1.27
15					5	0.385	0.19	0.308	0.198	1.74
20					5	0.385	0.19	0.308	0.198	1.74
25					5.8	0.446	0.19	0.357	0.259	2.29
30					6.5	0.500	0.19	0.400	0.313	2.76
35					7.4	0.569	0.19	0.455	0.383	3.37
40					8.6	0.662	0.19	0.529	0.475	4.18
45					12.3	0.946	0.19	0.757	0.759	6.69
50					29.1	2.238	0.19	1.791	2.052	18.08
55					6.8	0.523	0.19	0.418	0.336	2.96
60					5	0.385	0.19	0.308	0.198	1.74
				Σ[20] -	100			Σ[23] -	5.45	48.04

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[1] CONCENTRATION POINT			[2] AREA DESIGNATION				
[3] DRAINAGE AREA - ACRES	8.74	ACRES	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])			N/A	
[5] UNIT TIME - MINUTES	5	MIN PER E-1.2	[6] LAG TIME-MINUTES				MIN
[7] UNIT TIME-PERCENT OF LAG	N/A		[8] S-CURVE			N/A	
[9] STORM FREQUENCY & DURATION	5 YEAR	3 HOUR	[10] TOTAL ADJUSTED STORM RAIN-INCHES			1.08	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR	N/A		[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR			N/A	
[13] CONSTANT LOSS RATE-IN/HR	0.1867	IN/HR	[14] LOW LOSS RATE-PERCENT			0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.19	0	0.000	0.00
5					1.3	0.16848	0.19	0.13478	0.034	0.29
10					1.3	0.16848	0.19	0.13478	0.034	0.29
15					1.1	0.14256	0.19	0.11405	0.029	0.25
20					1.5	0.1944	0.19	0.15552	0.008	0.07
25					1.5	0.1944	0.19	0.15552	0.008	0.07
30					1.8	0.23328	0.19	0.18662	0.047	0.41
35					1.5	0.1944	0.19	0.15552	0.008	0.07
40					1.8	0.23328	0.19	0.18662	0.047	0.41
45					1.8	0.23328	0.19	0.18662	0.047	0.41
50					1.5	0.1944	0.19	0.15552	0.008	0.07
55					1.6	0.20736	0.19	0.16589	0.021	0.18
60					1.8	0.23328	0.19	0.18662	0.047	0.41
65					2.2	0.28512	0.19	0.2281	0.098	0.86
70					2.2	0.28512	0.19	0.2281	0.098	0.86
75					2.2	0.28512	0.19	0.2281	0.098	0.86
80					2	0.2592	0.19	0.20736	0.073	0.63
85					2.6	0.33696	0.19	0.26957	0.150	1.31
90					2.7	0.34992	0.19	0.27994	0.163	1.43
95					2.4	0.31104	0.19	0.24883	0.124	1.09
100					2.7	0.34992	0.19	0.27994	0.163	1.43
105					3.3	0.42768	0.19	0.34214	0.241	2.11
110					3.1	0.40176	0.19	0.32141	0.215	1.88
115					2.9	0.37584	0.19	0.30067	0.189	1.65
120					3	0.3888	0.19	0.31104	0.202	1.77
125					3.1	0.40176	0.19	0.32141	0.215	1.88
130					4.2	0.54432	0.19	0.43546	0.358	3.13
135					5	0.648	0.19	0.5184	0.461	4.03
140					3.5	0.4536	0.19	0.36288	0.267	2.33
145					6.8	0.88128	0.19	0.70502	0.695	6.07
150					7.3	0.94608	0.19	0.75686	0.759	6.64
155					8.2	1.06272	0.19	0.85018	0.876	7.66
160					5.9	0.76464	0.19	0.61171	0.578	5.05
165					2	0.2592	0.19	0.20736	0.073	0.63
170					1.8	0.23328	0.19	0.18662	0.047	0.41
175					1.8	0.23328	0.19	0.18662	0.047	0.41
180					0.6	0.07776	0.19	0.06221	0.016	0.14
				Σ[20] -	100			Σ[23] -	6.54	57.16

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210						1.3	0.23244	0.19	0.18595	0.046	0.40
215						1.4	0.25032	0.19	0.20026	0.064	0.56
220						1.4	0.25032	0.19	0.20026	0.064	0.56
225						1.5	0.2682	0.19	0.21456	0.082	0.71
230						1.5	0.2682	0.19	0.21456	0.082	0.71
235						1.6	0.28608	0.19	0.22886	0.099	0.87
240						1.6	0.28608	0.19	0.22886	0.099	0.87
245						1.7	0.30396	0.19	0.24317	0.117	1.02
250						1.8	0.32184	0.19	0.25747	0.135	1.18
255						1.9	0.33972	0.19	0.27178	0.153	1.34
260						2	0.3576	0.19	0.28608	0.171	1.49
265						2.1	0.37548	0.19	0.30038	0.189	1.65
270						2.1	0.37548	0.19	0.30038	0.189	1.65
275						2.2	0.39336	0.19	0.31469	0.207	1.81
280						2.3	0.41124	0.19	0.32899	0.225	1.96
285						2.4	0.42912	0.19	0.3433	0.242	2.12
290						2.4	0.42912	0.19	0.3433	0.242	2.12
295						2.5	0.447	0.19	0.3576	0.260	2.28
300						2.6	0.46488	0.19	0.3719	0.278	2.43
305						3.1	0.55428	0.19	0.44342	0.368	3.21
310						3.6	0.64368	0.19	0.51494	0.457	3.99
315						3.9	0.69732	0.19	0.55786	0.511	4.46
320						4.2	0.75096	0.19	0.60077	0.564	4.93
325						4.7	0.84036	0.19	0.67229	0.654	5.71
330						5.6	1.00128	0.19	0.80102	0.815	7.12
335						1.9	0.33972	0.19	0.27178	0.153	1.34
340						0.9	0.16092	0.19	0.12874	0.032	0.28
345						0.6	0.10728	0.19	0.08582	0.021	0.19
350						0.5	0.0894	0.19	0.07152	0.018	0.16
355						0.3	0.05364	0.19	0.04291	0.011	0.09
360						0.2	0.03576	0.19	0.02861	0.007	0.06
					Σ[20] -	100			Σ[23] -	7.67	67.06

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600					2.2	0.228	0.196	0.18234	0.031	0.28
615					1.5	0.155	0.194	0.12432	0.031	0.27
630					1.5	0.155	0.191	0.12432	0.031	0.27
645					2	0.207	0.188	0.16576	0.019	0.17
660					2	0.207	0.185	0.16576	0.022	0.19
675					1.9	0.197	0.183	0.15747	0.014	0.12
690					1.9	0.197	0.180	0.15747	0.017	0.15
705					1.7	0.176	0.177	0.1409	0.035	0.31
720					1.8	0.186	0.175	0.14918	0.012	0.10
735					2.5	0.259	0.172	0.2072	0.087	0.76
750					2.6	0.269	0.170	0.21549	0.100	0.87
765					2.8	0.290	0.167	0.23206	0.123	1.08
780					2.9	0.300	0.165	0.24035	0.136	1.19
795					3.4	0.352	0.162	0.28179	0.190	1.66
810					3.4	0.352	0.160	0.28179	0.193	1.68
825					2.3	0.238	0.157	0.19062	0.081	0.71
840					2.3	0.238	0.155	0.19062	0.083	0.73
855					2.7	0.280	0.153	0.22378	0.127	1.11
870					2.6	0.269	0.150	0.21549	0.119	1.04
885					2.6	0.269	0.148	0.21549	0.121	1.06
900					2.5	0.259	0.146	0.2072	0.113	0.99
915					2.4	0.249	0.144	0.19891	0.105	0.92
930					2.3	0.238	0.141	0.19062	0.097	0.85
945					1.9	0.197	0.139	0.15747	0.058	0.50
960					1.9	0.197	0.137	0.15747	0.060	0.52
975					0.4	0.041	0.135	0.03315	0.008	0.07
990					0.4	0.041	0.133	0.03315	0.008	0.07
1005					0.3	0.031	0.131	0.02486	0.006	0.05
1020					0.3	0.031	0.129	0.02486	0.006	0.05
1035					0.5	0.052	0.127	0.04144	0.010	0.09
1050					0.5	0.052	0.125	0.04144	0.010	0.09
1065					0.5	0.052	0.123	0.04144	0.010	0.09
1080					0.4	0.041	0.122	0.03315	0.008	0.07
1095					0.4	0.041	0.120	0.03315	0.008	0.07
1110					0.4	0.041	0.118	0.03315	0.008	0.07
1125					0.3	0.031	0.116	0.02486	0.006	0.05
1140					0.2	0.021	0.115	0.01658	0.004	0.04
1155					0.3	0.031	0.113	0.02486	0.006	0.05
1170					0.4	0.041	0.112	0.03315	0.008	0.07
1185					0.3	0.031	0.110	0.02486	0.006	0.05
1200					0.2	0.021	0.109	0.01658	0.004	0.04
1215					0.3	0.031	0.107	0.02486	0.006	0.05
1230					0.3	0.031	0.106	0.02486	0.006	0.05
1245					0.3	0.031	0.105	0.02486	0.006	0.05
1260					0.2	0.021	0.103	0.01658	0.004	0.04
1275					0.3	0.031	0.102	0.02486	0.006	0.05
1290					0.2	0.021	0.101	0.01658	0.004	0.04
1305					0.3	0.031	0.100	0.02486	0.006	0.05
1320					0.2	0.021	0.099	0.01658	0.004	0.04
1335					0.3	0.031	0.098	0.02486	0.006	0.05
1350					0.2	0.021	0.097	0.01658	0.004	0.04
1365					0.2	0.021	0.096	0.01658	0.004	0.04
1380					0.2	0.021	0.095	0.01658	0.004	0.04
1395					0.2	0.021	0.095	0.01658	0.004	0.04
1410					0.2	0.021	0.094	0.01658	0.004	0.04
1425					0.2	0.021	0.094	0.01658	0.004	0.04
1440					0.2	0.021	0.093	0.01658	0.004	0.04
				Σ[20] -	100			Σ[23] -	2.823	24.670

Proposed Condition Tank A
10-yr Storm Event

Total Area	Total Impervious Area	%Imp	Fp (infiltration rate based on RI, Plate E-6.2)
8.74	7.325	0.84	0.38

Constant Loss Rate

F= Fp(1-0.9Ai)
F= 0.0934

For 24-hr storms, Ft is variable loss rate

Ft= C[24-(T/60)]^1.55+Fm
Ft= 0.1649

C= (F-Fm)/54
C= 0.0009

Fm= 0.5F
Fm= 0.0467

T= 7.5

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[1] CONCENTRATION POINT						[2] AREA DESIGNATION					
[3] DRAINAGE AREA - ACRES			8.74	ACRES		[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])				N/A	
[5] UNIT TIME - MINUTES			5	MIN PER E-1.2		[6] LAG TIME-MINUTES					MIN
[7] UNIT TIME-PERCENT OF LAG			N/A			[8] S-CURVE				N/A	
[9] STORM FREQUENCY & DURATION			10 YEAR	1 HOUR		[10] TOTAL ADJUSTED STORM RAIN-INCHES				0.778	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR			N/A			[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR				N/A	
[13] CONSTANT LOSS RATE-IN/HR			0.0934		IN/HR	[14] LOW LOSS RATE-PERCENT				0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.00	0	0.000	0.00
5					4.2	0.392	0.09	0.314	0.299	2.63
10					4.3	0.401	0.09	0.321	0.308	2.71
15					5	0.467	0.09	0.373	0.373	3.29
20					5	0.467	0.09	0.373	0.373	3.29
25					5.8	0.541	0.09	0.433	0.448	3.95
30					6.5	0.607	0.09	0.485	0.513	4.52
35					7.4	0.691	0.09	0.553	0.597	5.27
40					8.6	0.803	0.09	0.642	0.709	6.25
45					12.3	1.148	0.09	0.919	1.055	9.30
50					29.1	2.717	0.09	2.173	2.623	23.12
55					6.8	0.635	0.09	0.508	0.541	4.77
60					5	0.467	0.09	0.373	0.373	3.29
				Σ[20] -	100			Σ[23] -	8.22	72.40

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[1] CONCENTRATION POINT			[2] AREA DESIGNATION				
[3] DRAINAGE AREA - ACRES	8.74	ACRES	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])			N/A	
[5] UNIT TIME - MINUTES	5	MIN PER E-1.2	[6] LAG TIME-MINUTES				MIN
[7] UNIT TIME-PERCENT OF LAG	N/A		[8] S-CURVE			N/A	
[9] STORM FREQUENCY & DURATION	10 YEAR	3 HOUR	[10] TOTAL ADJUSTED STORM RAIN-INCHES			1.29	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR	N/A		[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR			N/A	
[13] CONSTANT LOSS RATE-IN/HR	0.0934	IN/HR	[14] LOW LOSS RATE-PERCENT			0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.09	0	0.000	0.00
5					1.3	0.20124	0.09	0.16099	0.108	0.94
10					1.3	0.20124	0.09	0.16099	0.108	0.94
15					1.1	0.17028	0.09	0.13622	0.077	0.67
20					1.5	0.2322	0.09	0.18576	0.139	1.21
25					1.5	0.2322	0.09	0.18576	0.139	1.21
30					1.8	0.27864	0.09	0.22291	0.185	1.62
35					1.5	0.2322	0.09	0.18576	0.139	1.21
40					1.8	0.27864	0.09	0.22291	0.185	1.62
45					1.8	0.27864	0.09	0.22291	0.185	1.62
50					1.5	0.2322	0.09	0.18576	0.139	1.21
55					1.6	0.24768	0.09	0.19814	0.154	1.35
60					1.8	0.27864	0.09	0.22291	0.185	1.62
65					2.2	0.34056	0.09	0.27245	0.247	2.16
70					2.2	0.34056	0.09	0.27245	0.247	2.16
75					2.2	0.34056	0.09	0.27245	0.247	2.16
80					2	0.3096	0.09	0.24768	0.216	1.89
85					2.6	0.40248	0.09	0.32198	0.309	2.70
90					2.7	0.41796	0.09	0.33437	0.325	2.84
95					2.4	0.37152	0.09	0.29722	0.278	2.43
100					2.7	0.41796	0.09	0.33437	0.325	2.84
105					3.3	0.51084	0.09	0.40867	0.417	3.65
110					3.1	0.47988	0.09	0.3839	0.386	3.38
115					2.9	0.44892	0.09	0.35914	0.356	3.11
120					3	0.4644	0.09	0.37152	0.371	3.24
125					3.1	0.47988	0.09	0.3839	0.386	3.38
130					4.2	0.65016	0.09	0.52013	0.557	4.87
135					5	0.774	0.09	0.6192	0.681	5.95
140					3.5	0.5418	0.09	0.43344	0.448	3.92
145					6.8	1.05264	0.09	0.84211	0.959	8.38
150					7.3	1.13004	0.09	0.90403	1.037	9.06
155					8.2	1.26936	0.09	1.01549	1.176	10.28
160					5.9	0.91332	0.09	0.73066	0.820	7.17
165					2	0.3096	0.09	0.24768	0.216	1.89
170					1.8	0.27864	0.09	0.22291	0.185	1.62
175					1.8	0.27864	0.09	0.22291	0.185	1.62
180					0.6	0.09288	0.09	0.0743	0.019	0.16
				Σ[20] -	100			Σ[23] -	12.14	106.07

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| | | |

210						1.3	0.27612	0.09	0.2209	0.183	1.60
215						1.4	0.29736	0.09	0.23789	0.204	1.78
220						1.4	0.29736	0.09	0.23789	0.204	1.78
225						1.5	0.3186	0.09	0.25488	0.225	1.97
230						1.5	0.3186	0.09	0.25488	0.225	1.97
235						1.6	0.33984	0.09	0.27187	0.246	2.15
240						1.6	0.33984	0.09	0.27187	0.246	2.15
245						1.7	0.36108	0.09	0.28886	0.268	2.34
250						1.8	0.38232	0.09	0.30586	0.289	2.53
255						1.9	0.40356	0.09	0.32285	0.310	2.71
260						2	0.4248	0.09	0.33984	0.331	2.90
265						2.1	0.44604	0.09	0.35683	0.353	3.08
270						2.1	0.44604	0.09	0.35683	0.353	3.08
275						2.2	0.46728	0.09	0.37382	0.374	3.27
280						2.3	0.48852	0.09	0.39082	0.395	3.45
285						2.4	0.50976	0.09	0.40781	0.416	3.64
290						2.4	0.50976	0.09	0.40781	0.416	3.64
295						2.5	0.531	0.09	0.4248	0.438	3.82
300						2.6	0.55224	0.09	0.44179	0.459	4.01
305						3.1	0.65844	0.09	0.52675	0.565	4.94
310						3.6	0.76464	0.09	0.61171	0.671	5.87
315						3.9	0.82836	0.09	0.66269	0.735	6.42
320						4.2	0.89208	0.09	0.71366	0.799	6.98
325						4.7	0.99828	0.09	0.79862	0.905	7.91
330						5.6	1.18944	0.09	0.95155	1.096	9.58
335						1.9	0.40356	0.09	0.32285	0.310	2.71
340						0.9	0.19116	0.09	0.15293	0.098	0.85
345						0.6	0.12744	0.09	0.10195	0.034	0.30
350						0.5	0.1062	0.09	0.08496	0.013	0.11
355						0.3	0.06372	0.09	0.05098	0.013	0.11
360						0.2	0.04248	0.09	0.03398	0.008	0.07
					Σ[20] -	100			Σ[23] -	14.62	127.75

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[1] CONCENTRATION POINT				[2] AREA DESIGNATION				
[3] DRAINAGE AREA - ACRES	8.74	ACRES		[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])				
[5] UNIT TIME - MINUTES	15	MIN PER E-1.2		[6] LAG TIME-MINUTES				MIN
[7] UNIT TIME-PERCENT OF LAG	N/A			[8] S-CURVE			N/A	
[9] STORM FREQUENCY & DURATION	10 YEAR	24 HOUR		[10] TOTAL ADJUSTED STORM RAIN-INCHES			3.1	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR	0.1649			[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR				
[13] CONSTANT LOSS RATE-IN/HR			IN/HR	[14] LOW LOSS RATE-PERCENT			0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.00	0	0.000	0.00
15					0.2	0.025	0.170	0.01984	0.005	0.04
30					0.3	0.037	0.168	0.02976	0.007	0.07
45					0.3	0.037	0.166	0.02976	0.007	0.07
60					0.4	0.050	0.164	0.03968	0.010	0.09
75					0.3	0.037	0.162	0.02976	0.007	0.07
90					0.3	0.037	0.160	0.02976	0.007	0.07
105					0.3	0.037	0.158	0.02976	0.007	0.07
120					0.4	0.050	0.156	0.03968	0.010	0.09
135					0.4	0.050	0.154	0.03968	0.010	0.09
150					0.4	0.050	0.152	0.03968	0.010	0.09
165					0.5	0.062	0.150	0.0496	0.012	0.11
180					0.5	0.062	0.148	0.0496	0.012	0.11
195					0.5	0.062	0.147	0.0496	0.012	0.11
210					0.5	0.062	0.145	0.0496	0.012	0.11
225					0.5	0.062	0.143	0.0496	0.012	0.11
240					0.6	0.074	0.141	0.05952	0.015	0.13
255					0.6	0.074	0.139	0.05952	0.015	0.13
270					0.7	0.087	0.138	0.06944	0.017	0.15
285					0.7	0.087	0.136	0.06944	0.017	0.15
300					0.8	0.099	0.134	0.07936	0.020	0.17
315					0.6	0.074	0.132	0.05952	0.015	0.13
330					0.7	0.087	0.130	0.06944	0.017	0.15
345					0.8	0.099	0.129	0.07936	0.020	0.17
360					0.8	0.099	0.127	0.07936	0.020	0.17
375					0.9	0.112	0.125	0.08928	0.022	0.20
390					0.9	0.112	0.124	0.08928	0.022	0.20
405					1	0.124	0.122	0.0992	0.002	0.02
420					1	0.124	0.120	0.0992	0.004	0.03
435					1	0.124	0.119	0.0992	0.005	0.05
450					1.1	0.136	0.117	0.10912	0.019	0.17
465					1.2	0.149	0.115	0.11904	0.034	0.29
480					1.3	0.161	0.114	0.12896	0.048	0.42
495					1.5	0.186	0.112	0.1488	0.074	0.65
510					1.5	0.186	0.110	0.1488	0.076	0.66
525					1.6	0.198	0.109	0.15872	0.089	0.78
540					1.7	0.211	0.107	0.16864	0.103	0.90
555					1.9	0.236	0.106	0.18848	0.130	1.13
570					2	0.248	0.104	0.1984	0.144	1.26
585					2.1	0.260	0.103	0.20832	0.158	1.38
600					2.2	0.273	0.101	0.21824	0.172	1.50
615					1.5	0.186	0.100	0.1488	0.086	0.75

630					1.5	0.186	0.098	0.1488	0.088	0.77
645					2	0.248	0.097	0.1984	0.151	1.32
660					2	0.248	0.095	0.1984	0.153	1.33
675					1.9	0.236	0.094	0.18848	0.142	1.24
690					1.9	0.236	0.093	0.18848	0.143	1.25
705					1.7	0.211	0.091	0.16864	0.120	1.05
720					1.8	0.223	0.090	0.17856	0.133	1.17
735					2.5	0.310	0.088	0.248	0.222	1.94
750					2.6	0.322	0.087	0.25792	0.235	2.06
765					2.8	0.347	0.086	0.27776	0.262	2.29
780					2.9	0.360	0.084	0.28768	0.275	2.41
795					3.4	0.422	0.083	0.33728	0.339	2.96
810					3.4	0.422	0.082	0.33728	0.340	2.97
825					2.3	0.285	0.081	0.22816	0.205	1.79
840					2.3	0.285	0.079	0.22816	0.206	1.80
855					2.7	0.335	0.078	0.26784	0.257	2.24
870					2.6	0.322	0.077	0.25792	0.246	2.15
885					2.6	0.322	0.076	0.25792	0.247	2.16
900					2.5	0.310	0.074	0.248	0.236	2.06
915					2.4	0.298	0.073	0.23808	0.224	1.96
930					2.3	0.285	0.072	0.22816	0.213	1.86
945					1.9	0.236	0.071	0.18848	0.165	1.44
960					1.9	0.236	0.070	0.18848	0.166	1.45
975					0.4	0.050	0.069	0.03968	0.010	0.09
990					0.4	0.050	0.068	0.03968	0.010	0.09
1005					0.3	0.037	0.067	0.02976	0.007	0.07
1020					0.3	0.037	0.066	0.02976	0.007	0.07
1035					0.5	0.062	0.065	0.0496	0.012	0.11
1050					0.5	0.062	0.064	0.0496	0.012	0.11
1065					0.5	0.062	0.063	0.0496	0.012	0.11
1080					0.4	0.050	0.062	0.03968	0.010	0.09
1095					0.4	0.050	0.061	0.03968	0.010	0.09
1110					0.4	0.050	0.060	0.03968	0.010	0.09
1125					0.3	0.037	0.059	0.02976	0.007	0.07
1140					0.2	0.025	0.058	0.01984	0.005	0.04
1155					0.3	0.037	0.057	0.02976	0.007	0.07
1170					0.4	0.050	0.056	0.03968	0.010	0.09
1185					0.3	0.037	0.056	0.02976	0.007	0.07
1200					0.2	0.025	0.055	0.01984	0.005	0.04
1215					0.3	0.037	0.054	0.02976	0.007	0.07
1230					0.3	0.037	0.053	0.02976	0.007	0.07
1245					0.3	0.037	0.053	0.02976	0.007	0.07
1260					0.2	0.025	0.052	0.01984	0.005	0.04
1275					0.3	0.037	0.051	0.02976	0.007	0.07
1290					0.2	0.025	0.051	0.01984	0.005	0.04
1305					0.3	0.037	0.050	0.02976	0.007	0.07
1320					0.2	0.025	0.050	0.01984	0.005	0.04
1335					0.3	0.037	0.049	0.02976	0.007	0.07
1350					0.2	0.025	0.049	0.01984	0.005	0.04
1365					0.2	0.025	0.048	0.01984	0.005	0.04
1380					0.2	0.025	0.048	0.01984	0.005	0.04
1395					0.2	0.025	0.047	0.01984	0.005	0.04
1410					0.2	0.025	0.047	0.01984	0.005	0.04
1425					0.2	0.025	0.047	0.01984	0.005	0.04
1440					0.2	0.025	0.047	0.01984	0.005	0.04
				Σ[20] -	100			Σ[23] -	6.491	56.730

Proposed Condition Tank A
100-yr Storm Event

Total Area	Total Impervious Area	%Imp	Fp (infiltration rate based on RI, Plate E-6.2)
8.74	7.325	0.84	0.38

Constant Loss Rate

F= Fp(1-0.9Ai)

F= 0.0934

For 24-hr storms, Ft is variable loss rate

Ft= C[24-(T/60)]^1.55+Fm

Ft= 0.1649

C= (F-Fm)/54

C= 0.0009

Fm= 0.5F

Fm= 0.0467

T= 7.5

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[1] CONCENTRATION POINT						[2] AREA DESIGNATION					
[3] DRAINAGE AREA - ACRES			8.74	ACRES		[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])				N/A	
[5] UNIT TIME - MINUTES			5	MIN PER E-1.2		[6] LAG TIME-MINUTES					MIN
[7] UNIT TIME-PERCENT OF LAG			N/A			[8] S-CURVE				N/A	
[9] STORM FREQUENCY & DURATION			100 YEAR	1 HOUR		[10] TOTAL ADJUSTED STORM RAIN-INCHES				1.27	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR			N/A			[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR				N/A	
[13] CONSTANT LOSS RATE-IN/HR			0.0934		IN/HR	[14] LOW LOSS RATE-PERCENT				0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.00	0	0.000	0.00
5					4.2	0.640	0.09	0.512	0.547	4.82
10					4.3	0.655	0.09	0.524	0.562	4.95
15					5	0.762	0.09	0.610	0.669	5.89
20					5	0.762	0.09	0.610	0.669	5.89
25					5.8	0.884	0.09	0.707	0.791	6.97
30					6.5	0.991	0.09	0.792	0.897	7.91
35					7.4	1.128	0.09	0.902	1.034	9.12
40					8.6	1.311	0.09	1.049	1.217	10.73
45					12.3	1.875	0.09	1.500	1.781	15.70
50					29.1	4.435	0.09	3.548	4.341	38.26
55					6.8	1.036	0.09	0.829	0.943	8.31
60					5	0.762	0.09	0.610	0.669	5.89
				Σ[20] -	100			Σ[23] -	14.12	124.43

RCFC & WCD HYDROLOGY MANUAL	SYNTHETIC UNIT HYDROGRAPH METHOD UNIT HYDROGRAPH AND EFFECTIVE RAIN CALCULATION FORM	PROJECT: ROCAS GRANDES 2 JOB #: 3816 PAGE

[1] CONCENTRATION POINT			[2] AREA DESIGNATION				
[3] DRAINAGE AREA - ACRES	8.74	ACRES	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])			N/A	
[5] UNIT TIME - MINUTES	5	MIN PER E-1.2	[6] LAG TIME-MINUTES				MIN
[7] UNIT TIME-PERCENT OF LAG	N/A		[8] S-CURVE			N/A	
[9] STORM FREQUENCY & DURATION	100 YEAR	3 HOUR	[10] TOTAL ADJUSTED STORM RAIN-INCHES			2.01	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR	N/A		[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR			N/A	
[13] CONSTANT LOSS RATE-IN/HR	0.0934	IN/HR	[14] LOW LOSS RATE-PERCENT			0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.09	0	0.000	0.00
5					1.3	0.31356	0.09	0.25085	0.220	1.92
10					1.3	0.31356	0.09	0.25085	0.220	1.92
15					1.1	0.26532	0.09	0.21226	0.172	1.50
20					1.5	0.3618	0.09	0.28944	0.268	2.35
25					1.5	0.3618	0.09	0.28944	0.268	2.35
30					1.8	0.43416	0.09	0.34733	0.341	2.98
35					1.5	0.3618	0.09	0.28944	0.268	2.35
40					1.8	0.43416	0.09	0.34733	0.341	2.98
45					1.8	0.43416	0.09	0.34733	0.341	2.98
50					1.5	0.3618	0.09	0.28944	0.268	2.35
55					1.6	0.38592	0.09	0.30874	0.293	2.56
60					1.8	0.43416	0.09	0.34733	0.341	2.98
65					2.2	0.53064	0.09	0.42451	0.437	3.82
70					2.2	0.53064	0.09	0.42451	0.437	3.82
75					2.2	0.53064	0.09	0.42451	0.437	3.82
80					2	0.4824	0.09	0.38592	0.389	3.40
85					2.6	0.62712	0.09	0.5017	0.534	4.66
90					2.7	0.65124	0.09	0.52099	0.558	4.88
95					2.4	0.57888	0.09	0.4631	0.485	4.24
100					2.7	0.65124	0.09	0.52099	0.558	4.88
105					3.3	0.79596	0.09	0.63677	0.703	6.14
110					3.1	0.74772	0.09	0.59818	0.654	5.72
115					2.9	0.69948	0.09	0.55958	0.606	5.30
120					3	0.7236	0.09	0.57888	0.630	5.51
125					3.1	0.74772	0.09	0.59818	0.654	5.72
130					4.2	1.01304	0.09	0.81043	0.920	8.04
135					5	1.206	0.09	0.9648	1.113	9.72
140					3.5	0.8442	0.09	0.67536	0.751	6.56
145					6.8	1.64016	0.09	1.31213	1.547	13.52
150					7.3	1.76076	0.09	1.40861	1.667	14.57
155					8.2	1.97784	0.09	1.58227	1.884	16.47
160					5.9	1.42308	0.09	1.13846	1.330	11.62
165					2	0.4824	0.09	0.38592	0.389	3.40
170					1.8	0.43416	0.09	0.34733	0.341	2.98
175					1.8	0.43416	0.09	0.34733	0.341	2.98
180					0.6	0.14472	0.09	0.11578	0.051	0.45
				Σ[20] -	100			Σ[23] -	20.76	181.42

RCFC & WCD HYDROLOGY MANUAL	SYNTHETIC UNIT HYDROGRAPH METHOD UNIT HYDROGRAPH AND EFFECTIVE RAIN CALCULATION FORM	PROJECT: ROCAS GRANDES 2 JOB #: 3816 PAGE

[1] CONCENTRATION POINT			[2] AREA DESIGNATION				
[3] DRAINAGE AREA - ACRES	8.74	ACRES	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])				
[5] UNIT TIME - MINUTES	5	MIN PER E-1.2	[6] LAG TIME-MINUTES				MIN
[7] UNIT TIME-PERCENT OF LAG	N/A		[8] S-CURVE			N/A	
[9] STORM FREQUENCY & DURATION	100 YEAR	6 HOUR	[10] TOTAL ADJUSTED STORM RAIN-INCHES			2.72	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR	N/A		[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR			N/A	
[13] CONSTANT LOSS RATE-IN/HR	0.0934	IN/HR	[14] LOW LOSS RATE-PERCENT			0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.09	0	0.000	0.00
5					0.5	0.1632	0.09	0.13056	0.070	0.61
10					0.6	0.19584	0.09	0.15667	0.102	0.90
15					0.6	0.19584	0.09	0.15667	0.102	0.90
20					0.6	0.19584	0.09	0.15667	0.102	0.90
25					0.6	0.19584	0.09	0.15667	0.102	0.90
30					0.7	0.22848	0.09	0.18278	0.135	1.18
35					0.7	0.22848	0.09	0.18278	0.135	1.18
40					0.7	0.22848	0.09	0.18278	0.135	1.18
45					0.7	0.22848	0.09	0.18278	0.135	1.18
50					0.7	0.22848	0.09	0.18278	0.135	1.18
55					0.7	0.22848	0.09	0.18278	0.135	1.18
60					0.8	0.26112	0.09	0.2089	0.168	1.47
65					0.8	0.26112	0.09	0.2089	0.168	1.47
70					0.8	0.26112	0.09	0.2089	0.168	1.47
75					0.8	0.26112	0.09	0.2089	0.168	1.47
80					0.8	0.26112	0.09	0.2089	0.168	1.47
85					0.8	0.26112	0.09	0.2089	0.168	1.47
90					0.8	0.26112	0.09	0.2089	0.168	1.47
95					0.8	0.26112	0.09	0.2089	0.168	1.47
100					0.8	0.26112	0.09	0.2089	0.168	1.47
105					0.8	0.26112	0.09	0.2089	0.168	1.47
110					0.8	0.26112	0.09	0.2089	0.168	1.47
115					0.8	0.26112	0.09	0.2089	0.168	1.47
120					0.9	0.29376	0.09	0.23501	0.200	1.75
125					0.8	0.26112	0.09	0.2089	0.168	1.47
130					0.9	0.29376	0.09	0.23501	0.200	1.75
135					0.9	0.29376	0.09	0.23501	0.200	1.75
140					0.9	0.29376	0.09	0.23501	0.200	1.75
145					0.9	0.29376	0.09	0.23501	0.200	1.75
150					0.9	0.29376	0.09	0.23501	0.200	1.75
155					0.9	0.29376	0.09	0.23501	0.200	1.75
160					0.9	0.29376	0.09	0.23501	0.200	1.75
165					1	0.3264	0.09	0.26112	0.233	2.04
170					1	0.3264	0.09	0.26112	0.233	2.04
175					1	0.3264	0.09	0.26112	0.233	2.04
180					1	0.3264	0.09	0.26112	0.233	2.04
185					1	0.3264	0.09	0.26112	0.233	2.04
190					1.1	0.35904	0.09	0.28723	0.266	2.32
195					1.1	0.35904	0.09	0.28723	0.266	2.32
200					1.1	0.35904	0.09	0.28723	0.266	2.32
205					1.2	0.39168	0.09	0.31334	0.298	2.61

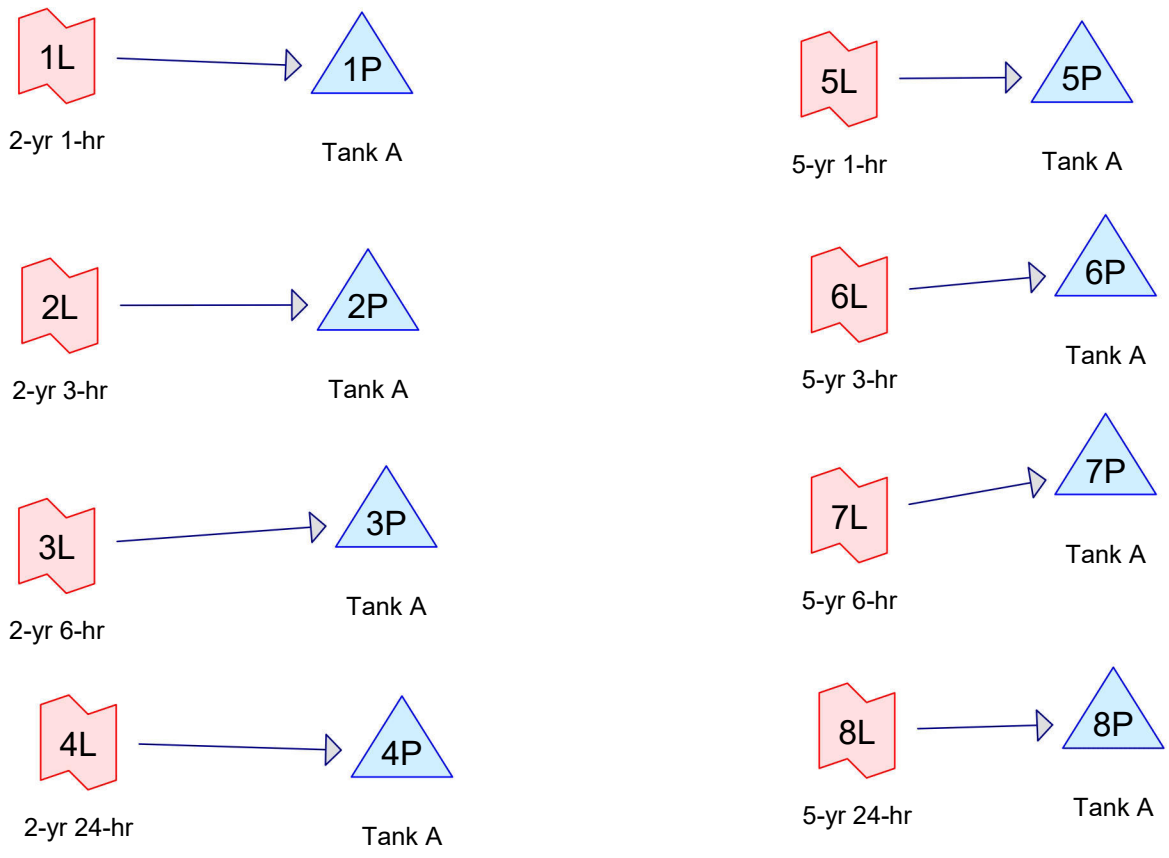
210						1.3	0.42432	0.09	0.33946	0.331	2.89
215						1.4	0.45696	0.09	0.36557	0.364	3.18
220						1.4	0.45696	0.09	0.36557	0.364	3.18
225						1.5	0.4896	0.09	0.39168	0.396	3.46
230						1.5	0.4896	0.09	0.39168	0.396	3.46
235						1.6	0.52224	0.09	0.41779	0.429	3.75
240						1.6	0.52224	0.09	0.41779	0.429	3.75
245						1.7	0.55488	0.09	0.4439	0.461	4.03
250						1.8	0.58752	0.09	0.47002	0.494	4.32
255						1.9	0.62016	0.09	0.49613	0.527	4.60
260						2	0.6528	0.09	0.52224	0.559	4.89
265						2.1	0.68544	0.09	0.54835	0.592	5.17
270						2.1	0.68544	0.09	0.54835	0.592	5.17
275						2.2	0.71808	0.09	0.57446	0.625	5.46
280						2.3	0.75072	0.09	0.60058	0.657	5.74
285						2.4	0.78336	0.09	0.62669	0.690	6.03
290						2.4	0.78336	0.09	0.62669	0.690	6.03
295						2.5	0.816	0.09	0.6528	0.723	6.32
300						2.6	0.84864	0.09	0.67891	0.755	6.60
305						3.1	1.01184	0.09	0.80947	0.918	8.03
310						3.6	1.17504	0.09	0.94003	1.082	9.45
315						3.9	1.27296	0.09	1.01837	1.180	10.31
320						4.2	1.37088	0.09	1.0967	1.277	11.17
325						4.7	1.53408	0.09	1.22726	1.441	12.59
330						5.6	1.82784	0.09	1.46227	1.734	15.16
335						1.9	0.62016	0.09	0.49613	0.527	4.60
340						0.9	0.29376	0.09	0.23501	0.200	1.75
345						0.6	0.19584	0.09	0.15667	0.102	0.90
350						0.5	0.1632	0.09	0.13056	0.070	0.61
355						0.3	0.09792	0.09	0.07834	0.005	0.04
360						0.2	0.06528	0.09	0.05222	0.013	0.11
					Σ[20] -	100			Σ[23] -	25.96	226.86

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[1] CONCENTRATION POINT					[2] AREA DESIGNATION			
[3] DRAINAGE AREA - ACRES	8.74	ACRES			[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])			
[5] UNIT TIME - MINUTES	15	MIN	PER E-1.2		[6] LAG TIME-MINUTES			MIN
[7] UNIT TIME-PERCENT OF LAG	N/A				[8] S-CURVE		N/A	
[9] STORM FREQUENCY & DURATION	100 YEAR	24 HOUR			[10] TOTAL ADJUSTED STORM RAIN-INCHES		4.83	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR	0.1649				[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR			
[13] CONSTANT LOSS RATE-IN/HR			IN/HR		[14] LOW LOSS RATE-PERCENT		0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.00	0	0.000	0.00
15					0.2	0.039	0.170	0.03091	0.008	0.07
30					0.3	0.058	0.168	0.04637	0.012	0.10
45					0.3	0.058	0.166	0.04637	0.012	0.10
60					0.4	0.077	0.164	0.06182	0.015	0.14
75					0.3	0.058	0.162	0.04637	0.012	0.10
90					0.3	0.058	0.160	0.04637	0.012	0.10
105					0.3	0.058	0.158	0.04637	0.012	0.10
120					0.4	0.077	0.156	0.06182	0.015	0.14
135					0.4	0.077	0.154	0.06182	0.015	0.14
150					0.4	0.077	0.152	0.06182	0.015	0.14
165					0.5	0.097	0.150	0.07728	0.019	0.17
180					0.5	0.097	0.148	0.07728	0.019	0.17
195					0.5	0.097	0.147	0.07728	0.019	0.17
210					0.5	0.097	0.145	0.07728	0.019	0.17
225					0.5	0.097	0.143	0.07728	0.019	0.17
240					0.6	0.116	0.141	0.09274	0.023	0.20
255					0.6	0.116	0.139	0.09274	0.023	0.20
270					0.7	0.135	0.138	0.10819	0.027	0.24
285					0.7	0.135	0.136	0.10819	0.027	0.24
300					0.8	0.155	0.134	0.12365	0.021	0.18
315					0.6	0.116	0.132	0.09274	0.023	0.20
330					0.7	0.135	0.130	0.10819	0.005	0.04
345					0.8	0.155	0.129	0.12365	0.026	0.23
360					0.8	0.155	0.127	0.12365	0.028	0.24
375					0.9	0.174	0.125	0.1391	0.049	0.42
390					0.9	0.174	0.124	0.1391	0.050	0.44
405					1	0.193	0.122	0.15456	0.071	0.62
420					1	0.193	0.120	0.15456	0.073	0.64
435					1	0.193	0.119	0.15456	0.075	0.65
450					1.1	0.213	0.117	0.17002	0.096	0.84
465					1.2	0.232	0.115	0.18547	0.117	1.02
480					1.3	0.251	0.114	0.20093	0.137	1.20
495					1.5	0.290	0.112	0.23184	0.178	1.55
510					1.5	0.290	0.110	0.23184	0.179	1.57
525					1.6	0.309	0.109	0.2473	0.200	1.75
540					1.7	0.328	0.107	0.26275	0.221	1.93
555					1.9	0.367	0.106	0.29366	0.261	2.28
570					2	0.386	0.104	0.30912	0.282	2.47
585					2.1	0.406	0.103	0.32458	0.303	2.65
600					2.2	0.425	0.101	0.34003	0.324	2.83
615					1.5	0.290	0.100	0.23184	0.190	1.66

630					1.5	0.290	0.098	0.23184	0.192	1.67
645					2	0.386	0.097	0.30912	0.290	2.53
660					2	0.386	0.095	0.30912	0.291	2.54
675					1.9	0.367	0.094	0.29366	0.273	2.39
690					1.9	0.367	0.093	0.29366	0.275	2.40
705					1.7	0.328	0.091	0.26275	0.237	2.07
720					1.8	0.348	0.090	0.27821	0.258	2.26
735					2.5	0.483	0.088	0.3864	0.395	3.45
750					2.6	0.502	0.087	0.40186	0.415	3.63
765					2.8	0.541	0.086	0.43277	0.455	3.98
780					2.9	0.560	0.084	0.44822	0.476	4.16
795					3.4	0.657	0.083	0.5255	0.574	5.02
810					3.4	0.657	0.082	0.5255	0.575	5.03
825					2.3	0.444	0.081	0.35549	0.364	3.18
840					2.3	0.444	0.079	0.35549	0.365	3.19
855					2.7	0.522	0.078	0.41731	0.444	3.88
870					2.6	0.502	0.077	0.40186	0.426	3.72
885					2.6	0.502	0.076	0.40186	0.427	3.73
900					2.5	0.483	0.074	0.3864	0.409	3.57
915					2.4	0.464	0.073	0.37094	0.390	3.41
930					2.3	0.444	0.072	0.35549	0.372	3.25
945					1.9	0.367	0.071	0.29366	0.296	2.59
960					1.9	0.367	0.070	0.29366	0.297	2.60
975					0.4	0.077	0.069	0.06182	0.009	0.07
990					0.4	0.077	0.068	0.06182	0.010	0.08
1005					0.3	0.058	0.067	0.04637	0.012	0.10
1020					0.3	0.058	0.066	0.04637	0.012	0.10
1035					0.5	0.097	0.065	0.07728	0.032	0.28
1050					0.5	0.097	0.064	0.07728	0.033	0.29
1065					0.5	0.097	0.063	0.07728	0.034	0.30
1080					0.4	0.077	0.062	0.06182	0.016	0.14
1095					0.4	0.077	0.061	0.06182	0.017	0.14
1110					0.4	0.077	0.060	0.06182	0.017	0.15
1125					0.3	0.058	0.059	0.04637	0.012	0.10
1140					0.2	0.039	0.058	0.03091	0.008	0.07
1155					0.3	0.058	0.057	0.04637	0.001	0.01
1170					0.4	0.077	0.056	0.06182	0.021	0.18
1185					0.3	0.058	0.056	0.04637	0.002	0.02
1200					0.2	0.039	0.055	0.03091	0.008	0.07
1215					0.3	0.058	0.054	0.04637	0.004	0.03
1230					0.3	0.058	0.053	0.04637	0.005	0.04
1245					0.3	0.058	0.053	0.04637	0.005	0.05
1260					0.2	0.039	0.052	0.03091	0.008	0.07
1275					0.3	0.058	0.051	0.04637	0.007	0.06
1290					0.2	0.039	0.051	0.03091	0.008	0.07
1305					0.3	0.058	0.050	0.04637	0.008	0.07
1320					0.2	0.039	0.050	0.03091	0.008	0.07
1335					0.3	0.058	0.049	0.04637	0.009	0.08
1350					0.2	0.039	0.049	0.03091	0.008	0.07
1365					0.2	0.039	0.048	0.03091	0.008	0.07
1380					0.2	0.039	0.048	0.03091	0.008	0.07
1395					0.2	0.039	0.047	0.03091	0.008	0.07
1410					0.2	0.039	0.047	0.03091	0.008	0.07
1425					0.2	0.039	0.047	0.03091	0.008	0.07
1440					0.2	0.039	0.047	0.03091	0.008	0.07
				Σ[20] -	100			Σ[23] -	12.083	105.607



Subcat Reach Pond Link

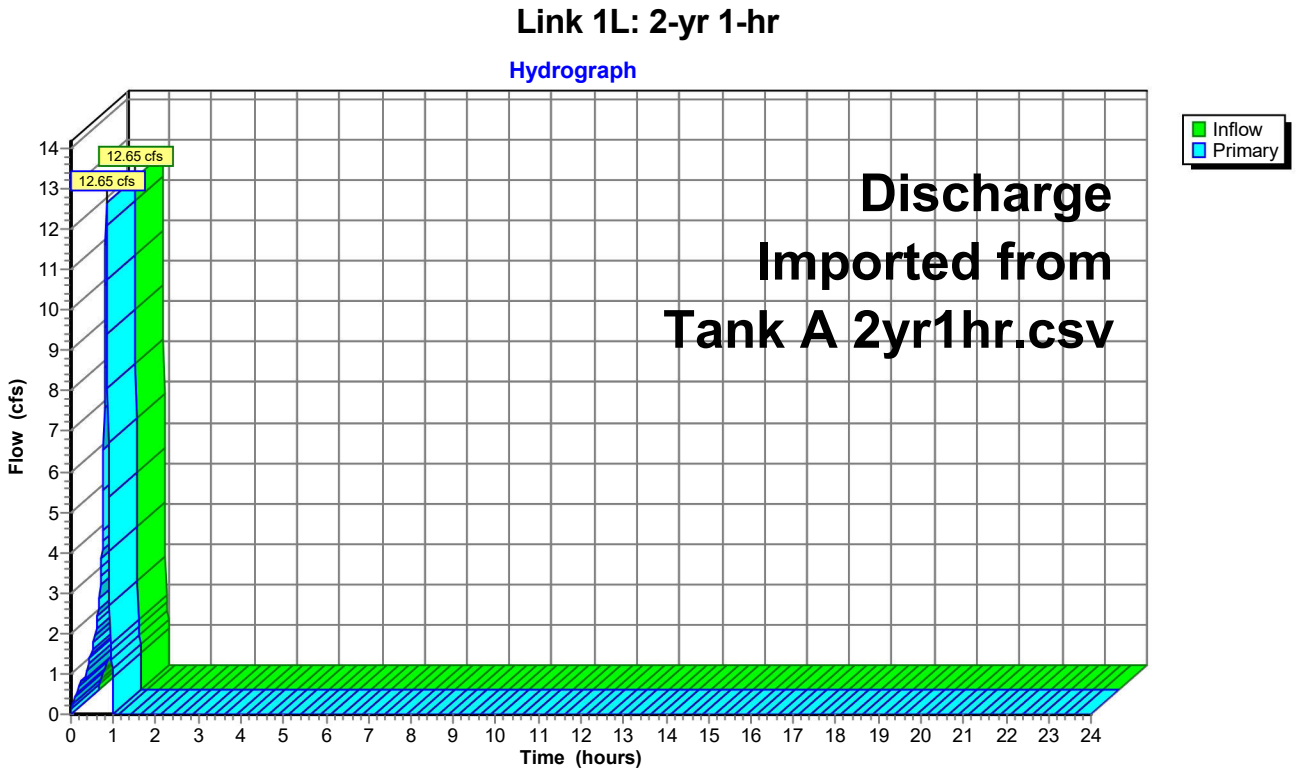
Routing Diagram for 3816 Tank A 2 and 5-yr
Prepared by Pasco Laret Suiter & Assoc, Printed 2/18/2025
HydroCAD® 10.20-6a s/n 10097 © 2024 HydroCAD Software Solutions LLC

Summary for Link 1L: 2-yr 1-hr

Inflow = 12.65 cfs @ 0.83 hrs, Volume= 0.207 af
Primary = 12.65 cfs @ 0.83 hrs, Volume= 0.207 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 1P : Tank A

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Discharge Imported from Tank A 2yr1hr.csv



Summary for Pond 1P: Tank A

Inflow	=	12.65 cfs @	0.83 hrs,	Volume=	0.207 af
Outflow	=	1.55 cfs @	0.94 hrs,	Volume=	0.199 af, Atten= 88%, Lag= 6.3 min
Primary	=	1.55 cfs @	0.94 hrs,	Volume=	0.199 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 1,564.62' @ 0.94 hrs Surf.Area= 12,376 sf Storage= 7,849 cf

Plug-Flow detention time= 152.1 min calculated for 0.199 af (96% of inflow)
Center-of-Mass det. time= 152.0 min (194.3 - 42.4)

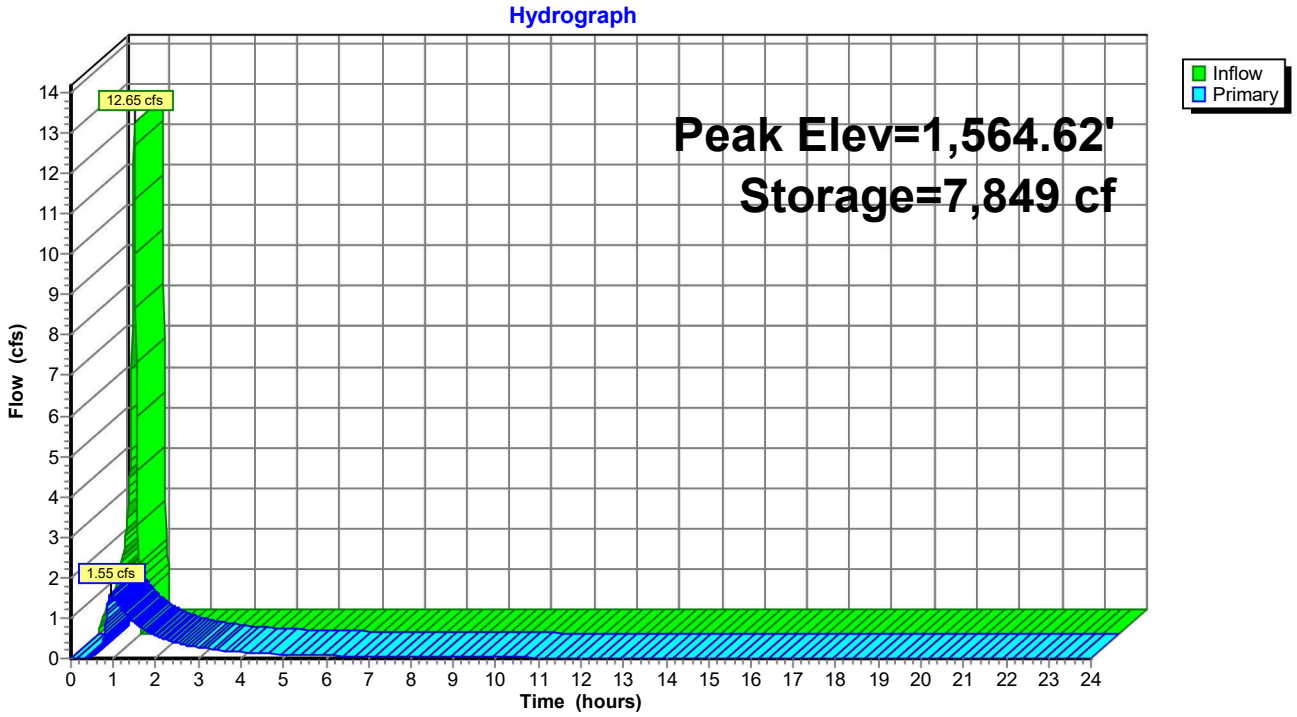
Volume	Invert	Avail.Storage	Storage Description
#1	1,563.95'	41,620 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,563.95	12,376	0.0	0	0	12,376
1,564.95	12,376	95.0	11,757	11,757	12,770
1,565.95	12,376	95.0	11,757	23,514	13,165
1,566.95	12,376	95.0	11,757	35,272	13,559
1,567.49	12,376	95.0	6,349	41,620	13,772

Device	Routing	Invert	Outlet Devices
#1	Primary	1,563.95'	**12.00" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#2	Primary	1,566.99'	**Custom Weir, Cv= 2.62 (C= 3.28)**
			Head (feet) 0.00 0.50 0.50
			Width (feet) 36.00 36.00 0.00

Primary OutFlow Max=1.55 cfs @ 0.94 hrs HW=1,564.62' (Free Discharge)
└─**1=Orifice** (Orifice Controls 1.55 cfs @ 2.78 fps)
└─**2=Custom Weir** (Controls 0.00 cfs)

Pond 1P: Tank A

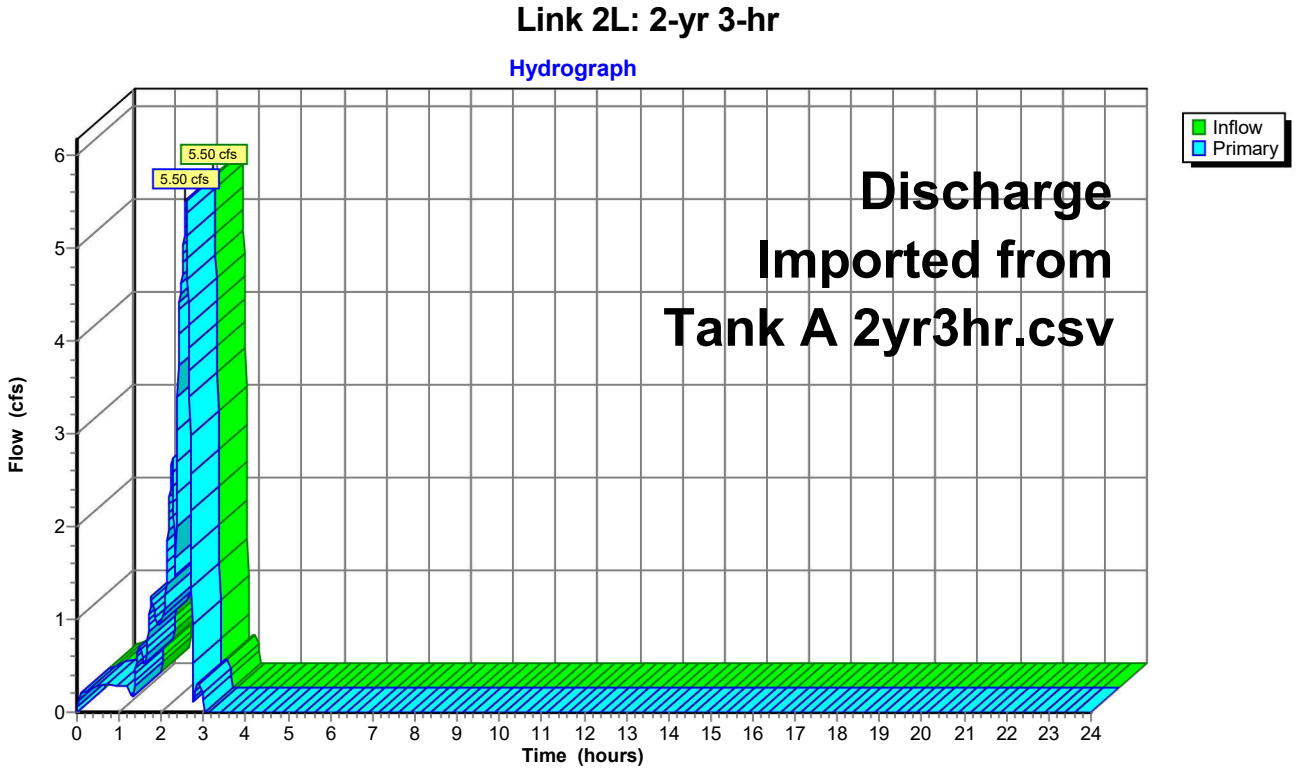


Summary for Link 2L: 2-yr 3-hr

Inflow = 5.50 cfs @ 2.58 hrs, Volume= 0.256 af
Primary = 5.50 cfs @ 2.58 hrs, Volume= 0.256 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 2P : Tank A

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Discharge Imported from Tank A 2yr3hr.csv



Summary for Pond 2P: Tank A

Inflow	=	5.50 cfs @	2.58 hrs,	Volume=	0.256 af
Outflow	=	1.74 cfs @	2.71 hrs,	Volume=	0.247 af, Atten= 68%, Lag= 7.9 min
Primary	=	1.74 cfs @	2.71 hrs,	Volume=	0.247 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 1,564.67' @ 2.71 hrs Surf.Area= 12,376 sf Storage= 8,431 cf

Plug-Flow detention time= 143.9 min calculated for 0.247 af (96% of inflow)
Center-of-Mass det. time= 142.9 min (270.7 - 127.8)

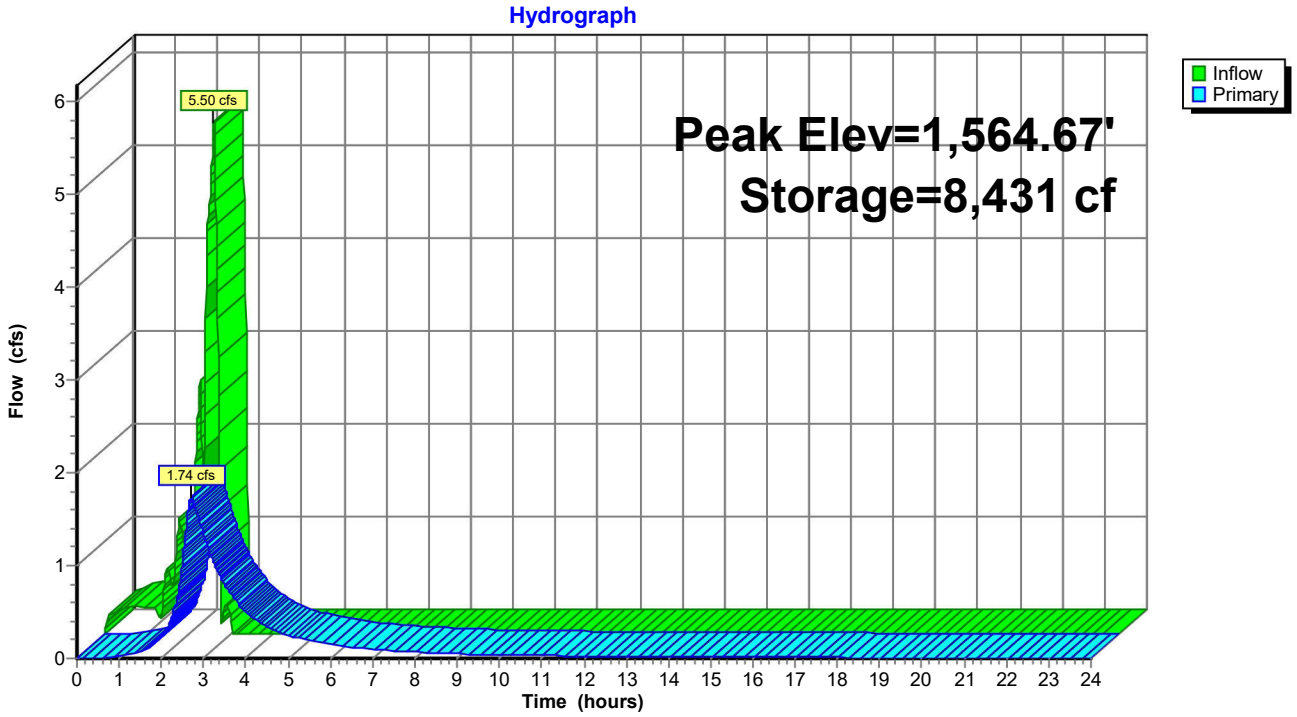
Volume	Invert	Avail.Storage	Storage Description
#1	1,563.95'	41,620 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,563.95	12,376	0.0	0	0	12,376
1,564.95	12,376	95.0	11,757	11,757	12,770
1,565.95	12,376	95.0	11,757	23,514	13,165
1,566.95	12,376	95.0	11,757	35,272	13,559
1,567.49	12,376	95.0	6,349	41,620	13,772

Device	Routing	Invert	Outlet Devices
#1	Primary	1,563.95'	**12.00" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#2	Primary	1,566.99'	**Custom Weir, Cv= 2.62 (C= 3.28)**
			Head (feet) 0.00 0.50 0.50
			Width (feet) 36.00 36.00 0.00

Primary OutFlow Max=1.74 cfs @ 2.71 hrs HW=1,564.67' (Free Discharge)
└**1=Orifice** (Orifice Controls 1.74 cfs @ 2.88 fps)
└**2=Custom Weir** (Controls 0.00 cfs)

Pond 2P: Tank A



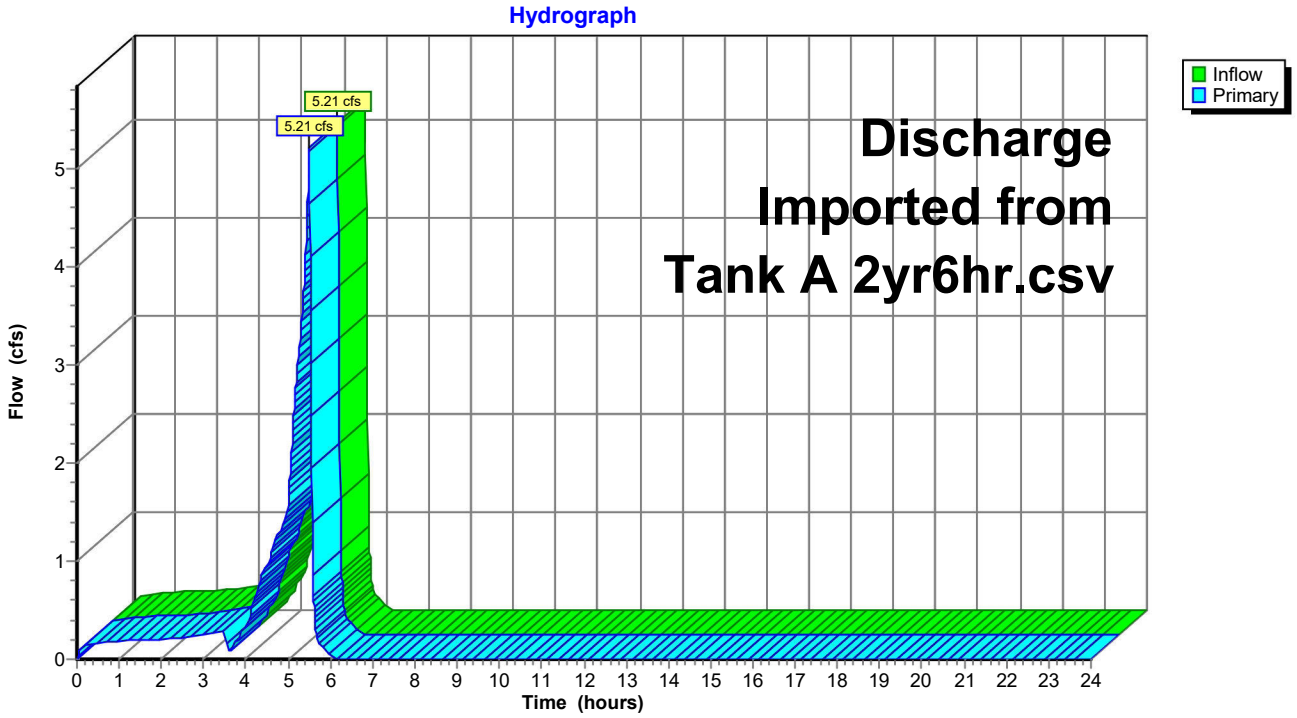
Summary for Link 3L: 2-yr 6-hr

Inflow = 5.21 cfs @ 5.50 hrs, Volume= 0.302 af
Primary = 5.21 cfs @ 5.50 hrs, Volume= 0.302 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 3P : Tank A

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Discharge Imported from Tank A 2yr6hr.csv

Link 3L: 2-yr 6-hr



Summary for Pond 3P: Tank A

Inflow	=	5.21 cfs @	5.50 hrs,	Volume=	0.302 af
Outflow	=	1.83 cfs @	5.56 hrs,	Volume=	0.292 af, Atten= 65%, Lag= 3.9 min
Primary	=	1.83 cfs @	5.56 hrs,	Volume=	0.292 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 1,564.69' @ 5.56 hrs Surf.Area= 12,376 sf Storage= 8,703 cf

Plug-Flow detention time= 143.9 min calculated for 0.292 af (97% of inflow)
Center-of-Mass det. time= 141.8 min (408.9 - 267.1)

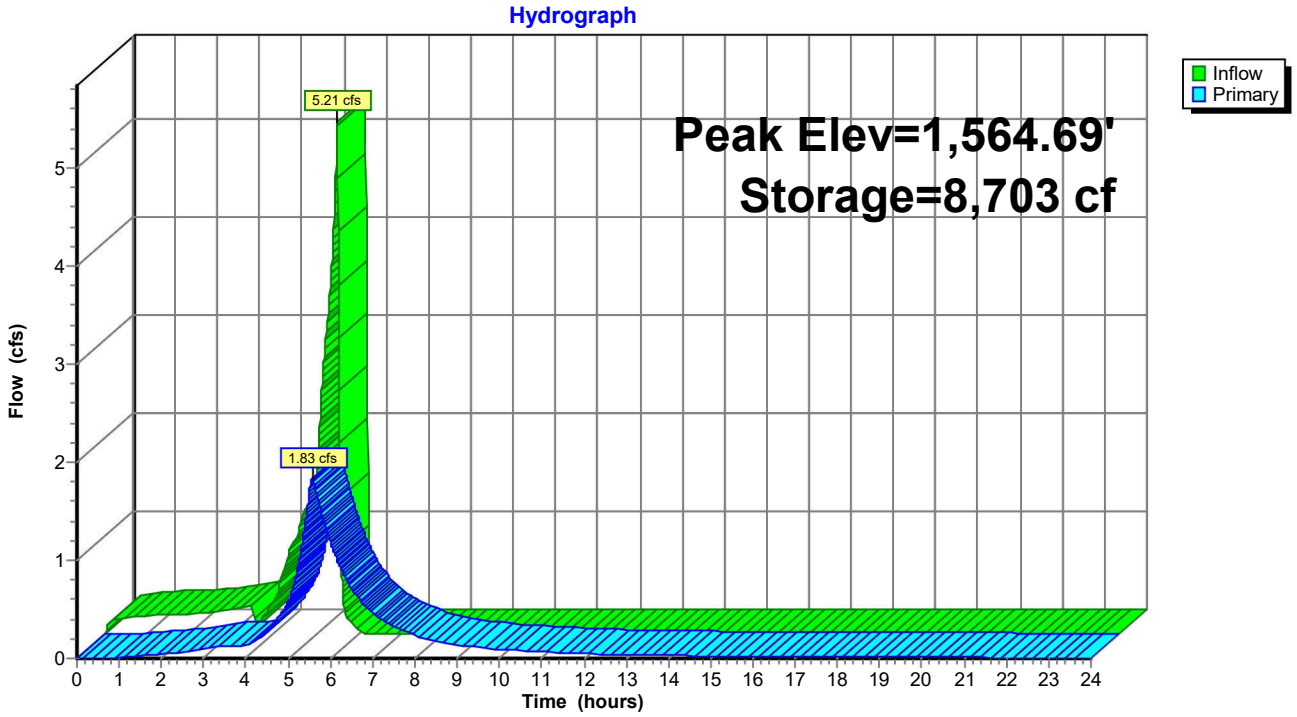
Volume	Invert	Avail.Storage	Storage Description
#1	1,563.95'	41,620 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,563.95	12,376	0.0	0	0	12,376
1,564.95	12,376	95.0	11,757	11,757	12,770
1,565.95	12,376	95.0	11,757	23,514	13,165
1,566.95	12,376	95.0	11,757	35,272	13,559
1,567.49	12,376	95.0	6,349	41,620	13,772

Device	Routing	Invert	Outlet Devices
#1	Primary	1,563.95'	**12.00" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#2	Primary	1,566.99'	**Custom Weir, Cv= 2.62 (C= 3.28)**
			Head (feet) 0.00 0.50 0.50
			Width (feet) 36.00 36.00 0.00

Primary OutFlow Max=1.83 cfs @ 5.56 hrs HW=1,564.69' (Free Discharge)
└**1=Orifice** (Orifice Controls 1.83 cfs @ 2.93 fps)
└**2=Custom Weir** (Controls 0.00 cfs)

Pond 3P: Tank A



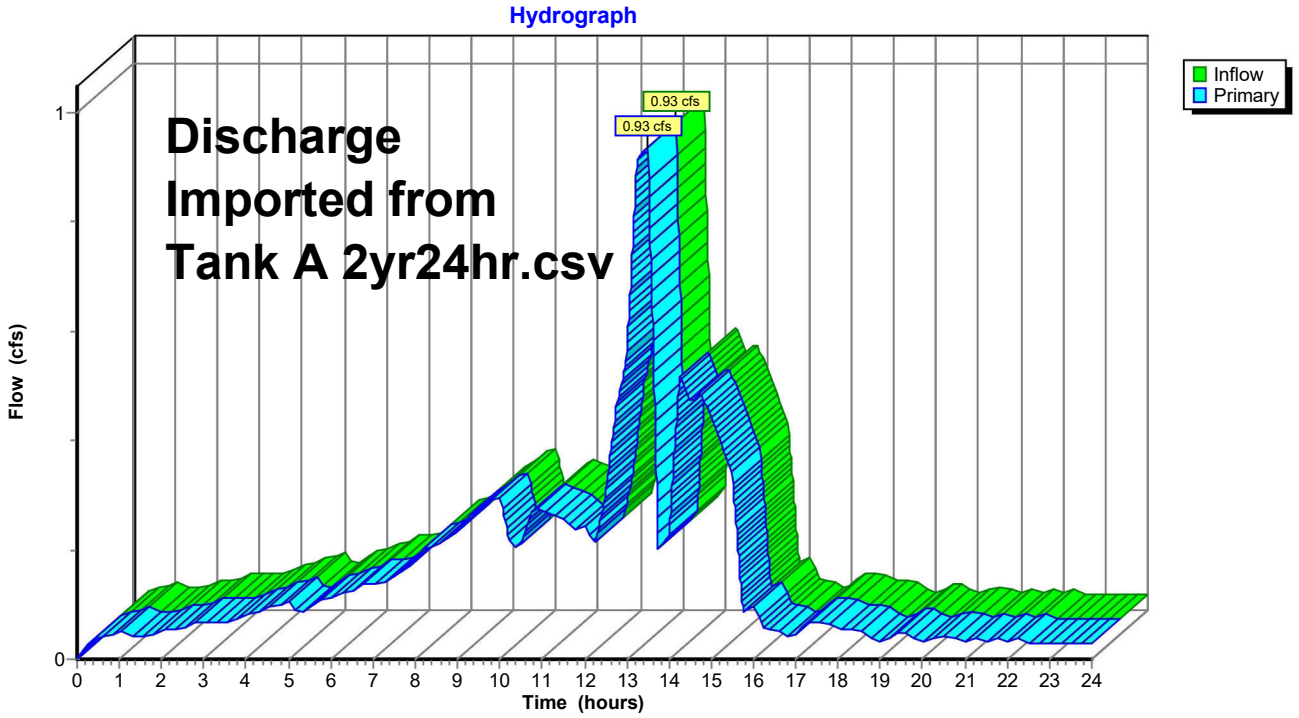
Summary for Link 4L: 2-yr 24-hr

Inflow = 0.93 cfs @ 13.50 hrs, Volume= 0.303 af
Primary = 0.93 cfs @ 13.50 hrs, Volume= 0.303 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 4P : Tank A

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Discharge Imported from Tank A 2yr24hr.csv

Link 4L: 2-yr 24-hr



Summary for Pond 4P: Tank A

Inflow	=	0.93 cfs @	13.50 hrs,	Volume=	0.303 af
Outflow	=	0.48 cfs @	13.65 hrs,	Volume=	0.275 af, Atten= 48%, Lag= 9.3 min
Primary	=	0.48 cfs @	13.65 hrs,	Volume=	0.275 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 1,564.30' @ 13.65 hrs Surf.Area= 12,376 sf Storage= 4,065 cf

Plug-Flow detention time= 193.5 min calculated for 0.275 af (91% of inflow)
Center-of-Mass det. time= 146.7 min (850.0 - 703.2)

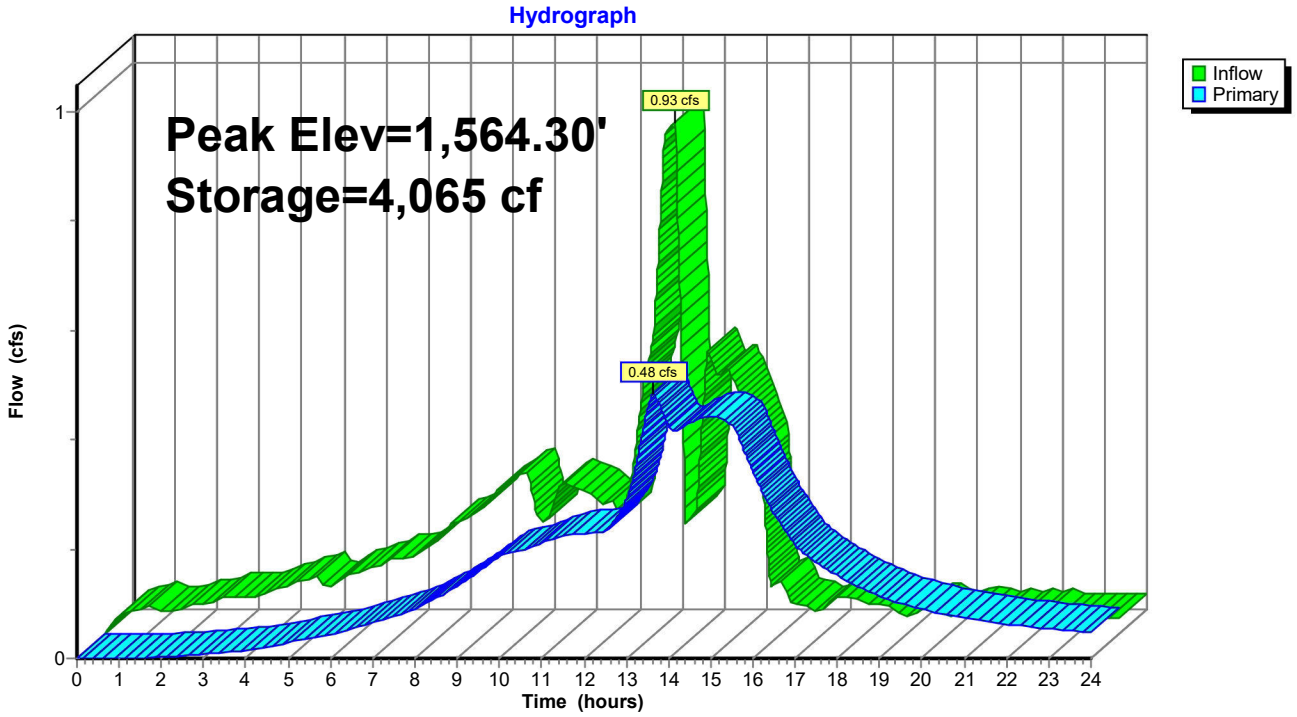
Volume	Invert	Avail.Storage	Storage Description
#1	1,563.95'	41,620 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,563.95	12,376	0.0	0	0	12,376
1,564.95	12,376	95.0	11,757	11,757	12,770
1,565.95	12,376	95.0	11,757	23,514	13,165
1,566.95	12,376	95.0	11,757	35,272	13,559
1,567.49	12,376	95.0	6,349	41,620	13,772

Device	Routing	Invert	Outlet Devices
#1	Primary	1,563.95'	**12.00" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#2	Primary	1,566.99'	**Custom Weir, Cv= 2.62 (C= 3.28)**
			Head (feet) 0.00 0.50 0.50
			Width (feet) 36.00 36.00 0.00

Primary OutFlow Max=0.48 cfs @ 13.65 hrs HW=1,564.30' (Free Discharge)
└─**1=Orifice** (Orifice Controls 0.48 cfs @ 2.00 fps)
└─**2=Custom Weir** (Controls 0.00 cfs)

Pond 4P: Tank A

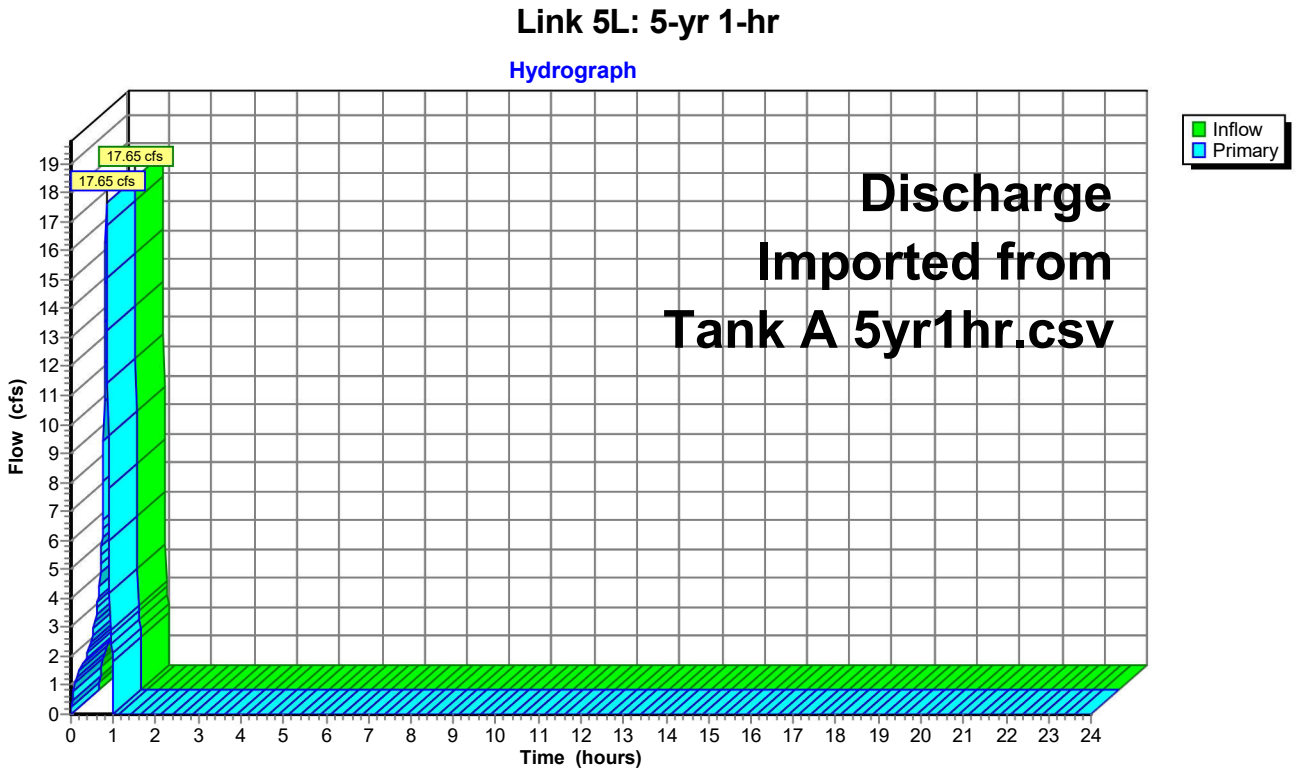


Summary for Link 5L: 5-yr 1-hr

Inflow = 17.65 cfs @ 0.83 hrs, Volume= 0.325 af
Primary = 17.65 cfs @ 0.83 hrs, Volume= 0.325 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 5P : Tank A

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Discharge Imported from Tank A 5yr1hr.csv



Summary for Pond 5P: Tank A

Inflow	=	17.65 cfs @	0.83 hrs,	Volume=	0.325 af
Outflow	=	2.67 cfs @	0.94 hrs,	Volume=	0.317 af, Atten= 85%, Lag= 6.3 min
Primary	=	2.67 cfs @	0.94 hrs,	Volume=	0.317 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 1,564.95' @ 0.94 hrs Surf.Area= 12,376 sf Storage= 11,712 cf

Plug-Flow detention time= 122.0 min calculated for 0.317 af (97% of inflow)
Center-of-Mass det. time= 122.1 min (162.9 - 40.8)

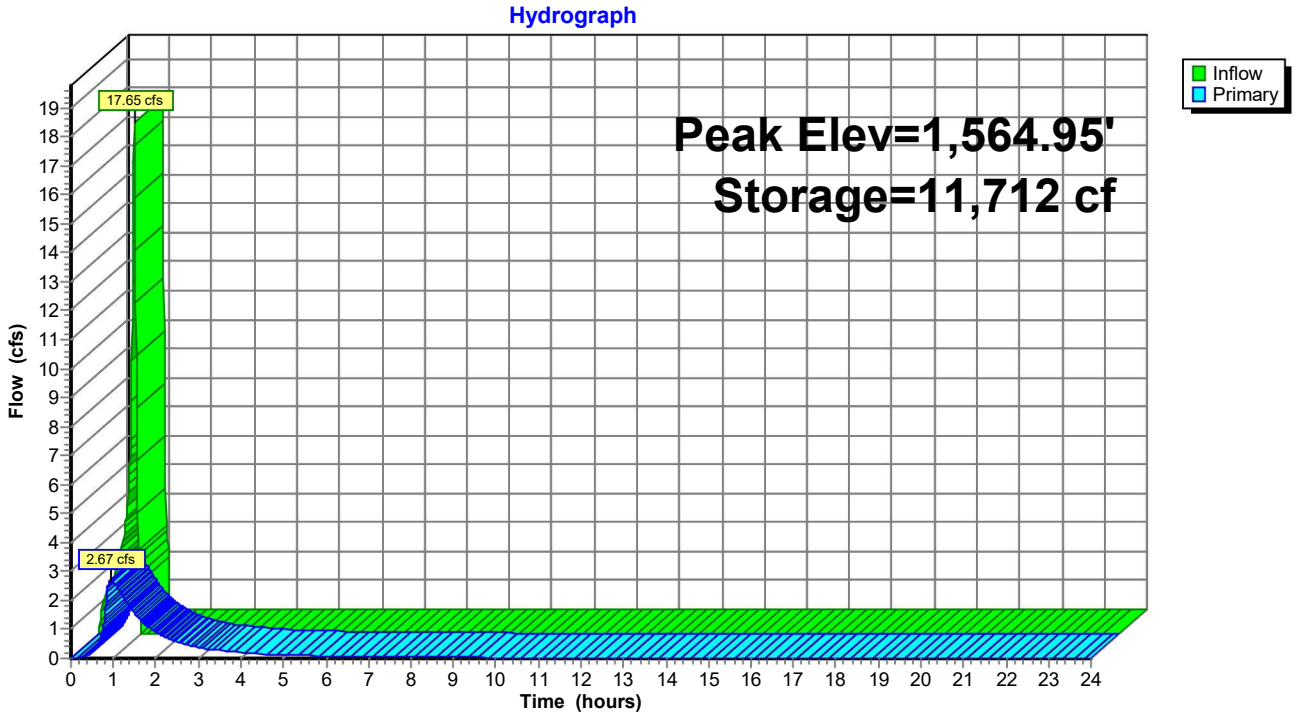
Volume	Invert	Avail.Storage	Storage Description
#1	1,563.95'	41,620 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,563.95	12,376	0.0	0	0	12,376
1,564.95	12,376	95.0	11,757	11,757	12,770
1,565.95	12,376	95.0	11,757	23,514	13,165
1,566.95	12,376	95.0	11,757	35,272	13,559
1,567.49	12,376	95.0	6,349	41,620	13,772

Device	Routing	Invert	Outlet Devices
#1	Primary	1,563.95'	**12.00" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#2	Primary	1,566.99'	**Custom Weir, Cv= 2.62 (C= 3.28)**
			Head (feet) 0.00 0.50 0.50
			Width (feet) 36.00 36.00 0.00

Primary OutFlow Max=2.67 cfs @ 0.94 hrs HW=1,564.95' (Free Discharge)
└**1=Orifice** (Orifice Controls 2.67 cfs @ 3.40 fps)
└**2=Custom Weir** (Controls 0.00 cfs)

Pond 5P: Tank A

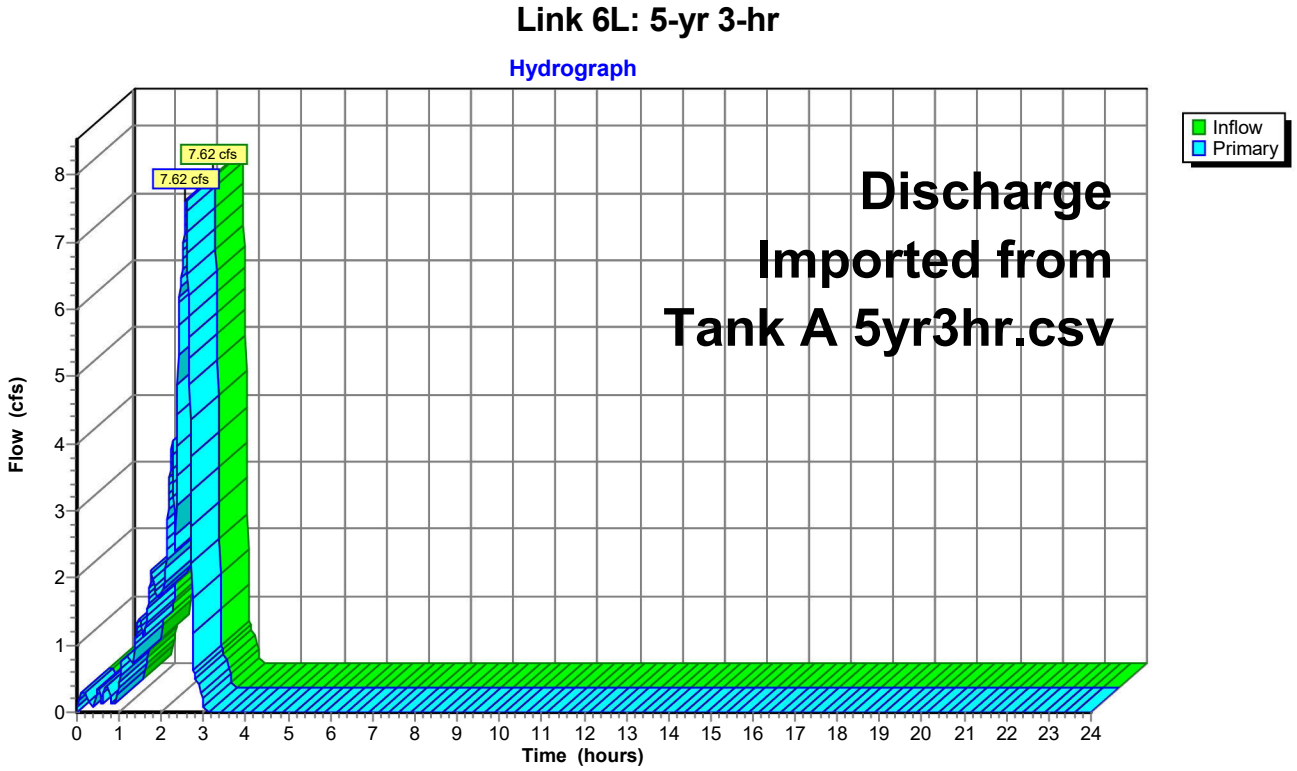


Summary for Link 6L: 5-yr 3-hr

Inflow = 7.62 cfs @ 2.58 hrs, Volume= 0.393 af
Primary = 7.62 cfs @ 2.58 hrs, Volume= 0.393 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 6P : Tank A

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Discharge Imported from Tank A 5yr3hr.csv



Summary for Pond 6P: Tank A

Inflow	=	7.62 cfs @	2.58 hrs,	Volume=	0.393 af
Outflow	=	2.71 cfs @	2.71 hrs,	Volume=	0.384 af, Atten= 64%, Lag= 7.9 min
Primary	=	2.71 cfs @	2.71 hrs,	Volume=	0.384 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 1,564.96' @ 2.71 hrs Surf.Area= 12,376 sf Storage= 11,914 cf

Plug-Flow detention time= 117.0 min calculated for 0.384 af (98% of inflow)
Center-of-Mass det. time= 116.5 min (244.1 - 127.6)

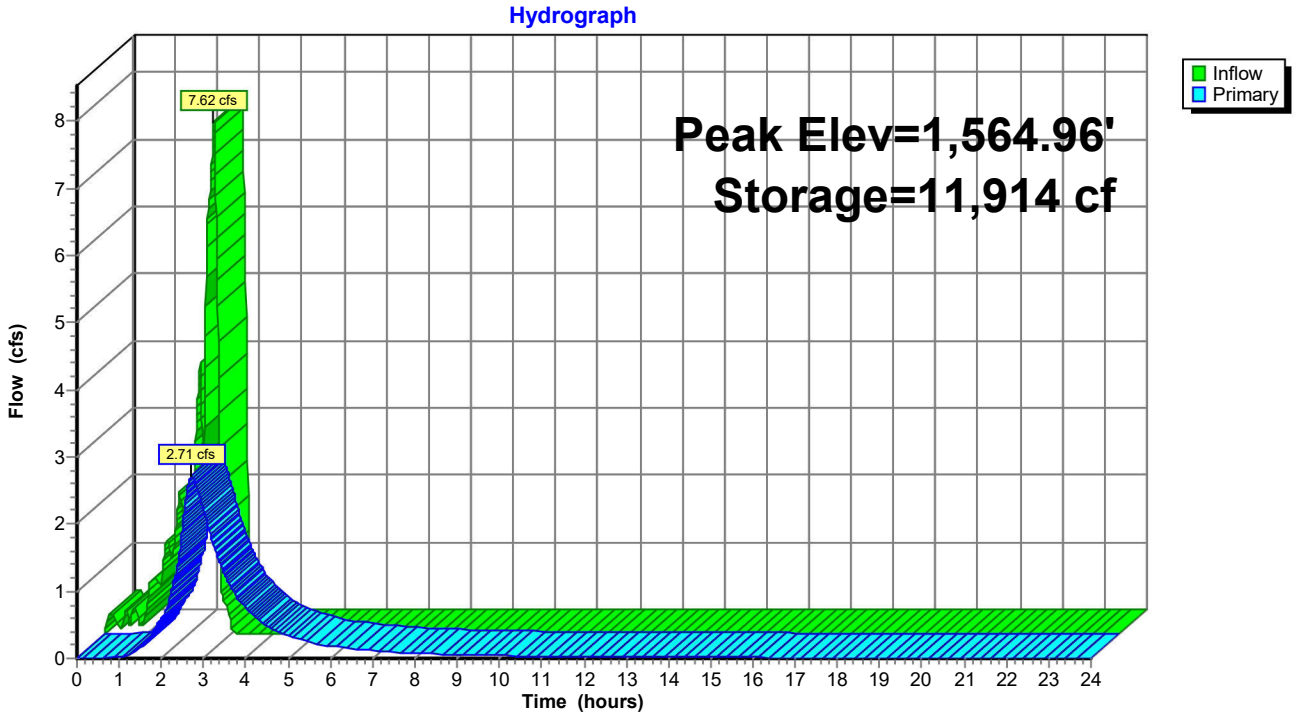
Volume	Invert	Avail.Storage	Storage Description
#1	1,563.95'	41,620 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,563.95	12,376	0.0	0	0	12,376
1,564.95	12,376	95.0	11,757	11,757	12,770
1,565.95	12,376	95.0	11,757	23,514	13,165
1,566.95	12,376	95.0	11,757	35,272	13,559
1,567.49	12,376	95.0	6,349	41,620	13,772

Device	Routing	Invert	Outlet Devices
#1	Primary	1,563.95'	**12.00" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#2	Primary	1,566.99'	**Custom Weir, Cv= 2.62 (C= 3.28)**
			Head (feet) 0.00 0.50 0.50
			Width (feet) 36.00 36.00 0.00

Primary OutFlow Max=2.71 cfs @ 2.71 hrs HW=1,564.96' (Free Discharge)
└**1=Orifice** (Orifice Controls 2.71 cfs @ 3.45 fps)
└**2=Custom Weir** (Controls 0.00 cfs)

Pond 6P: Tank A

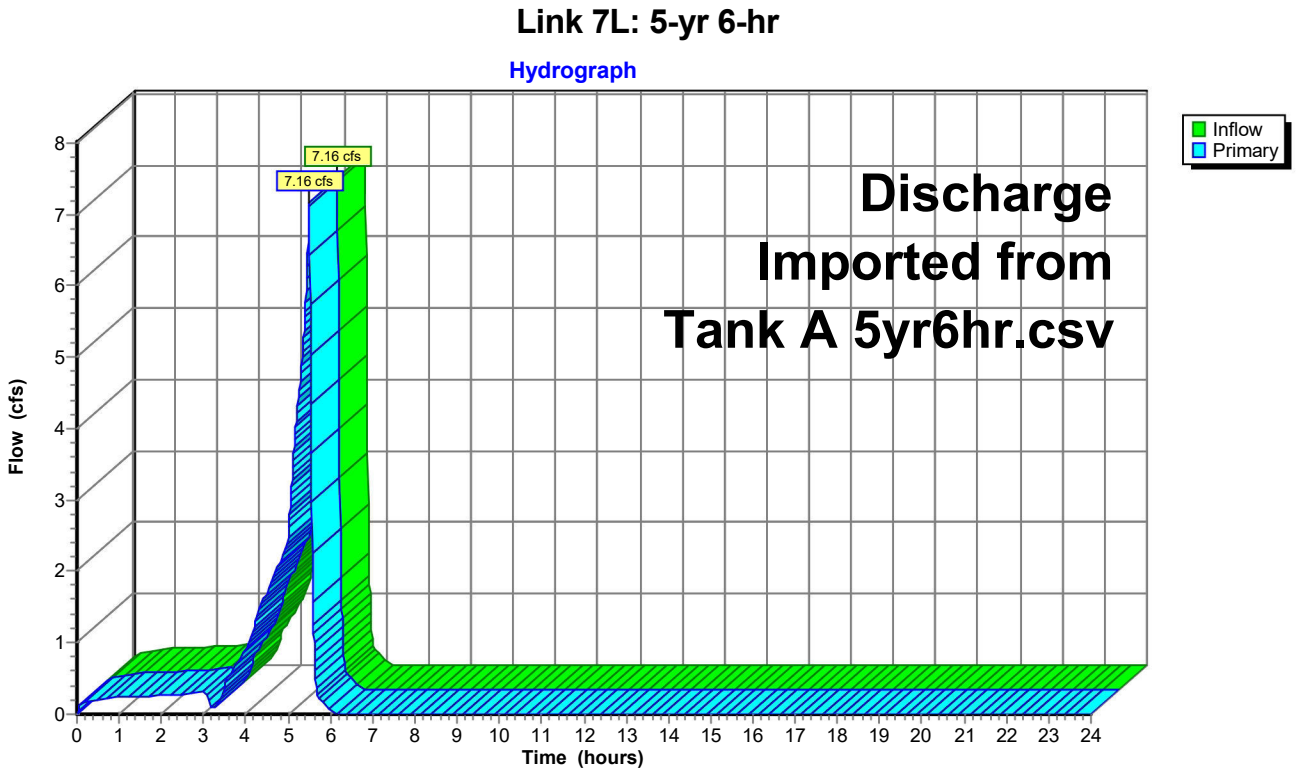


Summary for Link 7L: 5-yr 6-hr

Inflow = 7.16 cfs @ 5.50 hrs, Volume= 0.462 af
Primary = 7.16 cfs @ 5.50 hrs, Volume= 0.462 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 7P : Tank A

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Discharge Imported from Tank A 5yr6hr.csv



Summary for Pond 7P: Tank A

Inflow	=	7.16 cfs @	5.50 hrs,	Volume=	0.462 af
Outflow	=	2.74 cfs @	5.56 hrs,	Volume=	0.451 af, Atten= 62%, Lag= 4.0 min
Primary	=	2.74 cfs @	5.56 hrs,	Volume=	0.451 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 1,564.98' @ 5.56 hrs Surf.Area= 12,376 sf Storage= 12,072 cf

Plug-Flow detention time= 118.7 min calculated for 0.451 af (98% of inflow)
Center-of-Mass det. time= 117.0 min (386.4 - 269.4)

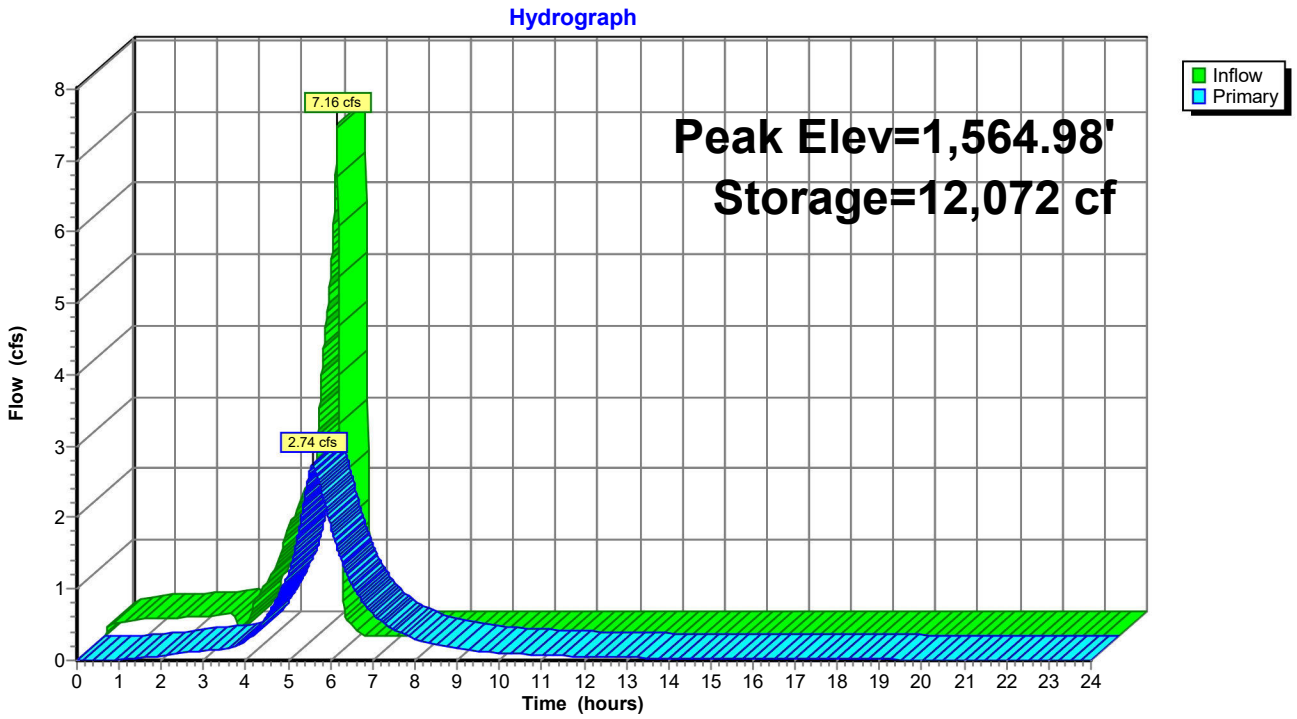
Volume	Invert	Avail.Storage	Storage Description
#1	1,563.95'	41,620 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,563.95	12,376	0.0	0	0	12,376
1,564.95	12,376	95.0	11,757	11,757	12,770
1,565.95	12,376	95.0	11,757	23,514	13,165
1,566.95	12,376	95.0	11,757	35,272	13,559
1,567.49	12,376	95.0	6,349	41,620	13,772

Device	Routing	Invert	Outlet Devices
#1	Primary	1,563.95'	**12.00" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#2	Primary	1,566.99'	**Custom Weir, Cv= 2.62 (C= 3.28)**
			Head (feet) 0.00 0.50 0.50
			Width (feet) 36.00 36.00 0.00

Primary OutFlow Max=2.74 cfs @ 5.56 hrs HW=1,564.98' (Free Discharge)
└**1=Orifice** (Orifice Controls 2.74 cfs @ 3.49 fps)
└**2=Custom Weir** (Controls 0.00 cfs)

Pond 7P: Tank A



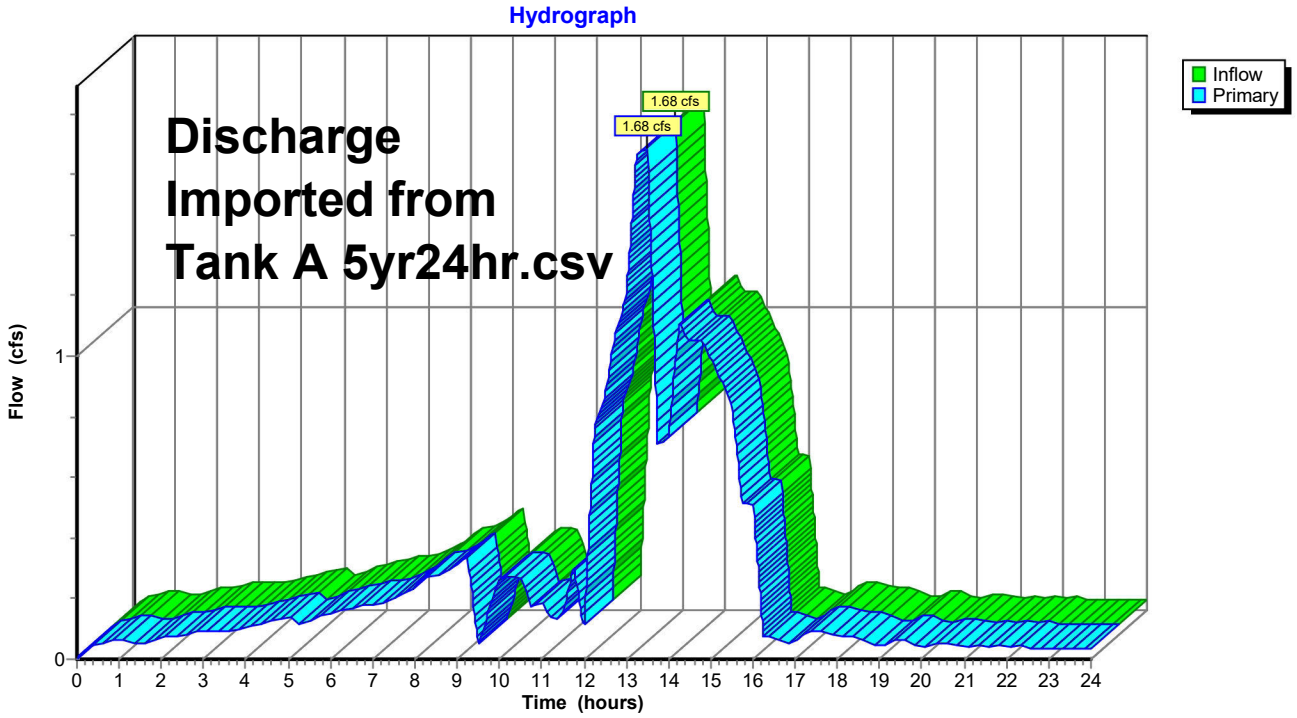
Summary for Link 8L: 5-yr 24-hr

Inflow = 1.68 cfs @ 13.50 hrs, Volume= 0.509 af
Primary = 1.68 cfs @ 13.50 hrs, Volume= 0.509 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 8P : Tank A

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Discharge Imported from Tank A 5yr24hr.csv

Link 8L: 5-yr 24-hr



Summary for Pond 8P: Tank A

Inflow	=	1.68 cfs @	13.50 hrs,	Volume=	0.509 af
Outflow	=	1.00 cfs @	13.68 hrs,	Volume=	0.477 af, Atten= 41%, Lag= 10.5 min
Primary	=	1.00 cfs @	13.68 hrs,	Volume=	0.477 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 1,564.47' @ 13.68 hrs Surf.Area= 12,376 sf Storage= 6,068 cf

Plug-Flow detention time= 148.4 min calculated for 0.477 af (94% of inflow)
Center-of-Mass det. time= 118.8 min (865.5 - 746.7)

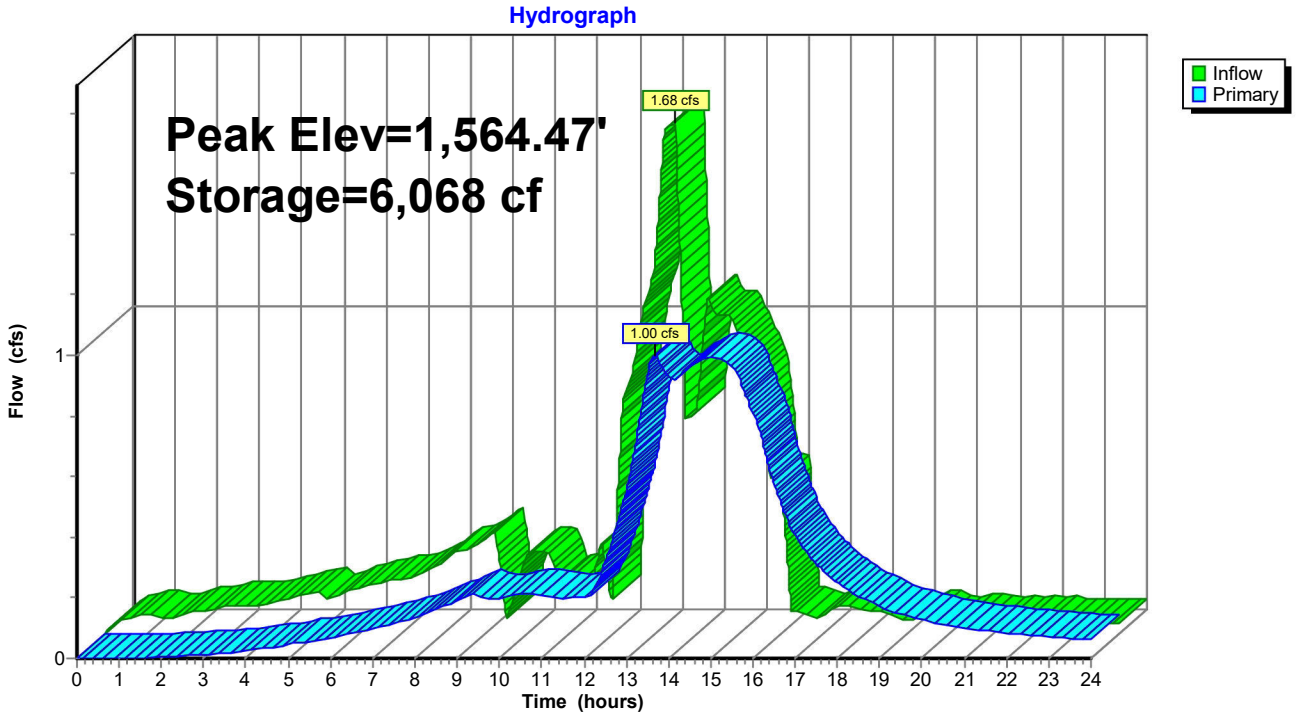
Volume	Invert	Avail.Storage	Storage Description
#1	1,563.95'	41,620 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

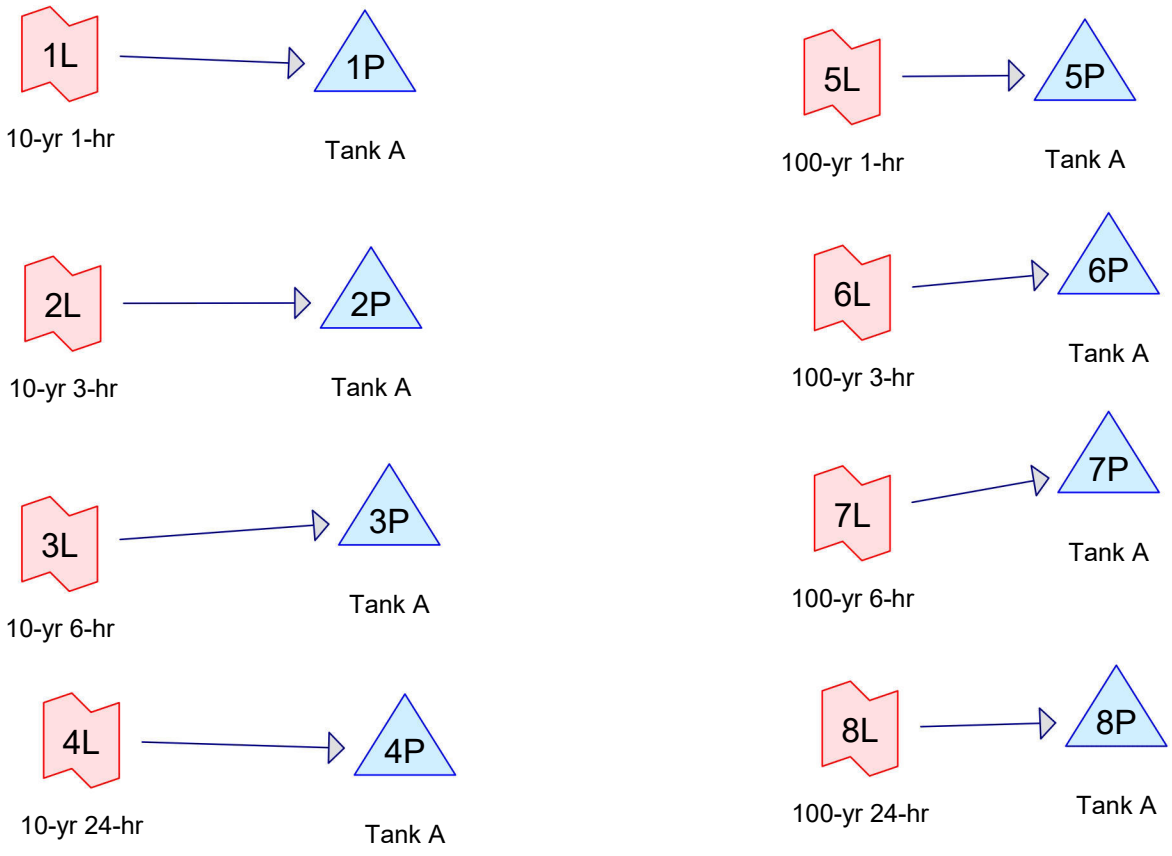
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,563.95	12,376	0.0	0	0	12,376
1,564.95	12,376	95.0	11,757	11,757	12,770
1,565.95	12,376	95.0	11,757	23,514	13,165
1,566.95	12,376	95.0	11,757	35,272	13,559
1,567.49	12,376	95.0	6,349	41,620	13,772

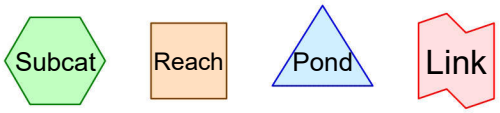
Device	Routing	Invert	Outlet Devices
#1	Primary	1,563.95'	**12.00" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#2	Primary	1,566.99'	**Custom Weir, Cv= 2.62 (C= 3.28)**
			Head (feet) 0.00 0.50 0.50
			Width (feet) 36.00 36.00 0.00

Primary OutFlow Max=1.00 cfs @ 13.68 hrs HW=1,564.47' (Free Discharge)
└**1=Orifice** (Orifice Controls 1.00 cfs @ 2.45 fps)
└**2=Custom Weir** (Controls 0.00 cfs)

Pond 8P: Tank A







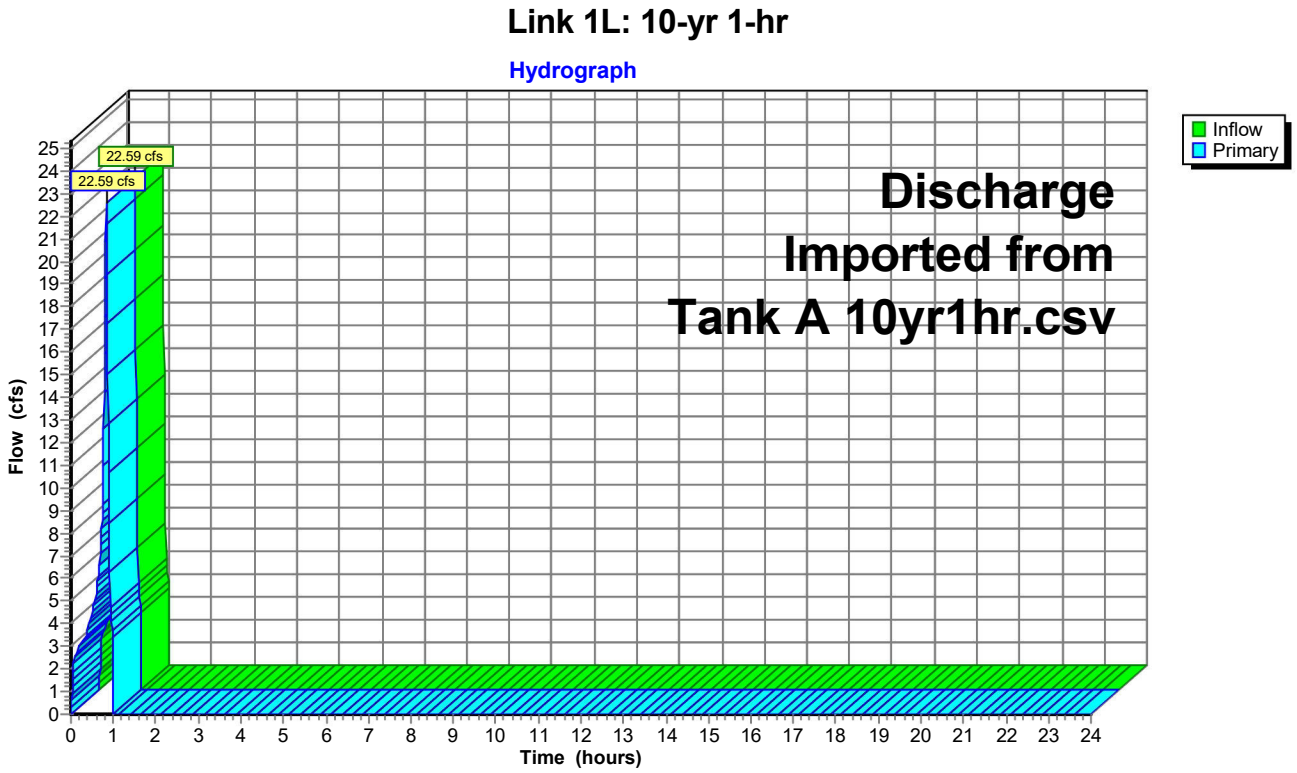
Routing Diagram for 3816 Tank A 10 and 100-yr
Prepared by Pasco Laret Suiter & Assoc, Printed 2/18/2025
HydroCAD® 10.20-6a s/n 10097 © 2024 HydroCAD Software Solutions LLC

Summary for Link 1L: 10-yr 1-hr

Inflow = 22.59 cfs @ 0.83 hrs, Volume= 0.488 af
Primary = 22.59 cfs @ 0.83 hrs, Volume= 0.488 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 1P : Tank A

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Discharge Imported from Tank A 10yr1hr.csv



Summary for Pond 1P: Tank A

Inflow	=	22.59 cfs @	0.83 hrs,	Volume=	0.488 af
Outflow	=	3.65 cfs @	0.98 hrs,	Volume=	0.480 af, Atten= 84%, Lag= 8.9 min
Primary	=	3.65 cfs @	0.98 hrs,	Volume=	0.480 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 1,565.38' @ 0.98 hrs Surf.Area= 12,376 sf Storage= 16,811 cf

Plug-Flow detention time= 105.4 min calculated for 0.480 af (98% of inflow)
Center-of-Mass det. time= 105.1 min (144.1 - 39.0)

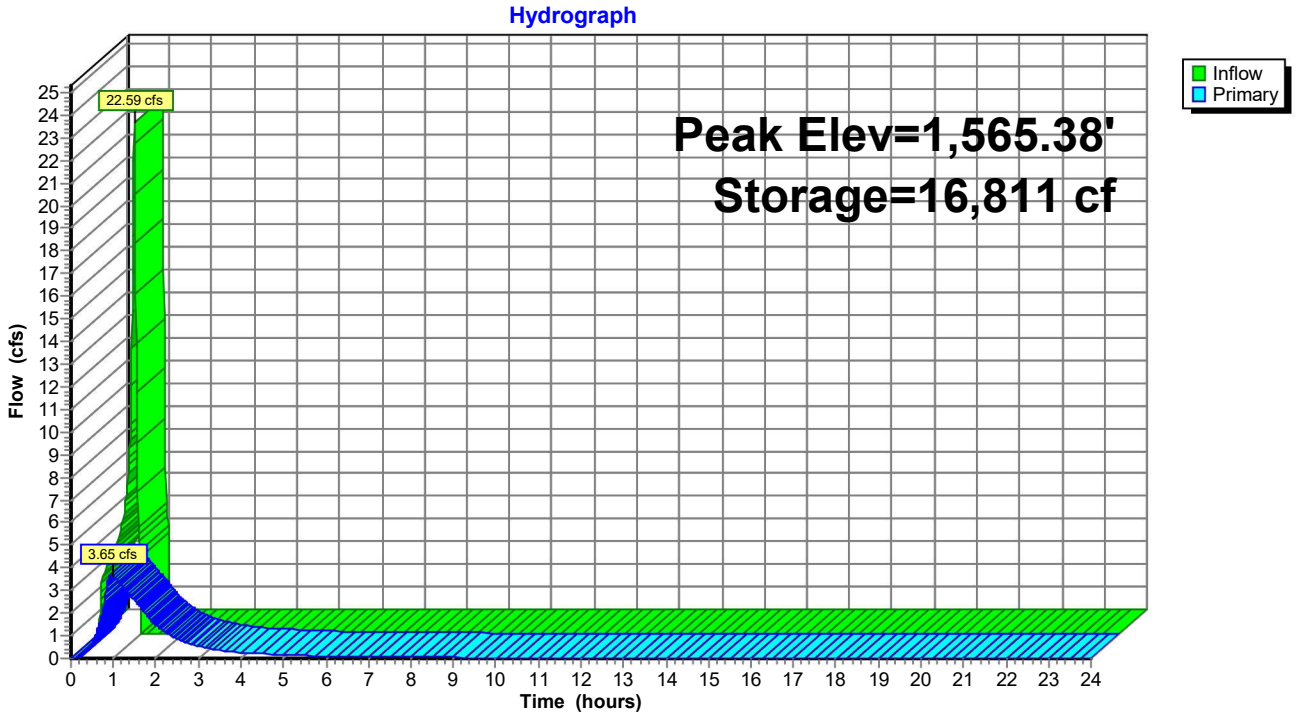
Volume	Invert	Avail.Storage	Storage Description
#1	1,563.95'	41,620 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,563.95	12,376	0.0	0	0	12,376
1,564.95	12,376	95.0	11,757	11,757	12,770
1,565.95	12,376	95.0	11,757	23,514	13,165
1,566.95	12,376	95.0	11,757	35,272	13,559
1,567.49	12,376	95.0	6,349	41,620	13,772

Device	Routing	Invert	Outlet Devices
#1	Primary	1,563.95'	**12.00" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#2	Primary	1,566.99'	**Custom Weir, Cv= 2.62 (C= 3.28)**
			Head (feet) 0.00 0.50 0.50
			Width (feet) 36.00 36.00 0.00

Primary OutFlow Max=3.65 cfs @ 0.98 hrs HW=1,565.38' (Free Discharge)
└**1=Orifice** (Orifice Controls 3.65 cfs @ 4.64 fps)
└**2=Custom Weir** (Controls 0.00 cfs)

Pond 1P: Tank A



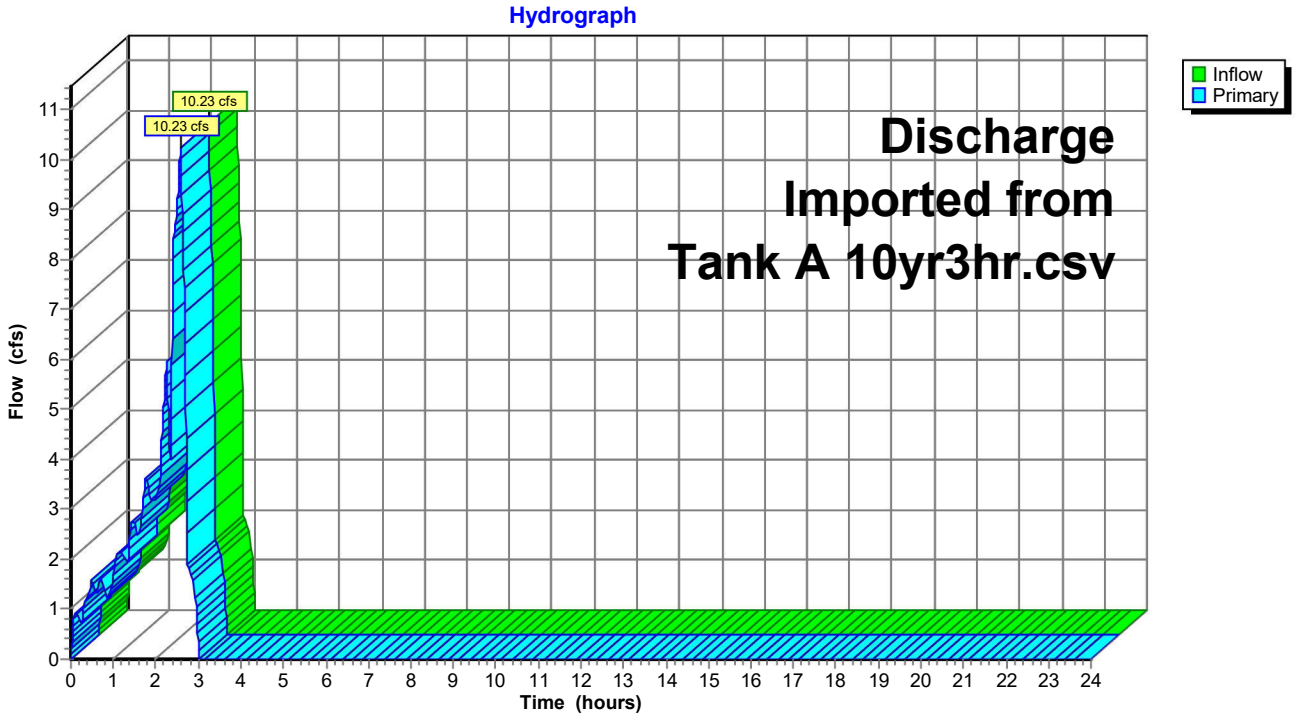
Summary for Link 2L: 10-yr 3-hr

Inflow = 10.23 cfs @ 2.58 hrs, Volume= 0.730 af
Primary = 10.23 cfs @ 2.58 hrs, Volume= 0.730 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 2P : Tank A

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Discharge Imported from Tank A 10yr3hr.csv

Link 2L: 10-yr 3-hr



Summary for Pond 2P: Tank A

Inflow	=	10.23 cfs @	2.58 hrs,	Volume=	0.730 af
Outflow	=	3.87 cfs @	2.72 hrs,	Volume=	0.721 af, Atten= 62%, Lag= 8.4 min
Primary	=	3.87 cfs @	2.72 hrs,	Volume=	0.721 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 1,565.50' @ 2.72 hrs Surf.Area= 12,376 sf Storage= 18,169 cf

Plug-Flow detention time= 97.0 min calculated for 0.721 af (99% of inflow)
Center-of-Mass det. time= 96.2 min (211.8 - 115.6)

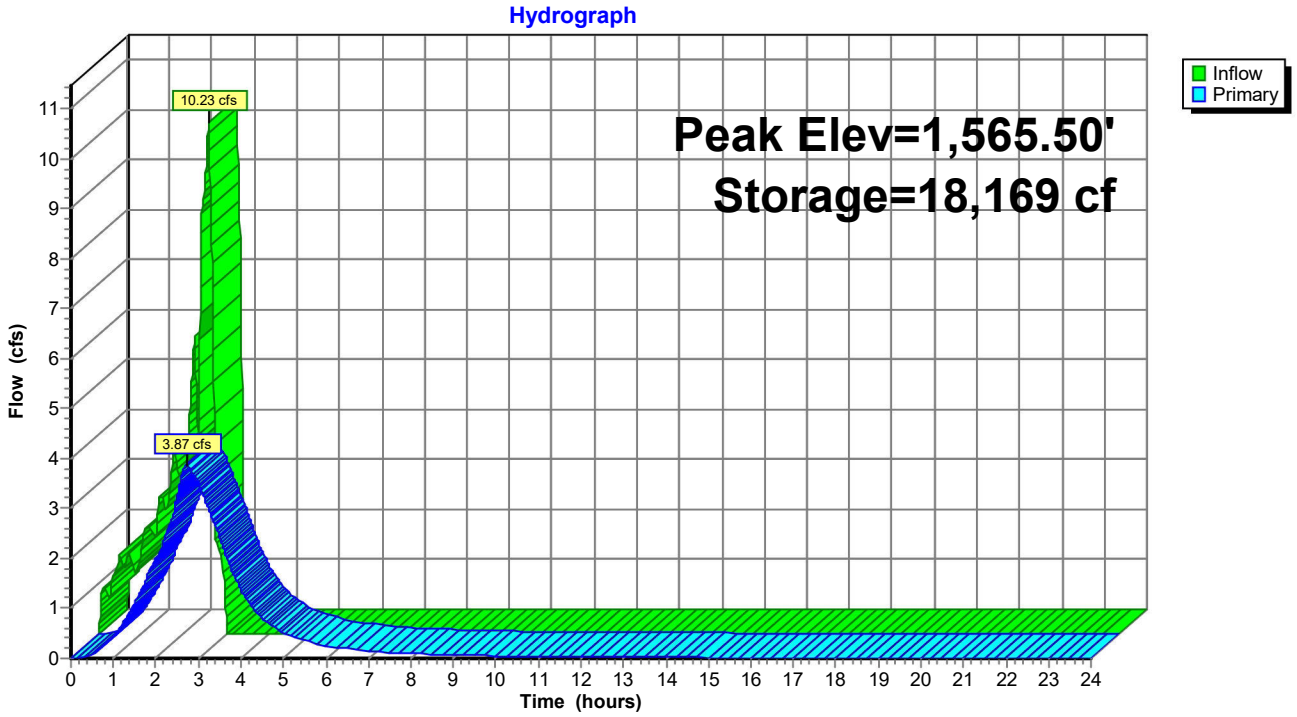
Volume	Invert	Avail.Storage	Storage Description
#1	1,563.95'	41,620 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,563.95	12,376	0.0	0	0	12,376
1,564.95	12,376	95.0	11,757	11,757	12,770
1,565.95	12,376	95.0	11,757	23,514	13,165
1,566.95	12,376	95.0	11,757	35,272	13,559
1,567.49	12,376	95.0	6,349	41,620	13,772

Device	Routing	Invert	Outlet Devices
#1	Primary	1,563.95'	**12.00" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#2	Primary	1,566.99'	**Custom Weir, Cv= 2.62 (C= 3.28)**
			Head (feet) 0.00 0.50 0.50
			Width (feet) 36.00 36.00 0.00

Primary OutFlow Max=3.87 cfs @ 2.72 hrs HW=1,565.50' (Free Discharge)
└**1=Orifice** (Orifice Controls 3.87 cfs @ 4.92 fps)
└**2=Custom Weir** (Controls 0.00 cfs)

Pond 2P: Tank A



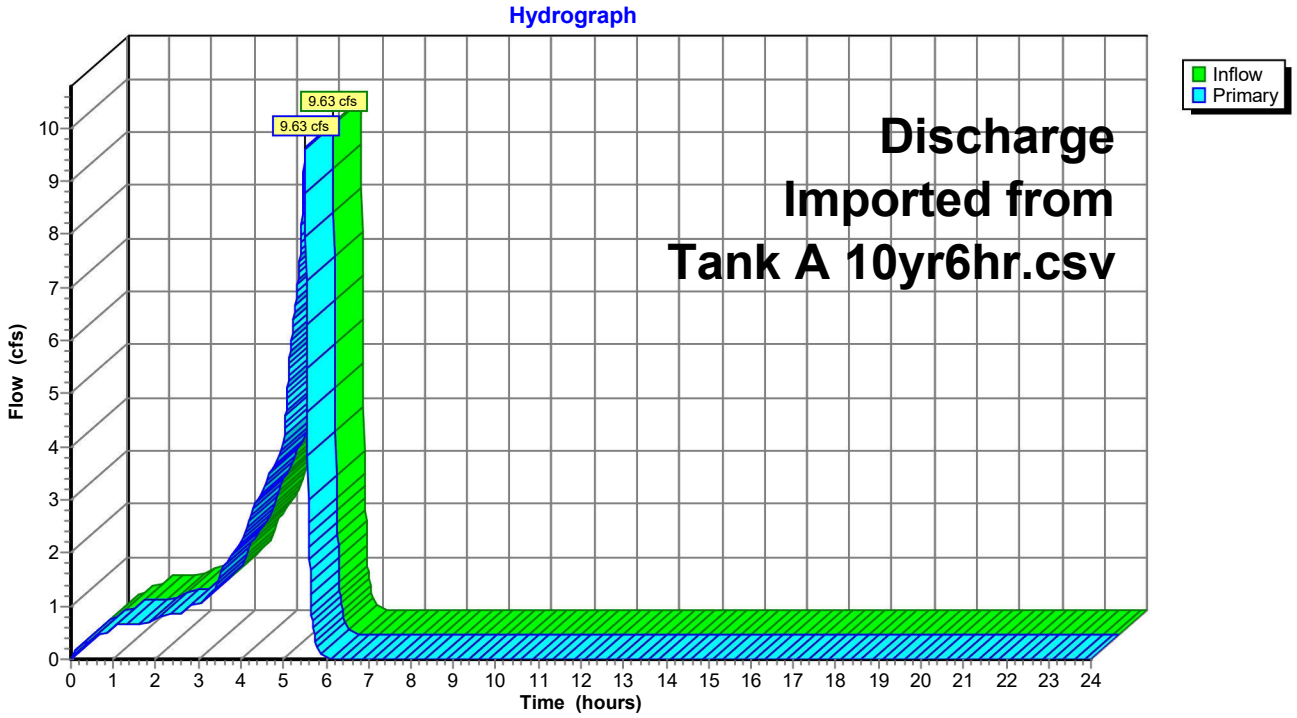
Summary for Link 3L: 10-yr 6-hr

Inflow = 9.63 cfs @ 5.50 hrs, Volume= 0.880 af
Primary = 9.63 cfs @ 5.50 hrs, Volume= 0.880 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 3P : Tank A

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Discharge Imported from Tank A 10yr6hr.csv

Link 3L: 10-yr 6-hr



Summary for Pond 3P: Tank A

Inflow	=	9.63 cfs @	5.50 hrs,	Volume=	0.880 af
Outflow	=	3.87 cfs @	5.57 hrs,	Volume=	0.869 af, Atten= 60%, Lag= 4.3 min
Primary	=	3.87 cfs @	5.57 hrs,	Volume=	0.869 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 1,565.50' @ 5.57 hrs Surf.Area= 12,376 sf Storage= 18,185 cf

Plug-Flow detention time= 96.7 min calculated for 0.869 af (99% of inflow)
Center-of-Mass det. time= 95.5 min (347.2 - 251.7)

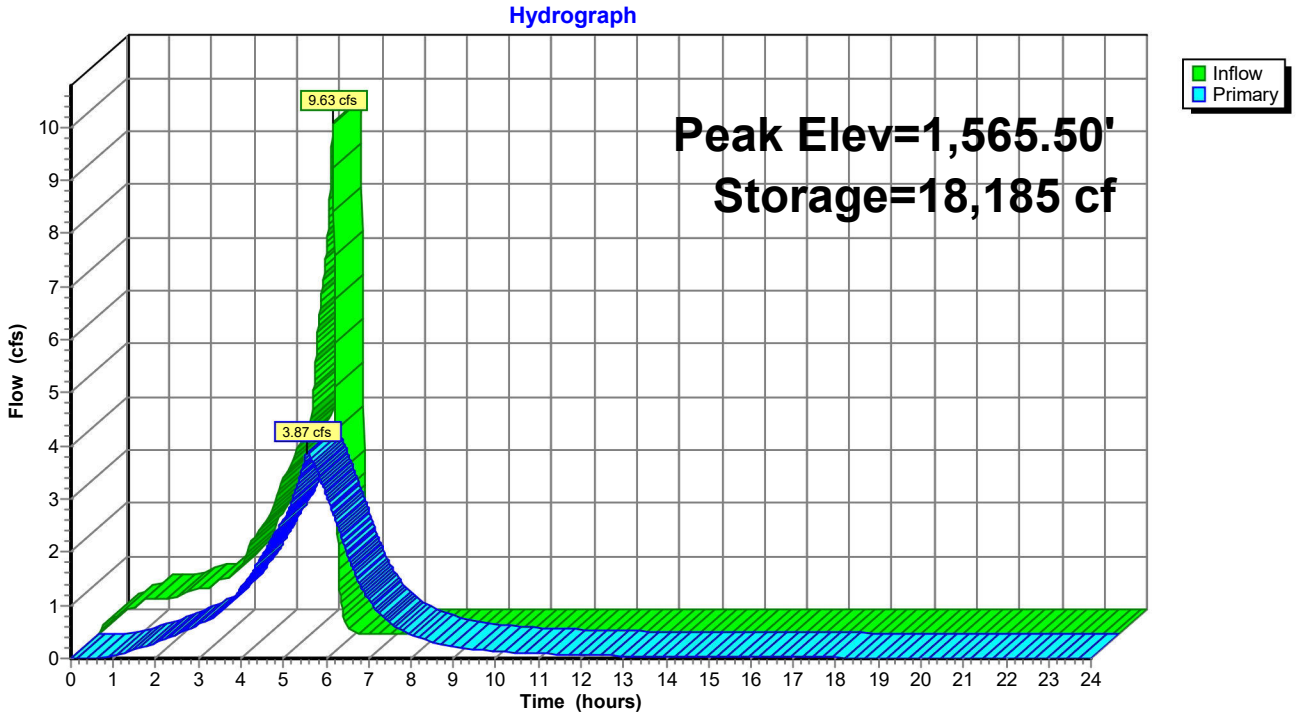
Volume	Invert	Avail.Storage	Storage Description
#1	1,563.95'	41,620 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,563.95	12,376	0.0	0	0	12,376
1,564.95	12,376	95.0	11,757	11,757	12,770
1,565.95	12,376	95.0	11,757	23,514	13,165
1,566.95	12,376	95.0	11,757	35,272	13,559
1,567.49	12,376	95.0	6,349	41,620	13,772

Device	Routing	Invert	Outlet Devices
#1	Primary	1,563.95'	**12.00" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#2	Primary	1,566.99'	**Custom Weir, Cv= 2.62 (C= 3.28)**
			Head (feet) 0.00 0.50 0.50
			Width (feet) 36.00 36.00 0.00

Primary OutFlow Max=3.87 cfs @ 5.57 hrs HW=1,565.50' (Free Discharge)
└**1=Orifice** (Orifice Controls 3.87 cfs @ 4.93 fps)
└**2=Custom Weir** (Controls 0.00 cfs)

Pond 3P: Tank A



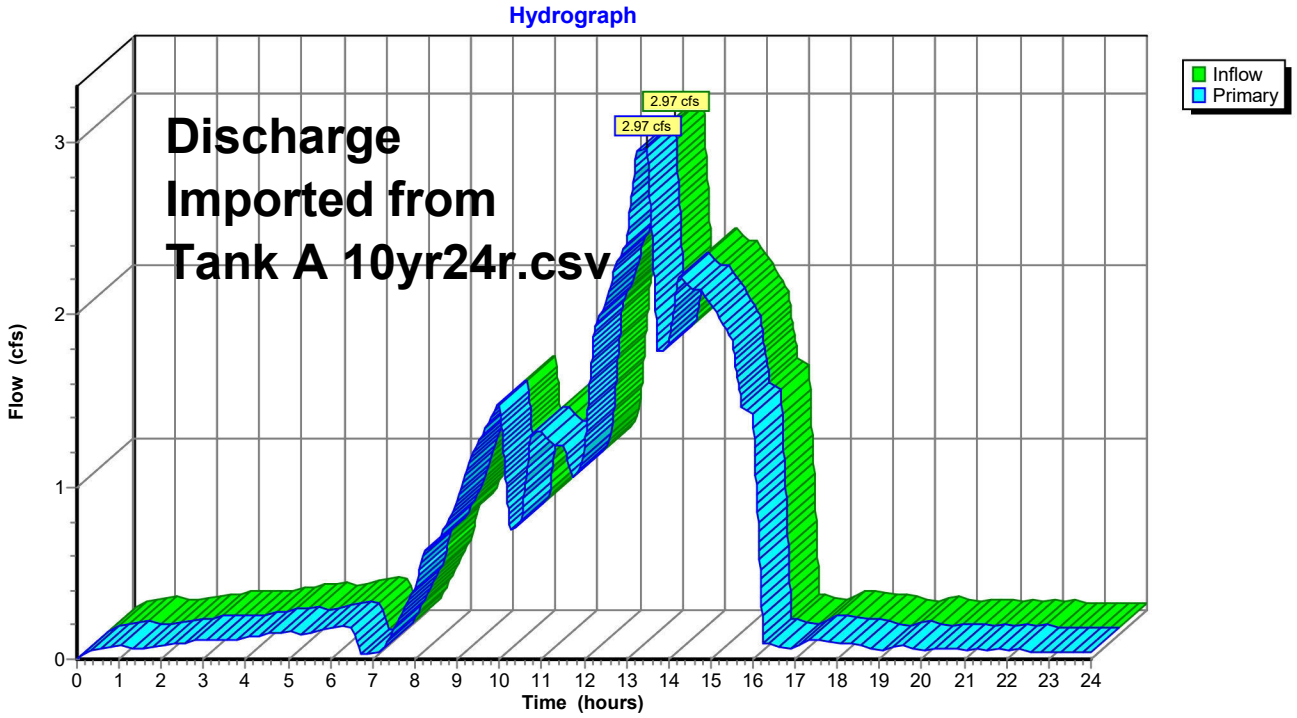
Summary for Link 4L: 10-yr 24-hr

Inflow = 2.97 cfs @ 13.50 hrs, Volume= 1.172 af
Primary = 2.97 cfs @ 13.50 hrs, Volume= 1.172 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 4P : Tank A

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Discharge Imported from Tank A 10yr24r.csv

Link 4L: 10-yr 24-hr



Summary for Pond 4P: Tank A

Inflow	=	2.97 cfs @	13.50 hrs,	Volume=	1.172 af
Outflow	=	2.30 cfs @	13.64 hrs,	Volume=	1.137 af, Atten= 22%, Lag= 8.5 min
Primary	=	2.30 cfs @	13.64 hrs,	Volume=	1.137 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 1,564.82' @ 13.64 hrs Surf.Area= 12,376 sf Storage= 10,233 cf

Plug-Flow detention time= 99.9 min calculated for 1.136 af (97% of inflow)
Center-of-Mass det. time= 85.9 min (832.3 - 746.3)

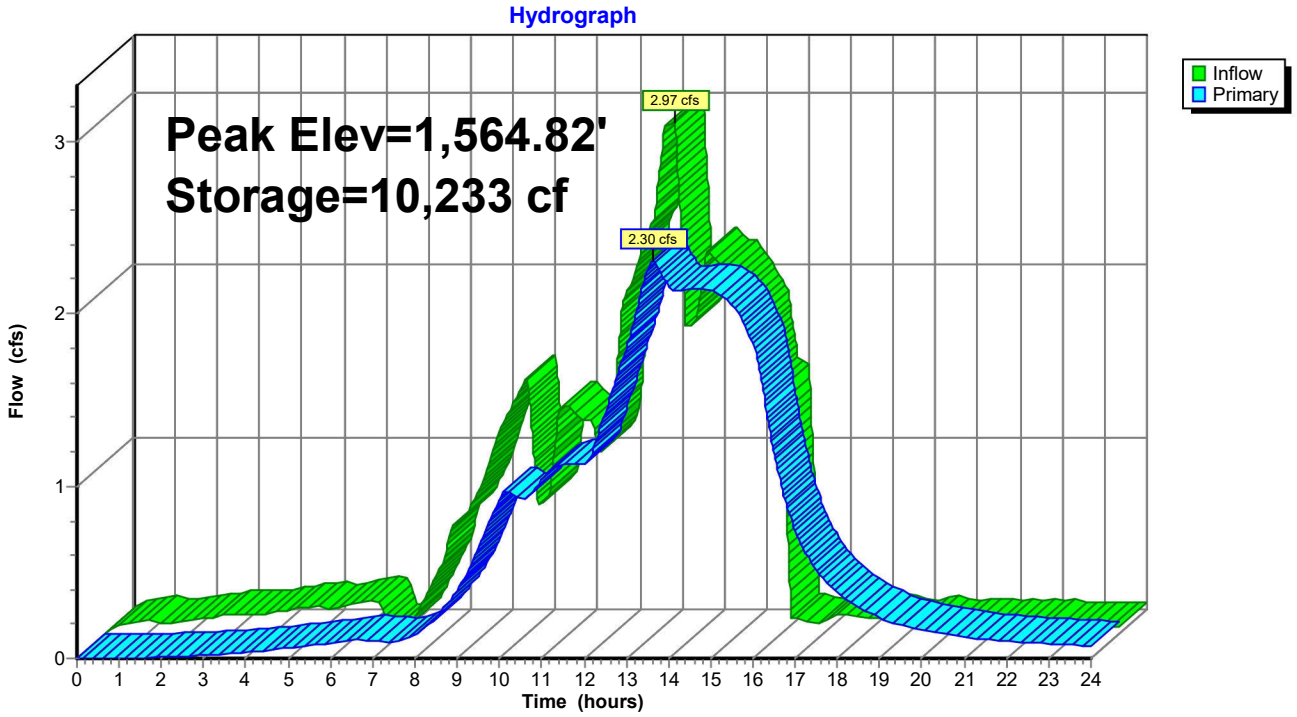
Volume	Invert	Avail.Storage	Storage Description
#1	1,563.95'	41,620 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,563.95	12,376	0.0	0	0	12,376
1,564.95	12,376	95.0	11,757	11,757	12,770
1,565.95	12,376	95.0	11,757	23,514	13,165
1,566.95	12,376	95.0	11,757	35,272	13,559
1,567.49	12,376	95.0	6,349	41,620	13,772

Device	Routing	Invert	Outlet Devices
#1	Primary	1,563.95'	**12.00" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#2	Primary	1,566.99'	**Custom Weir, Cv= 2.62 (C= 3.28)**
			Head (feet) 0.00 0.50 0.50
			Width (feet) 36.00 36.00 0.00

Primary OutFlow Max=2.30 cfs @ 13.64 hrs HW=1,564.82' (Free Discharge)
└**1=Orifice** (Orifice Controls 2.30 cfs @ 3.18 fps)
└**2=Custom Weir** (Controls 0.00 cfs)

Pond 4P: Tank A

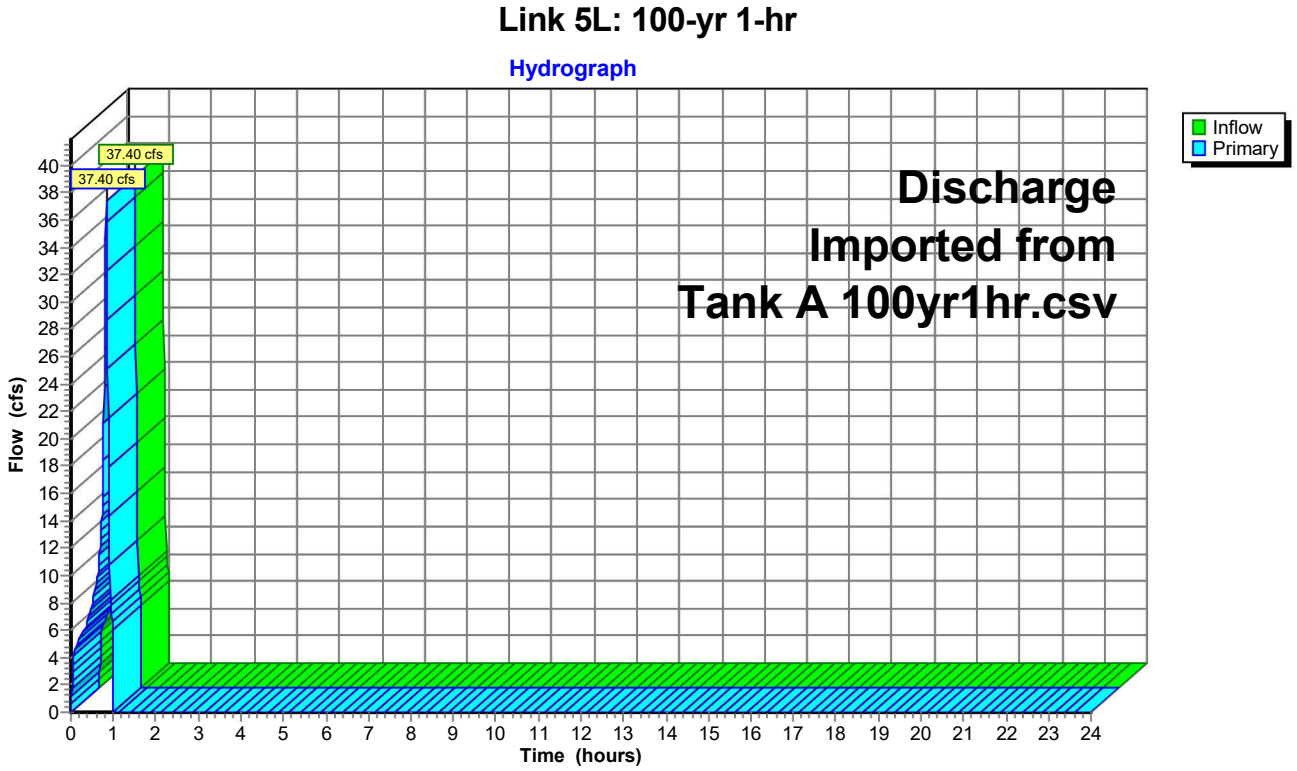


Summary for Link 5L: 100-yr 1-hr

Inflow = 37.40 cfs @ 0.83 hrs, Volume= 0.839 af
Primary = 37.40 cfs @ 0.83 hrs, Volume= 0.839 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 5P : Tank A

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Discharge Imported from Tank A 100yr1hr.csv



Summary for Pond 5P: Tank A

Inflow	=	37.40 cfs @	0.83 hrs,	Volume=	0.839 af
Outflow	=	5.28 cfs @	1.00 hrs,	Volume=	0.830 af, Atten= 86%, Lag= 10.0 min
Primary	=	5.28 cfs @	1.00 hrs,	Volume=	0.830 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 1,566.40' @ 1.00 hrs Surf.Area= 12,376 sf Storage= 28,759 cf

Plug-Flow detention time= 95.4 min calculated for 0.830 af (99% of inflow)
Center-of-Mass det. time= 95.1 min (133.8 - 38.6)

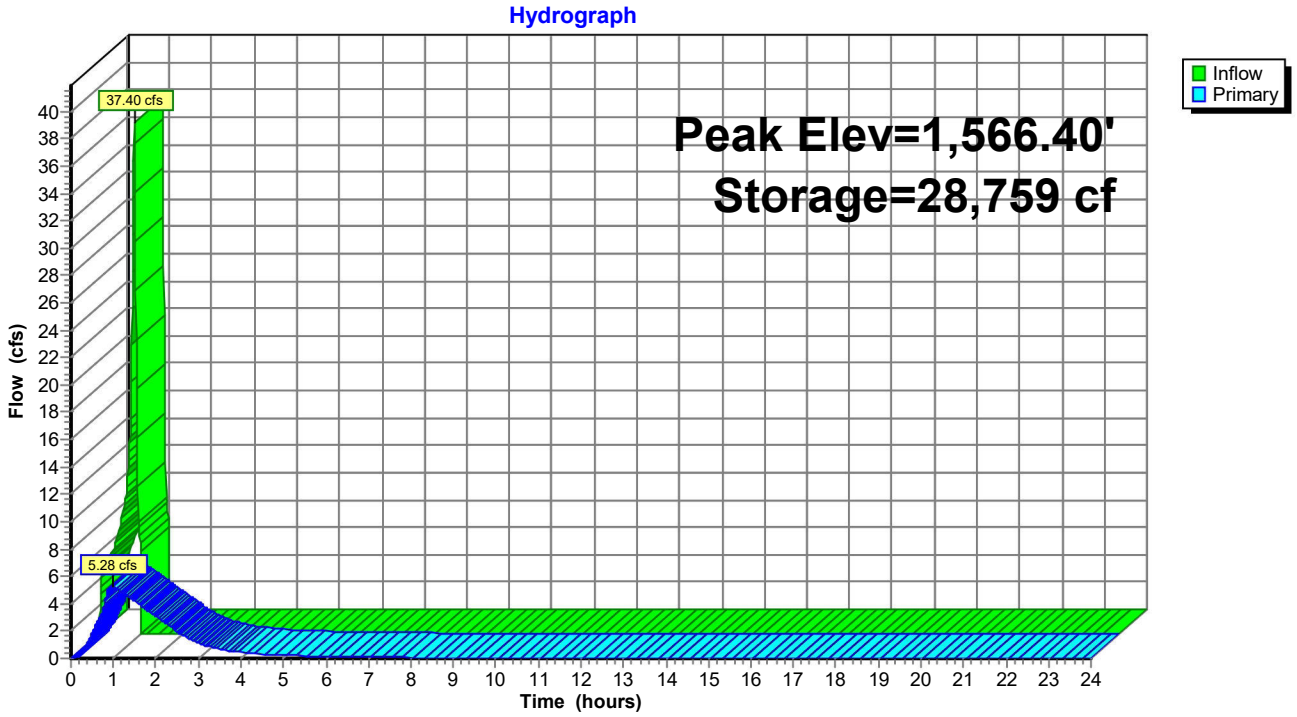
Volume	Invert	Avail.Storage	Storage Description
#1	1,563.95'	41,620 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,563.95	12,376	0.0	0	0	12,376
1,564.95	12,376	95.0	11,757	11,757	12,770
1,565.95	12,376	95.0	11,757	23,514	13,165
1,566.95	12,376	95.0	11,757	35,272	13,559
1,567.49	12,376	95.0	6,349	41,620	13,772

Device	Routing	Invert	Outlet Devices
#1	Primary	1,563.95'	**12.00" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#2	Primary	1,566.99'	**Custom Weir, Cv= 2.62 (C= 3.28)**
			Head (feet) 0.00 0.50 0.50
			Width (feet) 36.00 36.00 0.00

Primary OutFlow Max=5.27 cfs @ 1.00 hrs HW=1,566.40' (Free Discharge)
└**1=Orifice** (Orifice Controls 5.27 cfs @ 6.72 fps)
└**2=Custom Weir** (Controls 0.00 cfs)

Pond 5P: Tank A



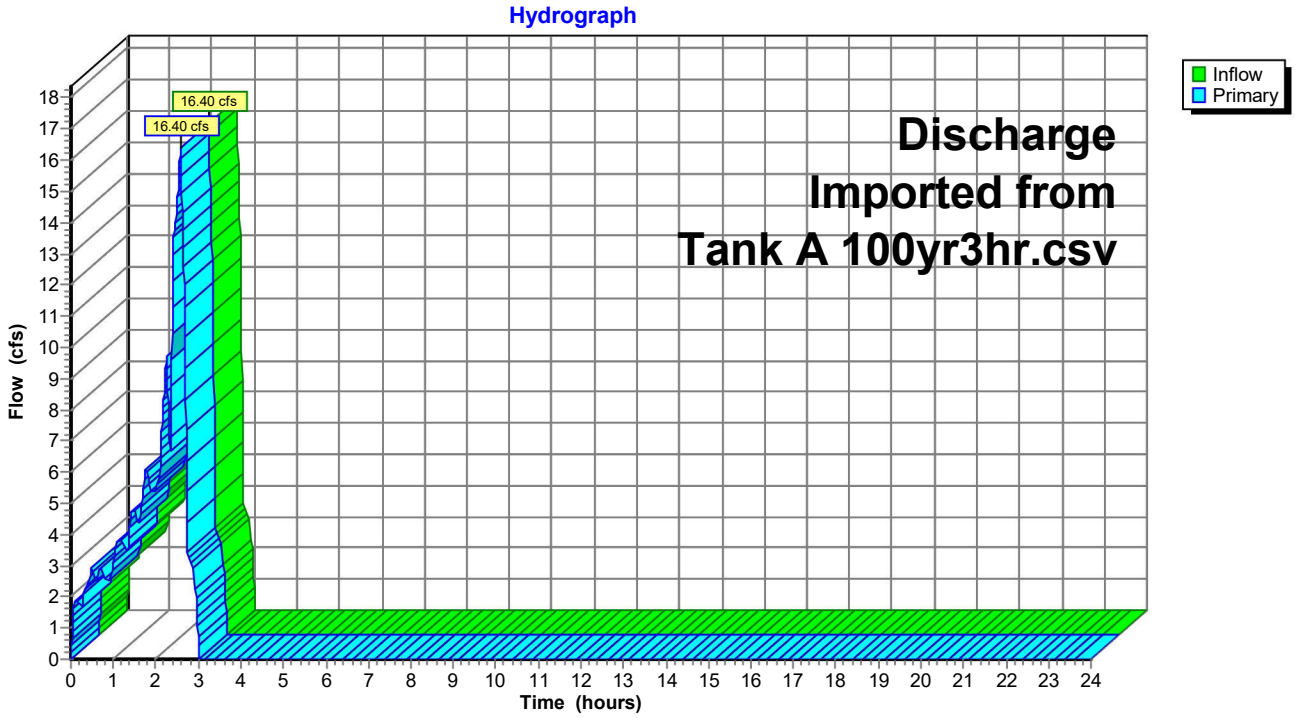
Summary for Link 6L: 100-yr 3-hr

Inflow = 16.40 cfs @ 2.58 hrs, Volume= 1.248 af
Primary = 16.40 cfs @ 2.58 hrs, Volume= 1.248 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 6P : Tank A

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Discharge Imported from Tank A 100yr3hr.csv

Link 6L: 100-yr 3-hr



Summary for Pond 6P: Tank A

Inflow	=	16.40 cfs @	2.58 hrs, Volume=	1.248 af
Outflow	=	5.47 cfs @	2.73 hrs, Volume=	1.238 af, Atten= 67%, Lag= 9.0 min
Primary	=	5.47 cfs @	2.73 hrs, Volume=	1.238 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 1,566.54' @ 2.73 hrs Surf.Area= 12,376 sf Storage= 30,484 cf

Plug-Flow detention time= 90.4 min calculated for 1.238 af (99% of inflow)
Center-of-Mass det. time= 90.4 min (203.8 - 113.4)

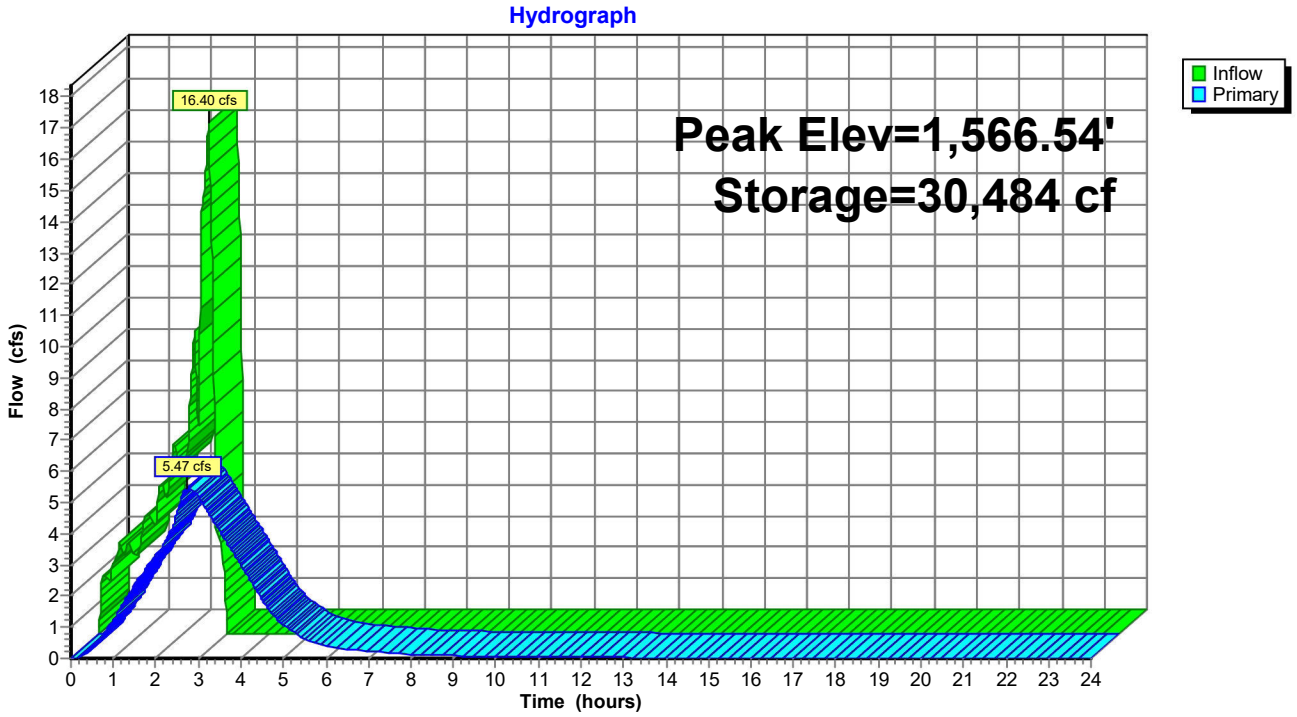
Volume	Invert	Avail.Storage	Storage Description
#1	1,563.95'	41,620 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,563.95	12,376	0.0	0	0	12,376
1,564.95	12,376	95.0	11,757	11,757	12,770
1,565.95	12,376	95.0	11,757	23,514	13,165
1,566.95	12,376	95.0	11,757	35,272	13,559
1,567.49	12,376	95.0	6,349	41,620	13,772

Device	Routing	Invert	Outlet Devices
#1	Primary	1,563.95'	**12.00" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#2	Primary	1,566.99'	**Custom Weir, Cv= 2.62 (C= 3.28)**
			Head (feet) 0.00 0.50 0.50
			Width (feet) 36.00 36.00 0.00

Primary OutFlow Max=5.47 cfs @ 2.73 hrs HW=1,566.54' (Free Discharge)
└**1=Orifice** (Orifice Controls 5.47 cfs @ 6.97 fps)
└**2=Custom Weir** (Controls 0.00 cfs)

Pond 6P: Tank A



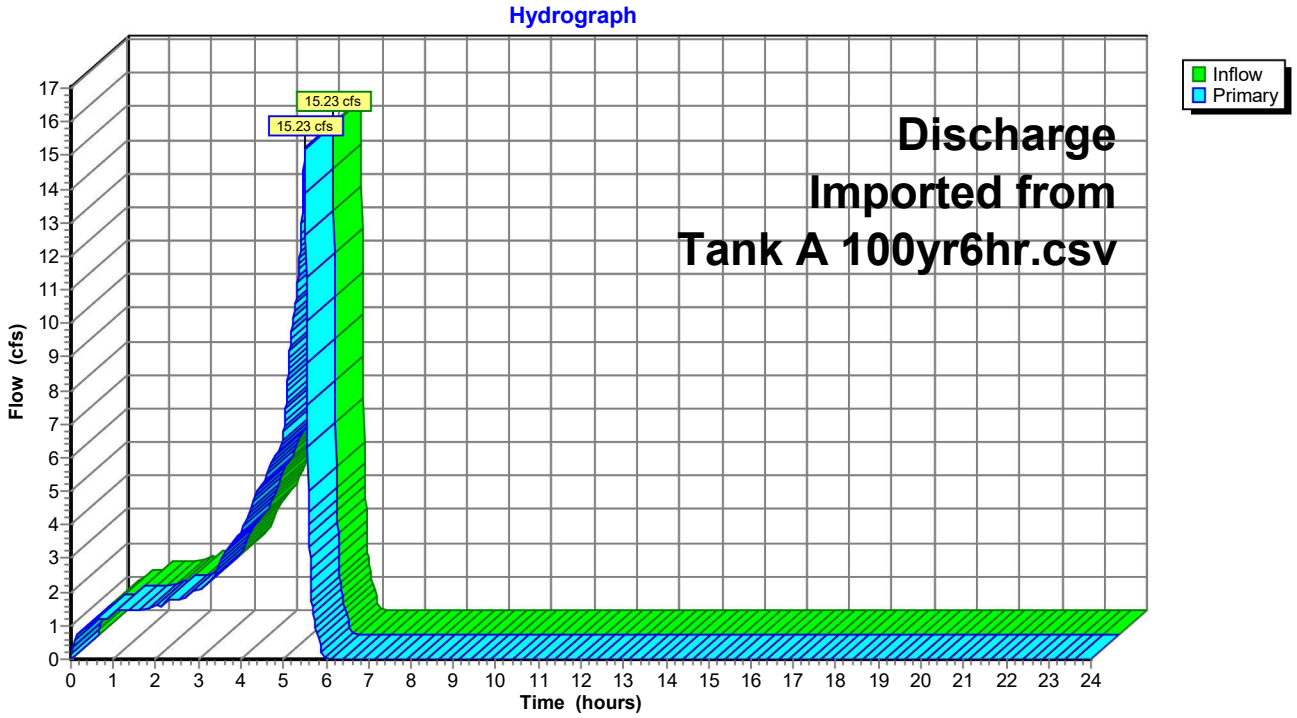
Summary for Link 7L: 100-yr 6-hr

Inflow = 15.23 cfs @ 5.50 hrs, Volume= 1.562 af
Primary = 15.23 cfs @ 5.50 hrs, Volume= 1.562 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 7P : Tank A

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Discharge Imported from Tank A 100yr6hr.csv

Link 7L: 100-yr 6-hr



Summary for Pond 7P: Tank A

Inflow	=	15.23 cfs @	5.50 hrs,	Volume=	1.562 af
Outflow	=	5.46 cfs @	5.58 hrs,	Volume=	1.551 af, Atten= 64%, Lag= 4.8 min
Primary	=	5.46 cfs @	5.58 hrs,	Volume=	1.551 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 1,566.54' @ 5.58 hrs Surf.Area= 12,376 sf Storage= 30,414 cf

Plug-Flow detention time= 89.0 min calculated for 1.551 af (99% of inflow)
Center-of-Mass det. time= 88.2 min (329.8 - 241.6)

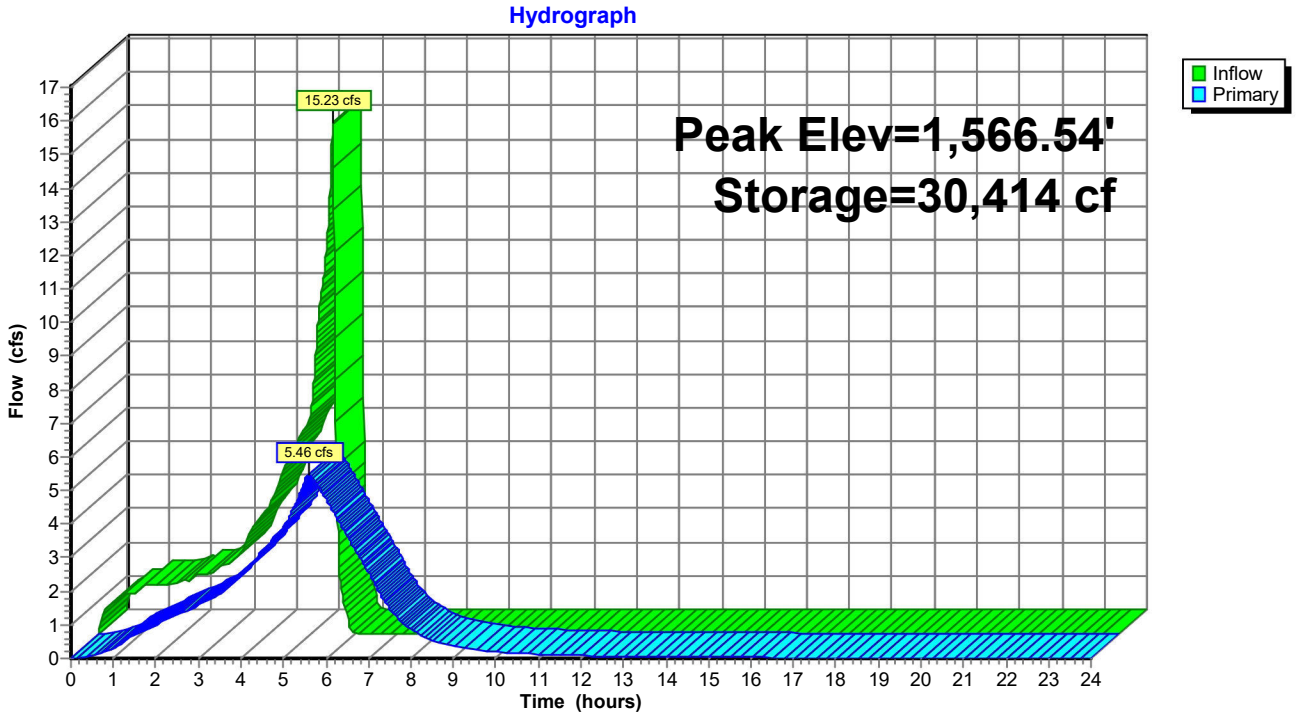
Volume	Invert	Avail.Storage	Storage Description
#1	1,563.95'	41,620 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,563.95	12,376	0.0	0	0	12,376
1,564.95	12,376	95.0	11,757	11,757	12,770
1,565.95	12,376	95.0	11,757	23,514	13,165
1,566.95	12,376	95.0	11,757	35,272	13,559
1,567.49	12,376	95.0	6,349	41,620	13,772

Device	Routing	Invert	Outlet Devices
#1	Primary	1,563.95'	**12.00" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#2	Primary	1,566.99'	**Custom Weir, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.50 0.50 Width (feet) 36.00 36.00 0.00

Primary OutFlow Max=5.46 cfs @ 5.58 hrs HW=1,566.54' (Free Discharge)
└**1=Orifice** (Orifice Controls 5.46 cfs @ 6.96 fps)
└**2=Custom Weir** (Controls 0.00 cfs)

Pond 7P: Tank A



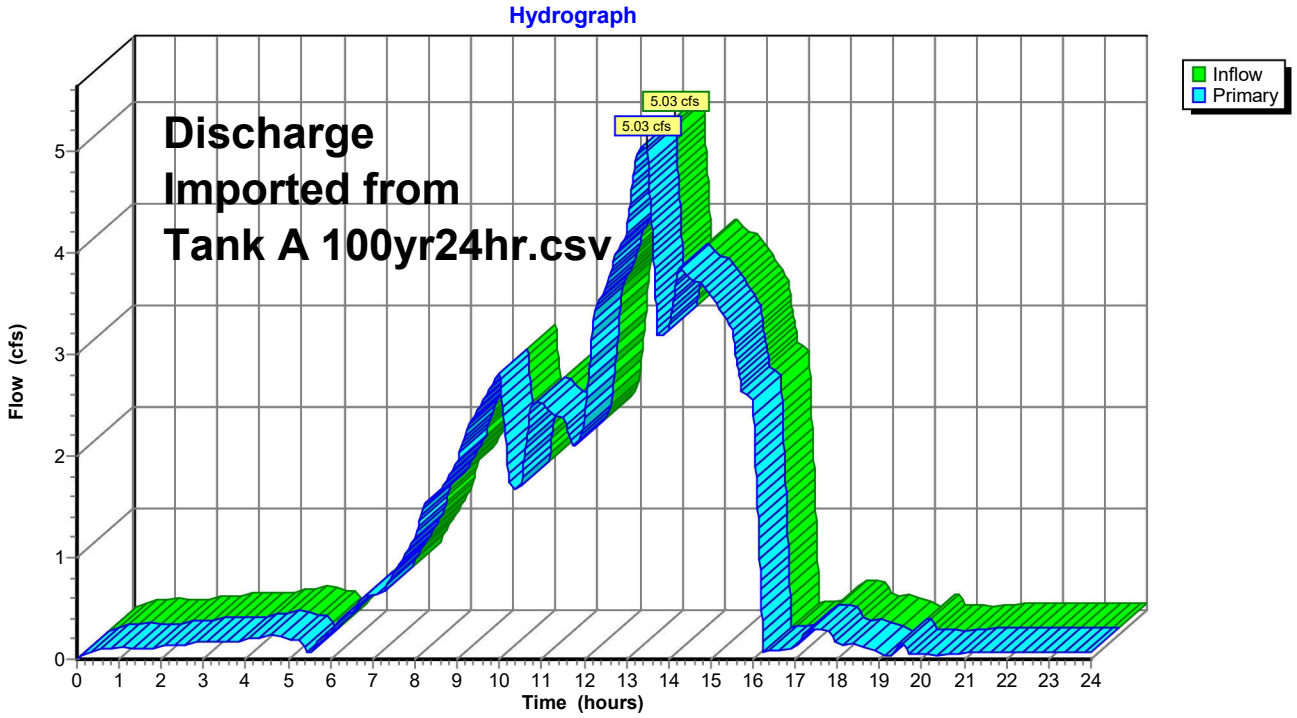
Summary for Link 8L: 100-yr 24-hr

Inflow = 5.03 cfs @ 13.50 hrs, Volume= 2.181 af
Primary = 5.03 cfs @ 13.50 hrs, Volume= 2.181 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 8P : Tank A

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Discharge Imported from Tank A 100yr24hr.csv

Link 8L: 100-yr 24-hr



Summary for Pond 8P: Tank A

Inflow	=	5.03 cfs @	13.50 hrs,	Volume=	2.181 af
Outflow	=	3.63 cfs @	13.69 hrs,	Volume=	2.142 af, Atten= 28%, Lag= 11.4 min
Primary	=	3.63 cfs @	13.69 hrs,	Volume=	2.142 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 1,565.37' @ 13.69 hrs Surf.Area= 12,376 sf Storage= 16,687 cf

Plug-Flow detention time= 85.6 min calculated for 2.142 af (98% of inflow)
Center-of-Mass det. time= 76.4 min (807.3 - 730.9)

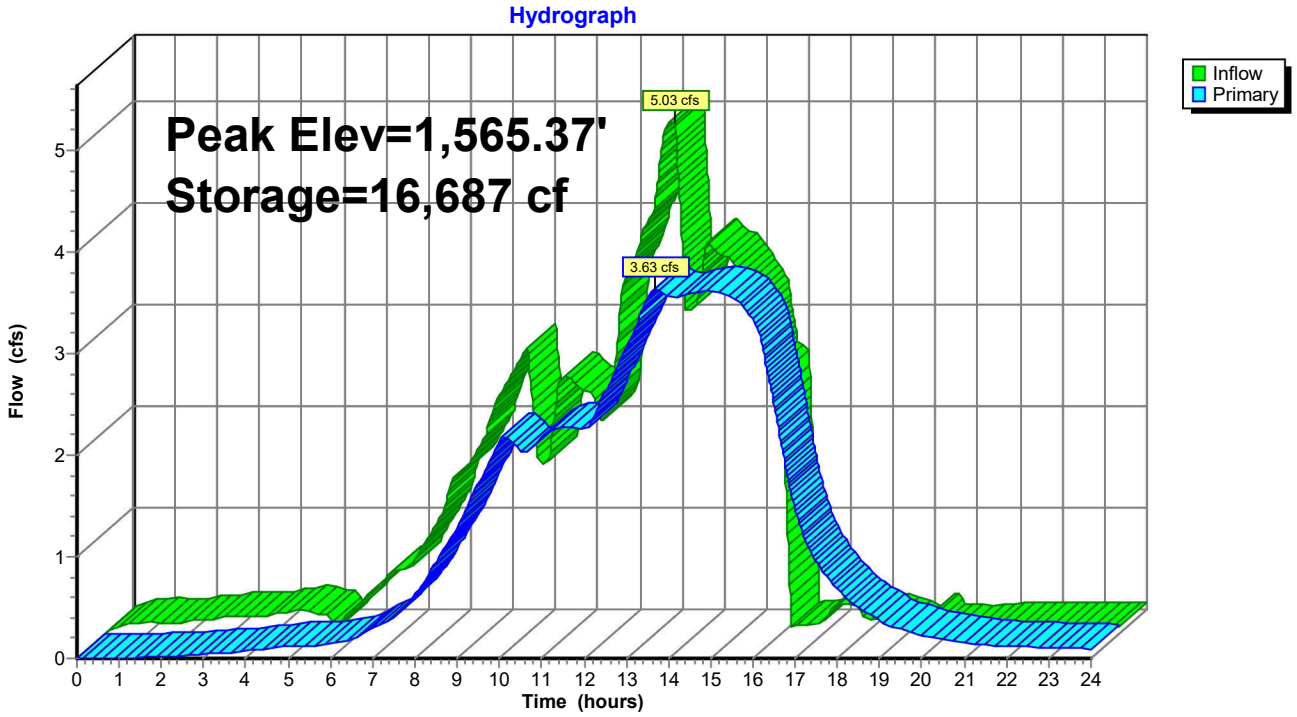
Volume	Invert	Avail.Storage	Storage Description
#1	1,563.95'	41,620 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,563.95	12,376	0.0	0	0	12,376
1,564.95	12,376	95.0	11,757	11,757	12,770
1,565.95	12,376	95.0	11,757	23,514	13,165
1,566.95	12,376	95.0	11,757	35,272	13,559
1,567.49	12,376	95.0	6,349	41,620	13,772

Device	Routing	Invert	Outlet Devices
#1	Primary	1,563.95'	**12.00" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#2	Primary	1,566.99'	**Custom Weir, Cv= 2.62 (C= 3.28)**
			Head (feet) 0.00 0.50 0.50
			Width (feet) 36.00 36.00 0.00

Primary OutFlow Max=3.63 cfs @ 13.69 hrs HW=1,565.37' (Free Discharge)
└**1=Orifice** (Orifice Controls 3.63 cfs @ 4.62 fps)
└**2=Custom Weir** (Controls 0.00 cfs)

Pond 8P: Tank A



Existing Condition Node 302
2-yr Storm Event

Total Area	Total Impervious Area	%Imp	Fp (infiltration rate based on RI, Plate E-6.2)
8.91	0	0.00	0.49

Constant Loss Rate

F= Fp(1-0.9Ai)
F= 0.4900

For 24-hr storms, Ft is variable loss rate

Ft= C[24-(T/60)]^1.55+Fm
Ft= 0.8653

C= (F-Fm)/54
C= 0.0045

Fm= 0.5F
Fm= 0.2450

T= 7.5

RCFC & WCD HYDROLOGY MANUAL	SYNTHETIC UNIT HYDROGRAPH METHOD UNIT HYDROGRAPH AND EFFECTIVE RAIN CALCULATION FORM	PROJECT: ROCAS GRANDES 2 JOB #: 3816 PAGE

[1] CONCENTRATION POINT			[2] AREA DESIGNATION					
[3] DRAINAGE AREA - ACRES	8.91	ACRES		[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])			N/A	
[5] UNIT TIME - MINUTES	5	MIN PER E-1.2		[6] LAG TIME-MINUTES				MIN
[7] UNIT TIME-PERCENT OF LAG	N/A			[8] S-CURVE			N/A	
[9] STORM FREQUENCY & DURATION	2 YEAR	1 HOUR		[10] TOTAL ADJUSTED STORM RAIN-INCHES			0.475	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR	N/A			[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR			N/A	
[13] CONSTANT LOSS RATE-IN/HR	0.4900	IN/HR		[14] LOW LOSS RATE-PERCENT			0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.00	0	0.000	0.00
5					4.2	0.239	0.49	0.192	0.048	0.43
10					4.3	0.245	0.49	0.196	0.049	0.44
15					5	0.285	0.49	0.228	0.057	0.51
20					5	0.285	0.49	0.228	0.057	0.51
25					5.8	0.331	0.49	0.264	0.066	0.59
30					6.5	0.371	0.49	0.296	0.074	0.67
35					7.4	0.422	0.49	0.337	0.084	0.76
40					8.6	0.490	0.49	0.392	0.000	0.00
45					12.3	0.701	0.49	0.561	0.211	1.90
50					29.1	1.659	0.49	1.327	1.169	10.50
55					6.8	0.388	0.49	0.310	0.078	0.70
60					5	0.285	0.49	0.228	0.057	0.51
				Σ[20] -	100			Σ[23] -	1.95	17.52

RCFC & WCD HYDROLOGY MANUAL	SYNTHETIC UNIT HYDROGRAPH METHOD UNIT HYDROGRAPH AND EFFECTIVE RAIN CALCULATION FORM	PROJECT: ROCAS GRANDES 2 JOB #: 3816 PAGE

[1] CONCENTRATION POINT			[2] AREA DESIGNATION				
[3] DRAINAGE AREA - ACRES	8.91	ACRES		[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])		N/A	
[5] UNIT TIME - MINUTES	5	MIN PER E-1.2		[6] LAG TIME-MINUTES			MIN
[7] UNIT TIME-PERCENT OF LAG	N/A			[8] S-CURVE		N/A	
[9] STORM FREQUENCY & DURATION	2 YEAR	3 HOUR		[10] TOTAL ADJUSTED STORM RAIN-INCHES		0.833	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR	N/A			[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR		N/A	
[13] CONSTANT LOSS RATE-IN/HR	0.4900	IN/HR		[14] LOW LOSS RATE-PERCENT		0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.49	0	0.000	0.00
5					1.3	0.129948	0.49	0.10396	0.026	0.23
10					1.3	0.129948	0.49	0.10396	0.026	0.23
15					1.1	0.109956	0.49	0.08796	0.022	0.20
20					1.5	0.14994	0.49	0.11995	0.030	0.27
25					1.5	0.14994	0.49	0.11995	0.030	0.27
30					1.8	0.179928	0.49	0.14394	0.036	0.32
35					1.5	0.14994	0.49	0.11995	0.030	0.27
40					1.8	0.179928	0.49	0.14394	0.036	0.32
45					1.8	0.179928	0.49	0.14394	0.036	0.32
50					1.5	0.14994	0.49	0.11995	0.030	0.27
55					1.6	0.159936	0.49	0.12795	0.032	0.29
60					1.8	0.179928	0.49	0.14394	0.036	0.32
65					2.2	0.219912	0.49	0.17593	0.044	0.39
70					2.2	0.219912	0.49	0.17593	0.044	0.39
75					2.2	0.219912	0.49	0.17593	0.044	0.39
80					2	0.19992	0.49	0.15994	0.040	0.36
85					2.6	0.259896	0.49	0.20792	0.052	0.46
90					2.7	0.269892	0.49	0.21591	0.054	0.48
95					2.4	0.239904	0.49	0.19192	0.048	0.43
100					2.7	0.269892	0.49	0.21591	0.054	0.48
105					3.3	0.329868	0.49	0.26389	0.066	0.59
110					3.1	0.309876	0.49	0.2479	0.062	0.55
115					2.9	0.289884	0.49	0.23191	0.058	0.52
120					3	0.29988	0.49	0.2399	0.060	0.53
125					3.1	0.309876	0.49	0.2479	0.062	0.55
130					4.2	0.419832	0.49	0.33587	0.084	0.75
135					5	0.4998	0.49	0.39984	0.010	0.09
140					3.5	0.34986	0.49	0.27989	0.070	0.62
145					6.8	0.679728	0.49	0.54378	0.190	1.69
150					7.3	0.729708	0.49	0.58377	0.240	2.14
155					8.2	0.819672	0.49	0.65574	0.330	2.94
160					5.9	0.589764	0.49	0.47181	0.100	0.89
165					2	0.19992	0.49	0.15994	0.040	0.36
170					1.8	0.179928	0.49	0.14394	0.036	0.32
175					1.8	0.179928	0.49	0.14394	0.036	0.32
180					0.6	0.059976	0.49	0.04798	0.012	0.11
				Σ[20] -	100			Σ[23] -	2.20	19.64

RCFC & WCD HYDROLOGY MANUAL	SYNTHETIC UNIT HYDROGRAPH METHOD UNIT HYDROGRAPH AND EFFECTIVE RAIN CALCULATION FORM	PROJECT: ROCAS GRANDES 2 JOB #: 3816 PAGE

[1] CONCENTRATION POINT			[2] AREA DESIGNATION				
[3] DRAINAGE AREA - ACRES	8.91	ACRES	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])				
[5] UNIT TIME - MINUTES	5	MIN PER E-1.2	[6] LAG TIME-MINUTES				MIN
[7] UNIT TIME-PERCENT OF LAG	N/A		[8] S-CURVE			N/A	
[9] STORM FREQUENCY & DURATION	2 YEAR	6 HOUR	[10] TOTAL ADJUSTED STORM RAIN-INCHES			1.16	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR	N/A		[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR			N/A	
[13] CONSTANT LOSS RATE-IN/HR	0.4900	IN/HR	[14] LOW LOSS RATE-PERCENT			0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.49	0	0.000	0.00
5					0.5	0.0696	0.49	0.05568	0.014	0.12
10					0.6	0.08352	0.49	0.06682	0.017	0.15
15					0.6	0.08352	0.49	0.06682	0.017	0.15
20					0.6	0.08352	0.49	0.06682	0.017	0.15
25					0.6	0.08352	0.49	0.06682	0.017	0.15
30					0.7	0.09744	0.49	0.07795	0.019	0.17
35					0.7	0.09744	0.49	0.07795	0.019	0.17
40					0.7	0.09744	0.49	0.07795	0.019	0.17
45					0.7	0.09744	0.49	0.07795	0.019	0.17
50					0.7	0.09744	0.49	0.07795	0.019	0.17
55					0.7	0.09744	0.49	0.07795	0.019	0.17
60					0.8	0.11136	0.49	0.08909	0.022	0.20
65					0.8	0.11136	0.49	0.08909	0.022	0.20
70					0.8	0.11136	0.49	0.08909	0.022	0.20
75					0.8	0.11136	0.49	0.08909	0.022	0.20
80					0.8	0.11136	0.49	0.08909	0.022	0.20
85					0.8	0.11136	0.49	0.08909	0.022	0.20
90					0.8	0.11136	0.49	0.08909	0.022	0.20
95					0.8	0.11136	0.49	0.08909	0.022	0.20
100					0.8	0.11136	0.49	0.08909	0.022	0.20
105					0.8	0.11136	0.49	0.08909	0.022	0.20
110					0.8	0.11136	0.49	0.08909	0.022	0.20
115					0.8	0.11136	0.49	0.08909	0.022	0.20
120					0.9	0.12528	0.49	0.10022	0.025	0.22
125					0.8	0.11136	0.49	0.08909	0.022	0.20
130					0.9	0.12528	0.49	0.10022	0.025	0.22
135					0.9	0.12528	0.49	0.10022	0.025	0.22
140					0.9	0.12528	0.49	0.10022	0.025	0.22
145					0.9	0.12528	0.49	0.10022	0.025	0.22
150					0.9	0.12528	0.49	0.10022	0.025	0.22
155					0.9	0.12528	0.49	0.10022	0.025	0.22
160					0.9	0.12528	0.49	0.10022	0.025	0.22
165					1	0.1392	0.49	0.11136	0.028	0.25
170					1	0.1392	0.49	0.11136	0.028	0.25
175					1	0.1392	0.49	0.11136	0.028	0.25
180					1	0.1392	0.49	0.11136	0.028	0.25
185					1	0.1392	0.49	0.11136	0.028	0.25
190					1.1	0.15312	0.49	0.1225	0.031	0.27
195					1.1	0.15312	0.49	0.1225	0.031	0.27
200					1.1	0.15312	0.49	0.1225	0.031	0.27
205					1.2	0.16704	0.49	0.13363	0.033	0.30

210						1.3	0.18096	0.49	0.14477	0.036	0.32
215						1.4	0.19488	0.49	0.1559	0.039	0.35
220						1.4	0.19488	0.49	0.1559	0.039	0.35
225						1.5	0.2088	0.49	0.16704	0.042	0.37
230						1.5	0.2088	0.49	0.16704	0.042	0.37
235						1.6	0.22272	0.49	0.17818	0.045	0.40
240						1.6	0.22272	0.49	0.17818	0.045	0.40
245						1.7	0.23664	0.49	0.18931	0.047	0.42
250						1.8	0.25056	0.49	0.20045	0.050	0.45
255						1.9	0.26448	0.49	0.21158	0.053	0.47
260						2	0.2784	0.49	0.22272	0.056	0.50
265						2.1	0.29232	0.49	0.23386	0.058	0.52
270						2.1	0.29232	0.49	0.23386	0.058	0.52
275						2.2	0.30624	0.49	0.24499	0.061	0.55
280						2.3	0.32016	0.49	0.25613	0.064	0.57
285						2.4	0.33408	0.49	0.26726	0.067	0.60
290						2.4	0.33408	0.49	0.26726	0.067	0.60
295						2.5	0.348	0.49	0.2784	0.070	0.62
300						2.6	0.36192	0.49	0.28954	0.072	0.64
305						3.1	0.43152	0.49	0.34522	0.086	0.77
310						3.6	0.50112	0.49	0.4009	0.011	0.10
315						3.9	0.54288	0.49	0.4343	0.053	0.47
320						4.2	0.58464	0.49	0.46771	0.095	0.84
325						4.7	0.65424	0.49	0.52339	0.164	1.46
330						5.6	0.77952	0.49	0.62362	0.290	2.58
335						1.9	0.26448	0.49	0.21158	0.053	0.47
340						0.9	0.12528	0.49	0.10022	0.025	0.22
345						0.6	0.08352	0.49	0.06682	0.017	0.15
350						0.5	0.0696	0.49	0.05568	0.014	0.12
355						0.3	0.04176	0.49	0.03341	0.008	0.07
360						0.2	0.02784	0.49	0.02227	0.006	0.05
					Σ[20] -	100			Σ[23] -	2.78	24.80

RCFC & WCD HYDROLOGY MANUAL	SYNTHETIC UNIT HYDROGRAPH METHOD UNIT HYDROGRAPH AND EFFECTIVE RAIN CALCULATION FORM	PROJECT: ROCAS GRANDES 2 JOB #: 3816 PAGE

[1] CONCENTRATION POINT			[2] AREA DESIGNATION					
[3] DRAINAGE AREA - ACRES	8.91	ACRES		[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])				
[5] UNIT TIME - MINUTES	15	MIN PER E-1.2		[6] LAG TIME-MINUTES				MIN
[7] UNIT TIME-PERCENT OF LAG	N/A			[8] S-CURVE			N/A	
[9] STORM FREQUENCY & DURATION	2 YEAR	24 HOUR		[10] TOTAL ADJUSTED STORM RAIN-INCHES			1.96	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR	0.8653			[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR				
[13] CONSTANT LOSS RATE-IN/HR		IN/HR		[14] LOW LOSS RATE-PERCENT			0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.00	0	0.000	0.00
15					0.2	0.016	0.860	0.01254	0.003	0.03
30					0.3	0.024	0.850	0.01882	0.005	0.04
45					0.3	0.024	0.840	0.01882	0.005	0.04
60					0.4	0.031	0.831	0.02509	0.006	0.06
75					0.3	0.024	0.821	0.01882	0.005	0.04
90					0.3	0.024	0.811	0.01882	0.005	0.04
105					0.3	0.024	0.801	0.01882	0.005	0.04
120					0.4	0.031	0.792	0.02509	0.006	0.06
135					0.4	0.031	0.782	0.02509	0.006	0.06
150					0.4	0.031	0.773	0.02509	0.006	0.06
165					0.5	0.039	0.763	0.03136	0.008	0.07
180					0.5	0.039	0.754	0.03136	0.008	0.07
195					0.5	0.039	0.745	0.03136	0.008	0.07
210					0.5	0.039	0.735	0.03136	0.008	0.07
225					0.5	0.039	0.726	0.03136	0.008	0.07
240					0.6	0.047	0.717	0.03763	0.009	0.08
255					0.6	0.047	0.708	0.03763	0.009	0.08
270					0.7	0.055	0.699	0.0439	0.011	0.10
285					0.7	0.055	0.690	0.0439	0.011	0.10
300					0.8	0.063	0.681	0.05018	0.013	0.11
315					0.6	0.047	0.672	0.03763	0.009	0.08
330					0.7	0.055	0.664	0.0439	0.011	0.10
345					0.8	0.063	0.655	0.05018	0.013	0.11
360					0.8	0.063	0.646	0.05018	0.013	0.11
375					0.9	0.071	0.638	0.05645	0.014	0.13
390					0.9	0.071	0.629	0.05645	0.014	0.13
405					1	0.078	0.621	0.06272	0.016	0.14
420					1	0.078	0.613	0.06272	0.016	0.14
435					1	0.078	0.604	0.06272	0.016	0.14
450					1.1	0.086	0.596	0.06899	0.017	0.15
465					1.2	0.094	0.588	0.07526	0.019	0.17
480					1.3	0.102	0.580	0.08154	0.020	0.18
495					1.5	0.118	0.572	0.09408	0.024	0.21
510					1.5	0.118	0.564	0.09408	0.024	0.21
525					1.6	0.125	0.556	0.10035	0.025	0.22
540					1.7	0.133	0.548	0.10662	0.027	0.24
555					1.9	0.149	0.540	0.11917	0.030	0.27
570					2	0.157	0.533	0.12544	0.031	0.28
585					2.1	0.165	0.525	0.13171	0.033	0.29
600					2.2	0.172	0.518	0.13798	0.034	0.31
615					1.5	0.118	0.510	0.09408	0.024	0.21

630					1.5	0.118	0.503	0.09408	0.024	0.21
645					2	0.157	0.496	0.12544	0.031	0.28
660					2	0.157	0.488	0.12544	0.031	0.28
675					1.9	0.149	0.481	0.11917	0.030	0.27
690					1.9	0.149	0.474	0.11917	0.030	0.27
705					1.7	0.133	0.467	0.10662	0.027	0.24
720					1.8	0.141	0.460	0.1129	0.028	0.25
735					2.5	0.196	0.453	0.1568	0.039	0.35
750					2.6	0.204	0.447	0.16307	0.041	0.36
765					2.8	0.220	0.440	0.17562	0.044	0.39
780					2.9	0.227	0.433	0.18189	0.045	0.41
795					3.4	0.267	0.427	0.21325	0.053	0.48
810					3.4	0.267	0.420	0.21325	0.053	0.48
825					2.3	0.180	0.414	0.14426	0.036	0.32
840					2.3	0.180	0.408	0.14426	0.036	0.32
855					2.7	0.212	0.402	0.16934	0.042	0.38
870					2.6	0.204	0.395	0.16307	0.041	0.36
885					2.6	0.204	0.389	0.16307	0.041	0.36
900					2.5	0.196	0.384	0.1568	0.039	0.35
915					2.4	0.188	0.378	0.15053	0.038	0.34
930					2.3	0.180	0.372	0.14426	0.036	0.32
945					1.9	0.149	0.366	0.11917	0.030	0.27
960					1.9	0.149	0.361	0.11917	0.030	0.27
975					0.4	0.031	0.355	0.02509	0.006	0.06
990					0.4	0.031	0.350	0.02509	0.006	0.06
1005					0.3	0.024	0.345	0.01882	0.005	0.04
1020					0.3	0.024	0.339	0.01882	0.005	0.04
1035					0.5	0.039	0.334	0.03136	0.008	0.07
1050					0.5	0.039	0.329	0.03136	0.008	0.07
1065					0.5	0.039	0.324	0.03136	0.008	0.07
1080					0.4	0.031	0.320	0.02509	0.006	0.06
1095					0.4	0.031	0.315	0.02509	0.006	0.06
1110					0.4	0.031	0.310	0.02509	0.006	0.06
1125					0.3	0.024	0.306	0.01882	0.005	0.04
1140					0.2	0.016	0.302	0.01254	0.003	0.03
1155					0.3	0.024	0.297	0.01882	0.005	0.04
1170					0.4	0.031	0.293	0.02509	0.006	0.06
1185					0.3	0.024	0.289	0.01882	0.005	0.04
1200					0.2	0.016	0.285	0.01254	0.003	0.03
1215					0.3	0.024	0.282	0.01882	0.005	0.04
1230					0.3	0.024	0.278	0.01882	0.005	0.04
1245					0.3	0.024	0.275	0.01882	0.005	0.04
1260					0.2	0.016	0.271	0.01254	0.003	0.03
1275					0.3	0.024	0.268	0.01882	0.005	0.04
1290					0.2	0.016	0.265	0.01254	0.003	0.03
1305					0.3	0.024	0.262	0.01882	0.005	0.04
1320					0.2	0.016	0.259	0.01254	0.003	0.03
1335					0.3	0.024	0.257	0.01882	0.005	0.04
1350					0.2	0.016	0.255	0.01254	0.003	0.03
1365					0.2	0.016	0.252	0.01254	0.003	0.03
1380					0.2	0.016	0.250	0.01254	0.003	0.03
1395					0.2	0.016	0.249	0.01254	0.003	0.03
1410					0.2	0.016	0.247	0.01254	0.003	0.03
1425					0.2	0.016	0.246	0.01254	0.003	0.03
1440					0.2	0.016	0.245	0.01254	0.003	0.03
				Σ[20] -	100			Σ[23] -	1.568	13.971

Existing Condition Node 302
5-yr Storm Event

Total Area	Total Impervious Area	%Imp	Fp (infiltration rate based on RI, Plate E-6.2)
8.91	0	0.00	0.49

Constant Loss Rate

F= Fp(1-0.9Ai)
F= 0.4900

For 24-hr storms, Ft is variable loss rate

Ft= C[24-(T/60)]^1.55+Fm
Ft= 0.8653

C= (F-Fm)/54
C= 0.0045

Fm= 0.5F
Fm= 0.2450

T= 7.5

RCFC & WCD HYDROLOGY MANUAL	SYNTHETIC UNIT HYDROGRAPH METHOD UNIT HYDROGRAPH AND EFFECTIVE RAIN CALCULATION FORM	PROJECT: ROCAS GRANDES 2 JOB #: 3816 PAGE

[1] CONCENTRATION POINT						[2] AREA DESIGNATION					
[3] DRAINAGE AREA - ACRES			8.91	ACRES		[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])				N/A	
[5] UNIT TIME - MINUTES			5	MIN PER E-1.2		[6] LAG TIME-MINUTES					MIN
[7] UNIT TIME-PERCENT OF LAG			N/A			[8] S-CURVE				N/A	
[9] STORM FREQUENCY & DURATION			5 YEAR	1 HOUR		[10] TOTAL ADJUSTED STORM RAIN-INCHES				0.641	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR			N/A			[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR				N/A	
[13] CONSTANT LOSS RATE-IN/HR			0.4900		IN/HR	[14] LOW LOSS RATE-PERCENT				0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.00	0	0.000	0.00
5					4.2	0.323	0.49	0.258	0.065	0.58
10					4.3	0.331	0.49	0.265	0.066	0.59
15					5	0.385	0.49	0.308	0.077	0.69
20					5	0.385	0.49	0.308	0.077	0.69
25					5.8	0.446	0.49	0.357	0.089	0.80
30					6.5	0.500	0.49	0.400	0.010	0.09
35					7.4	0.569	0.49	0.455	0.079	0.71
40					8.6	0.662	0.49	0.529	0.172	1.54
45					12.3	0.946	0.49	0.757	0.456	4.10
50					29.1	2.238	0.49	1.791	1.748	15.71
55					6.8	0.523	0.49	0.418	0.033	0.30
60					5	0.385	0.49	0.308	0.077	0.69
				Σ[20] -	100			Σ[23] -	2.95	26.49

RCFC & WCD HYDROLOGY MANUAL	SYNTHETIC UNIT HYDROGRAPH METHOD UNIT HYDROGRAPH AND EFFECTIVE RAIN CALCULATION FORM	PROJECT: ROCAS GRANDES 2 JOB #: 3816 PAGE

[1] CONCENTRATION POINT			[2] AREA DESIGNATION				
[3] DRAINAGE AREA - ACRES	8.91	ACRES		[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])		N/A	
[5] UNIT TIME - MINUTES	5	MIN PER E-1.2		[6] LAG TIME-MINUTES			MIN
[7] UNIT TIME-PERCENT OF LAG	N/A			[8] S-CURVE		N/A	
[9] STORM FREQUENCY & DURATION	5 YEAR	3 HOUR		[10] TOTAL ADJUSTED STORM RAIN-INCHES		1.08	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR	N/A			[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR		N/A	
[13] CONSTANT LOSS RATE-IN/HR	0.4900	IN/HR		[14] LOW LOSS RATE-PERCENT		0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.49	0	0.000	0.00
5					1.3	0.16848	0.49	0.13478	0.034	0.30
10					1.3	0.16848	0.49	0.13478	0.034	0.30
15					1.1	0.14256	0.49	0.11405	0.029	0.25
20					1.5	0.1944	0.49	0.15552	0.039	0.35
25					1.5	0.1944	0.49	0.15552	0.039	0.35
30					1.8	0.23328	0.49	0.18662	0.047	0.42
35					1.5	0.1944	0.49	0.15552	0.039	0.35
40					1.8	0.23328	0.49	0.18662	0.047	0.42
45					1.8	0.23328	0.49	0.18662	0.047	0.42
50					1.5	0.1944	0.49	0.15552	0.039	0.35
55					1.6	0.20736	0.49	0.16589	0.041	0.37
60					1.8	0.23328	0.49	0.18662	0.047	0.42
65					2.2	0.28512	0.49	0.2281	0.057	0.51
70					2.2	0.28512	0.49	0.2281	0.057	0.51
75					2.2	0.28512	0.49	0.2281	0.057	0.51
80					2	0.2592	0.49	0.20736	0.052	0.46
85					2.6	0.33696	0.49	0.26957	0.067	0.60
90					2.7	0.34992	0.49	0.27994	0.070	0.62
95					2.4	0.31104	0.49	0.24883	0.062	0.55
100					2.7	0.34992	0.49	0.27994	0.070	0.62
105					3.3	0.42768	0.49	0.34214	0.086	0.76
110					3.1	0.40176	0.49	0.32141	0.080	0.72
115					2.9	0.37584	0.49	0.30067	0.075	0.67
120					3	0.3888	0.49	0.31104	0.078	0.69
125					3.1	0.40176	0.49	0.32141	0.080	0.72
130					4.2	0.54432	0.49	0.43546	0.054	0.48
135					5	0.648	0.49	0.5184	0.158	1.41
140					3.5	0.4536	0.49	0.36288	0.091	0.81
145					6.8	0.88128	0.49	0.70502	0.391	3.49
150					7.3	0.94608	0.49	0.75686	0.456	4.06
155					8.2	1.06272	0.49	0.85018	0.573	5.10
160					5.9	0.76464	0.49	0.61171	0.275	2.45
165					2	0.2592	0.49	0.20736	0.052	0.46
170					1.8	0.23328	0.49	0.18662	0.047	0.42
175					1.8	0.23328	0.49	0.18662	0.047	0.42
180					0.6	0.07776	0.49	0.06221	0.016	0.14
				Σ[20] -	100			Σ[23] -	3.53	31.45

RCFC & WCD HYDROLOGY MANUAL	SYNTHETIC UNIT HYDROGRAPH METHOD UNIT HYDROGRAPH AND EFFECTIVE RAIN CALCULATION FORM	PROJECT: ROCAS GRANDES 2 JOB #: 3816 PAGE

[1] CONCENTRATION POINT			[2] AREA DESIGNATION				
[3] DRAINAGE AREA - ACRES	8.91	ACRES	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])				
[5] UNIT TIME - MINUTES	5	MIN PER E-1.2	[6] LAG TIME-MINUTES				MIN
[7] UNIT TIME-PERCENT OF LAG	N/A		[8] S-CURVE			N/A	
[9] STORM FREQUENCY & DURATION	5 YEAR	6 HOUR	[10] TOTAL ADJUSTED STORM RAIN-INCHES			1.49	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR	N/A		[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR			N/A	
[13] CONSTANT LOSS RATE-IN/HR	0.4900	IN/HR	[14] LOW LOSS RATE-PERCENT			0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.49	0	0.000	0.00
5					0.5	0.0894	0.49	0.07152	0.018	0.16
10					0.6	0.10728	0.49	0.08582	0.021	0.19
15					0.6	0.10728	0.49	0.08582	0.021	0.19
20					0.6	0.10728	0.49	0.08582	0.021	0.19
25					0.6	0.10728	0.49	0.08582	0.021	0.19
30					0.7	0.12516	0.49	0.10013	0.025	0.22
35					0.7	0.12516	0.49	0.10013	0.025	0.22
40					0.7	0.12516	0.49	0.10013	0.025	0.22
45					0.7	0.12516	0.49	0.10013	0.025	0.22
50					0.7	0.12516	0.49	0.10013	0.025	0.22
55					0.7	0.12516	0.49	0.10013	0.025	0.22
60					0.8	0.14304	0.49	0.11443	0.029	0.25
65					0.8	0.14304	0.49	0.11443	0.029	0.25
70					0.8	0.14304	0.49	0.11443	0.029	0.25
75					0.8	0.14304	0.49	0.11443	0.029	0.25
80					0.8	0.14304	0.49	0.11443	0.029	0.25
85					0.8	0.14304	0.49	0.11443	0.029	0.25
90					0.8	0.14304	0.49	0.11443	0.029	0.25
95					0.8	0.14304	0.49	0.11443	0.029	0.25
100					0.8	0.14304	0.49	0.11443	0.029	0.25
105					0.8	0.14304	0.49	0.11443	0.029	0.25
110					0.8	0.14304	0.49	0.11443	0.029	0.25
115					0.8	0.14304	0.49	0.11443	0.029	0.25
120					0.9	0.16092	0.49	0.12874	0.032	0.29
125					0.8	0.14304	0.49	0.11443	0.029	0.25
130					0.9	0.16092	0.49	0.12874	0.032	0.29
135					0.9	0.16092	0.49	0.12874	0.032	0.29
140					0.9	0.16092	0.49	0.12874	0.032	0.29
145					0.9	0.16092	0.49	0.12874	0.032	0.29
150					0.9	0.16092	0.49	0.12874	0.032	0.29
155					0.9	0.16092	0.49	0.12874	0.032	0.29
160					0.9	0.16092	0.49	0.12874	0.032	0.29
165					1	0.1788	0.49	0.14304	0.036	0.32
170					1	0.1788	0.49	0.14304	0.036	0.32
175					1	0.1788	0.49	0.14304	0.036	0.32
180					1	0.1788	0.49	0.14304	0.036	0.32
185					1	0.1788	0.49	0.14304	0.036	0.32
190					1.1	0.19668	0.49	0.15734	0.039	0.35
195					1.1	0.19668	0.49	0.15734	0.039	0.35
200					1.1	0.19668	0.49	0.15734	0.039	0.35
205					1.2	0.21456	0.49	0.17165	0.043	0.38

210						1.3	0.23244	0.49	0.18595	0.046	0.41
215						1.4	0.25032	0.49	0.20026	0.050	0.45
220						1.4	0.25032	0.49	0.20026	0.050	0.45
225						1.5	0.2682	0.49	0.21456	0.054	0.48
230						1.5	0.2682	0.49	0.21456	0.054	0.48
235						1.6	0.28608	0.49	0.22886	0.057	0.51
240						1.6	0.28608	0.49	0.22886	0.057	0.51
245						1.7	0.30396	0.49	0.24317	0.061	0.54
250						1.8	0.32184	0.49	0.25747	0.064	0.57
255						1.9	0.33972	0.49	0.27178	0.068	0.61
260						2	0.3576	0.49	0.28608	0.072	0.64
265						2.1	0.37548	0.49	0.30038	0.075	0.67
270						2.1	0.37548	0.49	0.30038	0.075	0.67
275						2.2	0.39336	0.49	0.31469	0.079	0.70
280						2.3	0.41124	0.49	0.32899	0.082	0.73
285						2.4	0.42912	0.49	0.3433	0.086	0.76
290						2.4	0.42912	0.49	0.3433	0.086	0.76
295						2.5	0.447	0.49	0.3576	0.089	0.80
300						2.6	0.46488	0.49	0.3719	0.093	0.83
305						3.1	0.55428	0.49	0.44342	0.064	0.57
310						3.6	0.64368	0.49	0.51494	0.154	1.37
315						3.9	0.69732	0.49	0.55786	0.207	1.85
320						4.2	0.75096	0.49	0.60077	0.261	2.33
325						4.7	0.84036	0.49	0.67229	0.350	3.12
330						5.6	1.00128	0.49	0.80102	0.511	4.56
335						1.9	0.33972	0.49	0.27178	0.068	0.61
340						0.9	0.16092	0.49	0.12874	0.032	0.29
345						0.6	0.10728	0.49	0.08582	0.021	0.19
350						0.5	0.0894	0.49	0.07152	0.018	0.16
355						0.3	0.05364	0.49	0.04291	0.011	0.10
360						0.2	0.03576	0.49	0.02861	0.007	0.06
					Σ[20] -	100			Σ[23] -	4.23	37.66

RCFC & WCD HYDROLOGY MANUAL	SYNTHETIC UNIT HYDROGRAPH METHOD UNIT HYDROGRAPH AND EFFECTIVE RAIN CALCULATION FORM	PROJECT: ROCAS GRANDES 2 JOB #: 3816 PAGE

[1] CONCENTRATION POINT			[2] AREA DESIGNATION					
[3] DRAINAGE AREA - ACRES	8.91	ACRES	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])					
[5] UNIT TIME - MINUTES	15	MIN PER E-1.2	[6] LAG TIME-MINUTES					MIN
[7] UNIT TIME-PERCENT OF LAG	N/A		[8] S-CURVE				N/A	
[9] STORM FREQUENCY & DURATION	5 YEAR	24 HOUR	[10] TOTAL ADJUSTED STORM RAIN-INCHES				2.59	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR	0.8653		[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR					
[13] CONSTANT LOSS RATE-IN/HR		IN/HR	[14] LOW LOSS RATE-PERCENT				0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.00	0	0.000	0.00
15					0.2	0.021	0.860	0.01658	0.004	0.04
30					0.3	0.031	0.850	0.02486	0.006	0.06
45					0.3	0.031	0.840	0.02486	0.006	0.06
60					0.4	0.041	0.831	0.03315	0.008	0.07
75					0.3	0.031	0.821	0.02486	0.006	0.06
90					0.3	0.031	0.811	0.02486	0.006	0.06
105					0.3	0.031	0.801	0.02486	0.006	0.06
120					0.4	0.041	0.792	0.03315	0.008	0.07
135					0.4	0.041	0.782	0.03315	0.008	0.07
150					0.4	0.041	0.773	0.03315	0.008	0.07
165					0.5	0.052	0.763	0.04144	0.010	0.09
180					0.5	0.052	0.754	0.04144	0.010	0.09
195					0.5	0.052	0.745	0.04144	0.010	0.09
210					0.5	0.052	0.735	0.04144	0.010	0.09
225					0.5	0.052	0.726	0.04144	0.010	0.09
240					0.6	0.062	0.717	0.04973	0.012	0.11
255					0.6	0.062	0.708	0.04973	0.012	0.11
270					0.7	0.073	0.699	0.05802	0.015	0.13
285					0.7	0.073	0.690	0.05802	0.015	0.13
300					0.8	0.083	0.681	0.0663	0.017	0.15
315					0.6	0.062	0.672	0.04973	0.012	0.11
330					0.7	0.073	0.664	0.05802	0.015	0.13
345					0.8	0.083	0.655	0.0663	0.017	0.15
360					0.8	0.083	0.646	0.0663	0.017	0.15
375					0.9	0.093	0.638	0.07459	0.019	0.17
390					0.9	0.093	0.629	0.07459	0.019	0.17
405					1	0.104	0.621	0.08288	0.021	0.18
420					1	0.104	0.613	0.08288	0.021	0.18
435					1	0.104	0.604	0.08288	0.021	0.18
450					1.1	0.114	0.596	0.09117	0.023	0.20
465					1.2	0.124	0.588	0.09946	0.025	0.22
480					1.3	0.135	0.580	0.10774	0.027	0.24
495					1.5	0.155	0.572	0.12432	0.031	0.28
510					1.5	0.155	0.564	0.12432	0.031	0.28
525					1.6	0.166	0.556	0.13261	0.033	0.30
540					1.7	0.176	0.548	0.1409	0.035	0.31
555					1.9	0.197	0.540	0.15747	0.039	0.35
570					2	0.207	0.533	0.16576	0.041	0.37
585					2.1	0.218	0.525	0.17405	0.044	0.39
600					2.2	0.228	0.518	0.18234	0.046	0.41
615					1.5	0.155	0.510	0.12432	0.031	0.28

630					1.5	0.155	0.503	0.12432	0.031	0.28
645					2	0.207	0.496	0.16576	0.041	0.37
660					2	0.207	0.488	0.16576	0.041	0.37
675					1.9	0.197	0.481	0.15747	0.039	0.35
690					1.9	0.197	0.474	0.15747	0.039	0.35
705					1.7	0.176	0.467	0.1409	0.035	0.31
720					1.8	0.186	0.460	0.14918	0.037	0.33
735					2.5	0.259	0.453	0.2072	0.052	0.46
750					2.6	0.269	0.447	0.21549	0.054	0.48
765					2.8	0.290	0.440	0.23206	0.058	0.52
780					2.9	0.300	0.433	0.24035	0.060	0.54
795					3.4	0.352	0.427	0.28179	0.070	0.63
810					3.4	0.352	0.420	0.28179	0.070	0.63
825					2.3	0.238	0.414	0.19062	0.048	0.42
840					2.3	0.238	0.408	0.19062	0.048	0.42
855					2.7	0.280	0.402	0.22378	0.056	0.50
870					2.6	0.269	0.395	0.21549	0.054	0.48
885					2.6	0.269	0.389	0.21549	0.054	0.48
900					2.5	0.259	0.384	0.2072	0.052	0.46
915					2.4	0.249	0.378	0.19891	0.050	0.44
930					2.3	0.238	0.372	0.19062	0.048	0.42
945					1.9	0.197	0.366	0.15747	0.039	0.35
960					1.9	0.197	0.361	0.15747	0.039	0.35
975					0.4	0.041	0.355	0.03315	0.008	0.07
990					0.4	0.041	0.350	0.03315	0.008	0.07
1005					0.3	0.031	0.345	0.02486	0.006	0.06
1020					0.3	0.031	0.339	0.02486	0.006	0.06
1035					0.5	0.052	0.334	0.04144	0.010	0.09
1050					0.5	0.052	0.329	0.04144	0.010	0.09
1065					0.5	0.052	0.324	0.04144	0.010	0.09
1080					0.4	0.041	0.320	0.03315	0.008	0.07
1095					0.4	0.041	0.315	0.03315	0.008	0.07
1110					0.4	0.041	0.310	0.03315	0.008	0.07
1125					0.3	0.031	0.306	0.02486	0.006	0.06
1140					0.2	0.021	0.302	0.01658	0.004	0.04
1155					0.3	0.031	0.297	0.02486	0.006	0.06
1170					0.4	0.041	0.293	0.03315	0.008	0.07
1185					0.3	0.031	0.289	0.02486	0.006	0.06
1200					0.2	0.021	0.285	0.01658	0.004	0.04
1215					0.3	0.031	0.282	0.02486	0.006	0.06
1230					0.3	0.031	0.278	0.02486	0.006	0.06
1245					0.3	0.031	0.275	0.02486	0.006	0.06
1260					0.2	0.021	0.271	0.01658	0.004	0.04
1275					0.3	0.031	0.268	0.02486	0.006	0.06
1290					0.2	0.021	0.265	0.01658	0.004	0.04
1305					0.3	0.031	0.262	0.02486	0.006	0.06
1320					0.2	0.021	0.259	0.01658	0.004	0.04
1335					0.3	0.031	0.257	0.02486	0.006	0.06
1350					0.2	0.021	0.255	0.01658	0.004	0.04
1365					0.2	0.021	0.252	0.01658	0.004	0.04
1380					0.2	0.021	0.250	0.01658	0.004	0.04
1395					0.2	0.021	0.249	0.01658	0.004	0.04
1410					0.2	0.021	0.247	0.01658	0.004	0.04
1425					0.2	0.021	0.246	0.01658	0.004	0.04
1440					0.2	0.021	0.245	0.01658	0.004	0.04
				Σ[20] -	100			Σ[23] -	2.072	18.462

Existing Condition Node 302
10-yr Storm Event

Total Area	Total Impervious Area	%Imp	Fp (infiltration rate based on RI, Plate E-6.2)
8.91	0	0.00	0.14

Constant Loss Rate

F= Fp(1-0.9Ai)
F= 0.1400

For 24-hr storms, Ft is variable loss rate

Ft= C[24-(T/60)]^1.55+Fm
Ft= 0.2472

C= (F-Fm)/54
C= 0.0013

Fm= 0.5F
Fm= 0.0700

T= 7.5

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[1] CONCENTRATION POINT						[2] AREA DESIGNATION					
[3] DRAINAGE AREA - ACRES			8.91	ACRES		[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])				N/A	
[5] UNIT TIME - MINUTES			5	MIN PER E-1.2		[6] LAG TIME-MINUTES					MIN
[7] UNIT TIME-PERCENT OF LAG			N/A			[8] S-CURVE				N/A	
[9] STORM FREQUENCY & DURATION			10 YEAR	1 HOUR		[10] TOTAL ADJUSTED STORM RAIN-INCHES				0.778	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR			N/A			[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR				N/A	
[13] CONSTANT LOSS RATE-IN/HR			0.1400		IN/HR	[14] LOW LOSS RATE-PERCENT				0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.00	0	0.000	0.00
5					4.2	0.392	0.14	0.314	0.252	2.27
10					4.3	0.401	0.14	0.321	0.261	2.35
15					5	0.467	0.14	0.373	0.327	2.94
20					5	0.467	0.14	0.373	0.327	2.94
25					5.8	0.541	0.14	0.433	0.401	3.61
30					6.5	0.607	0.14	0.485	0.467	4.19
35					7.4	0.691	0.14	0.553	0.551	4.95
40					8.6	0.803	0.14	0.642	0.663	5.96
45					12.3	1.148	0.14	0.919	1.008	9.06
50					29.1	2.717	0.14	2.173	2.577	23.15
55					6.8	0.635	0.14	0.508	0.495	4.45
60					5	0.467	0.14	0.373	0.327	2.94
				Σ[20] -	100			Σ[23] -	7.66	68.78

RCFC & WCD HYDROLOGY MANUAL	SYNTHETIC UNIT HYDROGRAPH METHOD UNIT HYDROGRAPH AND EFFECTIVE RAIN CALCULATION FORM	PROJECT: ROCAS GRANDES 2 JOB #: 3816 PAGE

[1] CONCENTRATION POINT			[2] AREA DESIGNATION				
[3] DRAINAGE AREA - ACRES	8.91	ACRES		[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])		N/A	
[5] UNIT TIME - MINUTES	5	MIN PER E-1.2		[6] LAG TIME-MINUTES			MIN
[7] UNIT TIME-PERCENT OF LAG	N/A			[8] S-CURVE		N/A	
[9] STORM FREQUENCY & DURATION	10 YEAR	3 HOUR		[10] TOTAL ADJUSTED STORM RAIN-INCHES		1.29	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR	N/A			[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR		N/A	
[13] CONSTANT LOSS RATE-IN/HR	0.1400	IN/HR		[14] LOW LOSS RATE-PERCENT		0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.14	0	0.000	0.00
5					1.3	0.20124	0.14	0.16099	0.061	0.55
10					1.3	0.20124	0.14	0.16099	0.061	0.55
15					1.1	0.17028	0.14	0.13622	0.030	0.27
20					1.5	0.2322	0.14	0.18576	0.092	0.82
25					1.5	0.2322	0.14	0.18576	0.092	0.82
30					1.8	0.27864	0.14	0.22291	0.139	1.24
35					1.5	0.2322	0.14	0.18576	0.092	0.82
40					1.8	0.27864	0.14	0.22291	0.139	1.24
45					1.8	0.27864	0.14	0.22291	0.139	1.24
50					1.5	0.2322	0.14	0.18576	0.092	0.82
55					1.6	0.24768	0.14	0.19814	0.108	0.96
60					1.8	0.27864	0.14	0.22291	0.139	1.24
65					2.2	0.34056	0.14	0.27245	0.201	1.79
70					2.2	0.34056	0.14	0.27245	0.201	1.79
75					2.2	0.34056	0.14	0.27245	0.201	1.79
80					2	0.3096	0.14	0.24768	0.170	1.51
85					2.6	0.40248	0.14	0.32198	0.262	2.34
90					2.7	0.41796	0.14	0.33437	0.278	2.48
95					2.4	0.37152	0.14	0.29722	0.232	2.06
100					2.7	0.41796	0.14	0.33437	0.278	2.48
105					3.3	0.51084	0.14	0.40867	0.371	3.30
110					3.1	0.47988	0.14	0.3839	0.340	3.03
115					2.9	0.44892	0.14	0.35914	0.309	2.75
120					3	0.4644	0.14	0.37152	0.324	2.89
125					3.1	0.47988	0.14	0.3839	0.340	3.03
130					4.2	0.65016	0.14	0.52013	0.510	4.55
135					5	0.774	0.14	0.6192	0.634	5.65
140					3.5	0.5418	0.14	0.43344	0.402	3.58
145					6.8	1.05264	0.14	0.84211	0.913	8.13
150					7.3	1.13004	0.14	0.90403	0.990	8.82
155					8.2	1.26936	0.14	1.01549	1.129	10.06
160					5.9	0.91332	0.14	0.73066	0.773	6.89
165					2	0.3096	0.14	0.24768	0.170	1.51
170					1.8	0.27864	0.14	0.22291	0.139	1.24
175					1.8	0.27864	0.14	0.22291	0.139	1.24
180					0.6	0.09288	0.14	0.0743	0.019	0.17
				Σ[20] -	100			Σ[23] -	10.51	93.61

RCFC & WCD HYDROLOGY MANUAL	SYNTHETIC UNIT HYDROGRAPH METHOD UNIT HYDROGRAPH AND EFFECTIVE RAIN CALCULATION FORM	PROJECT: ROCAS GRANDES 2 JOB #: 3816 PAGE

[1] CONCENTRATION POINT			[2] AREA DESIGNATION				
[3] DRAINAGE AREA - ACRES	8.91	ACRES	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])				
[5] UNIT TIME - MINUTES	5	MIN PER E-1.2	[6] LAG TIME-MINUTES				MIN
[7] UNIT TIME-PERCENT OF LAG	N/A		[8] S-CURVE			N/A	
[9] STORM FREQUENCY & DURATION	10 YEAR	6 HOUR	[10] TOTAL ADJUSTED STORM RAIN-INCHES			1.77	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR	N/A		[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR			N/A	
[13] CONSTANT LOSS RATE-IN/HR	0.1400	IN/HR	[14] LOW LOSS RATE-PERCENT			0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.14	0	0.000	0.00
5					0.5	0.1062	0.14	0.08496	0.021	0.19
10					0.6	0.12744	0.14	0.10195	0.025	0.23
15					0.6	0.12744	0.14	0.10195	0.025	0.23
20					0.6	0.12744	0.14	0.10195	0.025	0.23
25					0.6	0.12744	0.14	0.10195	0.025	0.23
30					0.7	0.14868	0.14	0.11894	0.009	0.08
35					0.7	0.14868	0.14	0.11894	0.009	0.08
40					0.7	0.14868	0.14	0.11894	0.009	0.08
45					0.7	0.14868	0.14	0.11894	0.009	0.08
50					0.7	0.14868	0.14	0.11894	0.009	0.08
55					0.7	0.14868	0.14	0.11894	0.009	0.08
60					0.8	0.16992	0.14	0.13594	0.030	0.27
65					0.8	0.16992	0.14	0.13594	0.030	0.27
70					0.8	0.16992	0.14	0.13594	0.030	0.27
75					0.8	0.16992	0.14	0.13594	0.030	0.27
80					0.8	0.16992	0.14	0.13594	0.030	0.27
85					0.8	0.16992	0.14	0.13594	0.030	0.27
90					0.8	0.16992	0.14	0.13594	0.030	0.27
95					0.8	0.16992	0.14	0.13594	0.030	0.27
100					0.8	0.16992	0.14	0.13594	0.030	0.27
105					0.8	0.16992	0.14	0.13594	0.030	0.27
110					0.8	0.16992	0.14	0.13594	0.030	0.27
115					0.8	0.16992	0.14	0.13594	0.030	0.27
120					0.9	0.19116	0.14	0.15293	0.051	0.46
125					0.8	0.16992	0.14	0.13594	0.030	0.27
130					0.9	0.19116	0.14	0.15293	0.051	0.46
135					0.9	0.19116	0.14	0.15293	0.051	0.46
140					0.9	0.19116	0.14	0.15293	0.051	0.46
145					0.9	0.19116	0.14	0.15293	0.051	0.46
150					0.9	0.19116	0.14	0.15293	0.051	0.46
155					0.9	0.19116	0.14	0.15293	0.051	0.46
160					0.9	0.19116	0.14	0.15293	0.051	0.46
165					1	0.2124	0.14	0.16992	0.072	0.65
170					1	0.2124	0.14	0.16992	0.072	0.65
175					1	0.2124	0.14	0.16992	0.072	0.65
180					1	0.2124	0.14	0.16992	0.072	0.65
185					1	0.2124	0.14	0.16992	0.072	0.65
190					1.1	0.23364	0.14	0.18691	0.094	0.83
195					1.1	0.23364	0.14	0.18691	0.094	0.83
200					1.1	0.23364	0.14	0.18691	0.094	0.83
205					1.2	0.25488	0.14	0.2039	0.115	1.02

210						1.3	0.27612	0.14	0.2209	0.136	1.21
215						1.4	0.29736	0.14	0.23789	0.157	1.40
220						1.4	0.29736	0.14	0.23789	0.157	1.40
225						1.5	0.3186	0.14	0.25488	0.179	1.59
230						1.5	0.3186	0.14	0.25488	0.179	1.59
235						1.6	0.33984	0.14	0.27187	0.200	1.78
240						1.6	0.33984	0.14	0.27187	0.200	1.78
245						1.7	0.36108	0.14	0.28886	0.221	1.97
250						1.8	0.38232	0.14	0.30586	0.242	2.16
255						1.9	0.40356	0.14	0.32285	0.264	2.35
260						2	0.4248	0.14	0.33984	0.285	2.54
265						2.1	0.44604	0.14	0.35683	0.306	2.73
270						2.1	0.44604	0.14	0.35683	0.306	2.73
275						2.2	0.46728	0.14	0.37382	0.327	2.92
280						2.3	0.48852	0.14	0.39082	0.349	3.11
285						2.4	0.50976	0.14	0.40781	0.370	3.29
290						2.4	0.50976	0.14	0.40781	0.370	3.29
295						2.5	0.531	0.14	0.4248	0.391	3.48
300						2.6	0.55224	0.14	0.44179	0.412	3.67
305						3.1	0.65844	0.14	0.52675	0.518	4.62
310						3.6	0.76464	0.14	0.61171	0.625	5.57
315						3.9	0.82836	0.14	0.66269	0.688	6.13
320						4.2	0.89208	0.14	0.71366	0.752	6.70
325						4.7	0.99828	0.14	0.79862	0.858	7.65
330						5.6	1.18944	0.14	0.95155	1.049	9.35
335						1.9	0.40356	0.14	0.32285	0.264	2.35
340						0.9	0.19116	0.14	0.15293	0.051	0.46
345						0.6	0.12744	0.14	0.10195	0.025	0.23
350						0.5	0.1062	0.14	0.08496	0.021	0.19
355						0.3	0.06372	0.14	0.05098	0.013	0.11
360						0.2	0.04248	0.14	0.03398	0.008	0.08
					Σ[20] -	100			Σ[23] -	11.66	103.85

RCFC & WCD HYDROLOGY MANUAL	SYNTHETIC UNIT HYDROGRAPH METHOD UNIT HYDROGRAPH AND EFFECTIVE RAIN CALCULATION FORM	PROJECT: ROCAS GRANDES 2 JOB #: 3816 PAGE

[1] CONCENTRATION POINT			[2] AREA DESIGNATION					
[3] DRAINAGE AREA - ACRES	8.91	ACRES		[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])				
[5] UNIT TIME - MINUTES	15	MIN PER E-1.2		[6] LAG TIME-MINUTES				MIN
[7] UNIT TIME-PERCENT OF LAG	N/A			[8] S-CURVE			N/A	
[9] STORM FREQUENCY & DURATION	10 YEAR	24 HOUR		[10] TOTAL ADJUSTED STORM RAIN-INCHES			3.1	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR	0.2472			[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR				
[13] CONSTANT LOSS RATE-IN/HR			IN/HR	[14] LOW LOSS RATE-PERCENT			0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.00	0	0.000	0.00
15					0.2	0.025	0.248	0.01984	0.005	0.04
30					0.3	0.037	0.245	0.02976	0.007	0.07
45					0.3	0.037	0.242	0.02976	0.007	0.07
60					0.4	0.050	0.239	0.03968	0.010	0.09
75					0.3	0.037	0.236	0.02976	0.007	0.07
90					0.3	0.037	0.234	0.02976	0.007	0.07
105					0.3	0.037	0.231	0.02976	0.007	0.07
120					0.4	0.050	0.228	0.03968	0.010	0.09
135					0.4	0.050	0.225	0.03968	0.010	0.09
150					0.4	0.050	0.222	0.03968	0.010	0.09
165					0.5	0.062	0.220	0.0496	0.012	0.11
180					0.5	0.062	0.217	0.0496	0.012	0.11
195					0.5	0.062	0.214	0.0496	0.012	0.11
210					0.5	0.062	0.212	0.0496	0.012	0.11
225					0.5	0.062	0.209	0.0496	0.012	0.11
240					0.6	0.074	0.206	0.05952	0.015	0.13
255					0.6	0.074	0.204	0.05952	0.015	0.13
270					0.7	0.087	0.201	0.06944	0.017	0.15
285					0.7	0.087	0.199	0.06944	0.017	0.15
300					0.8	0.099	0.196	0.07936	0.020	0.18
315					0.6	0.074	0.193	0.05952	0.015	0.13
330					0.7	0.087	0.191	0.06944	0.017	0.15
345					0.8	0.099	0.188	0.07936	0.020	0.18
360					0.8	0.099	0.186	0.07936	0.020	0.18
375					0.9	0.112	0.183	0.08928	0.022	0.20
390					0.9	0.112	0.181	0.08928	0.022	0.20
405					1	0.124	0.179	0.0992	0.025	0.22
420					1	0.124	0.176	0.0992	0.025	0.22
435					1	0.124	0.174	0.0992	0.025	0.22
450					1.1	0.136	0.171	0.10912	0.027	0.24
465					1.2	0.149	0.169	0.11904	0.030	0.27
480					1.3	0.161	0.167	0.12896	0.032	0.29
495					1.5	0.186	0.164	0.1488	0.022	0.19
510					1.5	0.186	0.162	0.1488	0.024	0.21
525					1.6	0.198	0.160	0.15872	0.039	0.34
540					1.7	0.211	0.158	0.16864	0.053	0.47
555					1.9	0.236	0.155	0.18848	0.080	0.71
570					2	0.248	0.153	0.1984	0.095	0.85
585					2.1	0.260	0.151	0.20832	0.109	0.98
600					2.2	0.273	0.149	0.21824	0.124	1.11
615					1.5	0.186	0.147	0.1488	0.039	0.35

630					1.5	0.186	0.145	0.1488	0.041	0.37
645					2	0.248	0.142	0.1984	0.106	0.94
660					2	0.248	0.140	0.1984	0.108	0.96
675					1.9	0.236	0.138	0.18848	0.097	0.87
690					1.9	0.236	0.136	0.18848	0.099	0.89
705					1.7	0.211	0.134	0.16864	0.077	0.68
720					1.8	0.223	0.132	0.17856	0.091	0.81
735					2.5	0.310	0.130	0.248	0.180	1.60
750					2.6	0.322	0.128	0.25792	0.194	1.73
765					2.8	0.347	0.126	0.27776	0.221	1.97
780					2.9	0.360	0.124	0.28768	0.235	2.10
795					3.4	0.422	0.123	0.33728	0.299	2.66
810					3.4	0.422	0.121	0.33728	0.301	2.68
825					2.3	0.285	0.119	0.22816	0.166	1.48
840					2.3	0.285	0.117	0.22816	0.168	1.50
855					2.7	0.335	0.115	0.26784	0.220	1.96
870					2.6	0.322	0.113	0.25792	0.209	1.86
885					2.6	0.322	0.112	0.25792	0.211	1.88
900					2.5	0.310	0.110	0.248	0.200	1.78
915					2.4	0.298	0.108	0.23808	0.189	1.69
930					2.3	0.285	0.107	0.22816	0.179	1.59
945					1.9	0.236	0.105	0.18848	0.131	1.16
960					1.9	0.236	0.103	0.18848	0.132	1.18
975					0.4	0.050	0.102	0.03968	0.010	0.09
990					0.4	0.050	0.100	0.03968	0.010	0.09
1005					0.3	0.037	0.099	0.02976	0.007	0.07
1020					0.3	0.037	0.097	0.02976	0.007	0.07
1035					0.5	0.062	0.096	0.0496	0.012	0.11
1050					0.5	0.062	0.094	0.0496	0.012	0.11
1065					0.5	0.062	0.093	0.0496	0.012	0.11
1080					0.4	0.050	0.092	0.03968	0.010	0.09
1095					0.4	0.050	0.090	0.03968	0.010	0.09
1110					0.4	0.050	0.089	0.03968	0.010	0.09
1125					0.3	0.037	0.088	0.02976	0.007	0.07
1140					0.2	0.025	0.086	0.01984	0.005	0.04
1155					0.3	0.037	0.085	0.02976	0.007	0.07
1170					0.4	0.050	0.084	0.03968	0.010	0.09
1185					0.3	0.037	0.083	0.02976	0.007	0.07
1200					0.2	0.025	0.082	0.01984	0.005	0.04
1215					0.3	0.037	0.081	0.02976	0.007	0.07
1230					0.3	0.037	0.080	0.02976	0.007	0.07
1245					0.3	0.037	0.079	0.02976	0.007	0.07
1260					0.2	0.025	0.078	0.01984	0.005	0.04
1275					0.3	0.037	0.077	0.02976	0.007	0.07
1290					0.2	0.025	0.076	0.01984	0.005	0.04
1305					0.3	0.037	0.075	0.02976	0.007	0.07
1320					0.2	0.025	0.074	0.01984	0.005	0.04
1335					0.3	0.037	0.073	0.02976	0.007	0.07
1350					0.2	0.025	0.073	0.01984	0.005	0.04
1365					0.2	0.025	0.072	0.01984	0.005	0.04
1380					0.2	0.025	0.072	0.01984	0.005	0.04
1395					0.2	0.025	0.071	0.01984	0.005	0.04
1410					0.2	0.025	0.071	0.01984	0.005	0.04
1425					0.2	0.025	0.070	0.01984	0.005	0.04
1440					0.2	0.025	0.070	0.01984	0.005	0.04
				Σ[20] -	100			Σ[23] -	5.185	46.199

Existing Condition Node 302
100-yr Storm Event

Total Area	Total Impervious Area	%Imp	Fp (infiltration rate based on RI, Plate E-6.2)
8.91	0	0.00	0.14

Constant Loss Rate

F= Fp(1-0.9Ai)
F= 0.1400

For 24-hr storms, Ft is variable loss rate

Ft= C[24-(T/60)]^1.55+Fm
Ft= 0.2472

C= (F-Fm)/54
C= 0.0013

Fm= 0.5F
Fm= 0.0700

T= 7.5

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[1] CONCENTRATION POINT						[2] AREA DESIGNATION					
[3] DRAINAGE AREA - ACRES			8.91	ACRES		[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])				N/A	
[5] UNIT TIME - MINUTES			5	MIN PER E-1.2		[6] LAG TIME-MINUTES					MIN
[7] UNIT TIME-PERCENT OF LAG			N/A			[8] S-CURVE				N/A	
[9] STORM FREQUENCY & DURATION			100 YEAR	1 HOUR		[10] TOTAL ADJUSTED STORM RAIN-INCHES				1.27	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR			N/A			[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR				N/A	
[13] CONSTANT LOSS RATE-IN/HR			0.1400		IN/HR	[14] LOW LOSS RATE-PERCENT				0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.00	0	0.000	0.00
5					4.2	0.640	0.14	0.512	0.500	4.49
10					4.3	0.655	0.14	0.524	0.515	4.63
15					5	0.762	0.14	0.610	0.622	5.59
20					5	0.762	0.14	0.610	0.622	5.59
25					5.8	0.884	0.14	0.707	0.744	6.68
30					6.5	0.991	0.14	0.792	0.851	7.64
35					7.4	1.128	0.14	0.902	0.988	8.87
40					8.6	1.311	0.14	1.049	1.171	10.52
45					12.3	1.875	0.14	1.500	1.735	15.58
50					29.1	4.435	0.14	3.548	4.295	38.59
55					6.8	1.036	0.14	0.829	0.896	8.05
60					5	0.762	0.14	0.610	0.622	5.59
				Σ[20] -	100			Σ[23] -	13.56	121.83

RCFC & WCD HYDROLOGY MANUAL	SYNTHETIC UNIT HYDROGRAPH METHOD UNIT HYDROGRAPH AND EFFECTIVE RAIN CALCULATION FORM	PROJECT: ROCAS GRANDES 2 JOB #: 3816 PAGE

[1] CONCENTRATION POINT			[2] AREA DESIGNATION				
[3] DRAINAGE AREA - ACRES	8.91	ACRES		[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])		N/A	
[5] UNIT TIME - MINUTES	5	MIN PER E-1.2		[6] LAG TIME-MINUTES			MIN
[7] UNIT TIME-PERCENT OF LAG	N/A			[8] S-CURVE		N/A	
[9] STORM FREQUENCY & DURATION	100 YEAR	3 HOUR		[10] TOTAL ADJUSTED STORM RAIN-INCHES		2.01	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR	N/A			[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR		N/A	
[13] CONSTANT LOSS RATE-IN/HR	0.1400	IN/HR		[14] LOW LOSS RATE-PERCENT		0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.14	0	0.000	0.00
5					1.3	0.31356	0.14	0.25085	0.174	1.55
10					1.3	0.31356	0.14	0.25085	0.174	1.55
15					1.1	0.26532	0.14	0.21226	0.125	1.12
20					1.5	0.3618	0.14	0.28944	0.222	1.98
25					1.5	0.3618	0.14	0.28944	0.222	1.98
30					1.8	0.43416	0.14	0.34733	0.294	2.62
35					1.5	0.3618	0.14	0.28944	0.222	1.98
40					1.8	0.43416	0.14	0.34733	0.294	2.62
45					1.8	0.43416	0.14	0.34733	0.294	2.62
50					1.5	0.3618	0.14	0.28944	0.222	1.98
55					1.6	0.38592	0.14	0.30874	0.246	2.19
60					1.8	0.43416	0.14	0.34733	0.294	2.62
65					2.2	0.53064	0.14	0.42451	0.391	3.48
70					2.2	0.53064	0.14	0.42451	0.391	3.48
75					2.2	0.53064	0.14	0.42451	0.391	3.48
80					2	0.4824	0.14	0.38592	0.342	3.05
85					2.6	0.62712	0.14	0.5017	0.487	4.34
90					2.7	0.65124	0.14	0.52099	0.511	4.56
95					2.4	0.57888	0.14	0.4631	0.439	3.91
100					2.7	0.65124	0.14	0.52099	0.511	4.56
105					3.3	0.79596	0.14	0.63677	0.656	5.84
110					3.1	0.74772	0.14	0.59818	0.608	5.41
115					2.9	0.69948	0.14	0.55958	0.559	4.98
120					3	0.7236	0.14	0.57888	0.584	5.20
125					3.1	0.74772	0.14	0.59818	0.608	5.41
130					4.2	1.01304	0.14	0.81043	0.873	7.78
135					5	1.206	0.14	0.9648	1.066	9.50
140					3.5	0.8442	0.14	0.67536	0.704	6.27
145					6.8	1.64016	0.14	1.31213	1.500	13.37
150					7.3	1.76076	0.14	1.40861	1.621	14.44
155					8.2	1.97784	0.14	1.58227	1.838	16.38
160					5.9	1.42308	0.14	1.13846	1.283	11.43
165					2	0.4824	0.14	0.38592	0.342	3.05
170					1.8	0.43416	0.14	0.34733	0.294	2.62
175					1.8	0.43416	0.14	0.34733	0.294	2.62
180					0.6	0.14472	0.14	0.11578	0.005	0.04
				Σ[20] -	100			Σ[23] -	19.08	170.00

RCFC & WCD HYDROLOGY MANUAL	SYNTHETIC UNIT HYDROGRAPH METHOD UNIT HYDROGRAPH AND EFFECTIVE RAIN CALCULATION FORM	PROJECT: ROCAS GRANDES 2 JOB #: 3816 PAGE

[1] CONCENTRATION POINT			[2] AREA DESIGNATION				
[3] DRAINAGE AREA - ACRES	8.91	ACRES	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])				
[5] UNIT TIME - MINUTES	5	MIN PER E-1.2	[6] LAG TIME-MINUTES				MIN
[7] UNIT TIME-PERCENT OF LAG	N/A		[8] S-CURVE			N/A	
[9] STORM FREQUENCY & DURATION	100 YEAR	6 HOUR	[10] TOTAL ADJUSTED STORM RAIN-INCHES			2.72	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR	N/A		[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR			N/A	
[13] CONSTANT LOSS RATE-IN/HR	0.1400	IN/HR	[14] LOW LOSS RATE-PERCENT			0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.14	0	0.000	0.00
5					0.5	0.1632	0.14	0.13056	0.023	0.21
10					0.6	0.19584	0.14	0.15667	0.056	0.50
15					0.6	0.19584	0.14	0.15667	0.056	0.50
20					0.6	0.19584	0.14	0.15667	0.056	0.50
25					0.6	0.19584	0.14	0.15667	0.056	0.50
30					0.7	0.22848	0.14	0.18278	0.088	0.79
35					0.7	0.22848	0.14	0.18278	0.088	0.79
40					0.7	0.22848	0.14	0.18278	0.088	0.79
45					0.7	0.22848	0.14	0.18278	0.088	0.79
50					0.7	0.22848	0.14	0.18278	0.088	0.79
55					0.7	0.22848	0.14	0.18278	0.088	0.79
60					0.8	0.26112	0.14	0.2089	0.121	1.08
65					0.8	0.26112	0.14	0.2089	0.121	1.08
70					0.8	0.26112	0.14	0.2089	0.121	1.08
75					0.8	0.26112	0.14	0.2089	0.121	1.08
80					0.8	0.26112	0.14	0.2089	0.121	1.08
85					0.8	0.26112	0.14	0.2089	0.121	1.08
90					0.8	0.26112	0.14	0.2089	0.121	1.08
95					0.8	0.26112	0.14	0.2089	0.121	1.08
100					0.8	0.26112	0.14	0.2089	0.121	1.08
105					0.8	0.26112	0.14	0.2089	0.121	1.08
110					0.8	0.26112	0.14	0.2089	0.121	1.08
115					0.8	0.26112	0.14	0.2089	0.121	1.08
120					0.9	0.29376	0.14	0.23501	0.154	1.37
125					0.8	0.26112	0.14	0.2089	0.121	1.08
130					0.9	0.29376	0.14	0.23501	0.154	1.37
135					0.9	0.29376	0.14	0.23501	0.154	1.37
140					0.9	0.29376	0.14	0.23501	0.154	1.37
145					0.9	0.29376	0.14	0.23501	0.154	1.37
150					0.9	0.29376	0.14	0.23501	0.154	1.37
155					0.9	0.29376	0.14	0.23501	0.154	1.37
160					0.9	0.29376	0.14	0.23501	0.154	1.37
165					1	0.3264	0.14	0.26112	0.186	1.66
170					1	0.3264	0.14	0.26112	0.186	1.66
175					1	0.3264	0.14	0.26112	0.186	1.66
180					1	0.3264	0.14	0.26112	0.186	1.66
185					1	0.3264	0.14	0.26112	0.186	1.66
190					1.1	0.35904	0.14	0.28723	0.219	1.95
195					1.1	0.35904	0.14	0.28723	0.219	1.95
200					1.1	0.35904	0.14	0.28723	0.219	1.95
205					1.2	0.39168	0.14	0.31334	0.252	2.24

210						1.3	0.42432	0.14	0.33946	0.284	2.53
215						1.4	0.45696	0.14	0.36557	0.317	2.82
220						1.4	0.45696	0.14	0.36557	0.317	2.82
225						1.5	0.4896	0.14	0.39168	0.350	3.11
230						1.5	0.4896	0.14	0.39168	0.350	3.11
235						1.6	0.52224	0.14	0.41779	0.382	3.41
240						1.6	0.52224	0.14	0.41779	0.382	3.41
245						1.7	0.55488	0.14	0.4439	0.415	3.70
250						1.8	0.58752	0.14	0.47002	0.448	3.99
255						1.9	0.62016	0.14	0.49613	0.480	4.28
260						2	0.6528	0.14	0.52224	0.513	4.57
265						2.1	0.68544	0.14	0.54835	0.545	4.86
270						2.1	0.68544	0.14	0.54835	0.545	4.86
275						2.2	0.71808	0.14	0.57446	0.578	5.15
280						2.3	0.75072	0.14	0.60058	0.611	5.44
285						2.4	0.78336	0.14	0.62669	0.643	5.73
290						2.4	0.78336	0.14	0.62669	0.643	5.73
295						2.5	0.816	0.14	0.6528	0.676	6.02
300						2.6	0.84864	0.14	0.67891	0.709	6.31
305						3.1	1.01184	0.14	0.80947	0.872	7.77
310						3.6	1.17504	0.14	0.94003	1.035	9.22
315						3.9	1.27296	0.14	1.01837	1.133	10.09
320						4.2	1.37088	0.14	1.0967	1.231	10.97
325						4.7	1.53408	0.14	1.22726	1.394	12.42
330						5.6	1.82784	0.14	1.46227	1.688	15.04
335						1.9	0.62016	0.14	0.49613	0.480	4.28
340						0.9	0.29376	0.14	0.23501	0.154	1.37
345						0.6	0.19584	0.14	0.15667	0.056	0.50
350						0.5	0.1632	0.14	0.13056	0.023	0.21
355						0.3	0.09792	0.14	0.07834	0.020	0.17
360						0.2	0.06528	0.14	0.05222	0.013	0.12
					Σ[20] -	100			Σ[23] -	22.71	202.34

RCFC & WCD HYDROLOGY MANUAL	SYNTHETIC UNIT HYDROGRAPH METHOD UNIT HYDROGRAPH AND EFFECTIVE RAIN CALCULATION FORM	PROJECT: ROCAS GRANDES 2 JOB #: 3816 PAGE

[1] CONCENTRATION POINT			[2] AREA DESIGNATION					
[3] DRAINAGE AREA - ACRES	8.91	ACRES		[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])				
[5] UNIT TIME - MINUTES	15	MIN PER E-1.2		[6] LAG TIME-MINUTES				MIN
[7] UNIT TIME-PERCENT OF LAG	N/A			[8] S-CURVE			N/A	
[9] STORM FREQUENCY & DURATION	100 YEAR	24 HOUR		[10] TOTAL ADJUSTED STORM RAIN-INCHES			4.83	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR	0.2472			[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR				
[13] CONSTANT LOSS RATE-IN/HR			IN/HR	[14] LOW LOSS RATE-PERCENT			0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.00	0	0.000	0.00
15					0.2	0.039	0.248	0.03091	0.008	0.07
30					0.3	0.058	0.245	0.04637	0.012	0.10
45					0.3	0.058	0.242	0.04637	0.012	0.10
60					0.4	0.077	0.239	0.06182	0.015	0.14
75					0.3	0.058	0.236	0.04637	0.012	0.10
90					0.3	0.058	0.234	0.04637	0.012	0.10
105					0.3	0.058	0.231	0.04637	0.012	0.10
120					0.4	0.077	0.228	0.06182	0.015	0.14
135					0.4	0.077	0.225	0.06182	0.015	0.14
150					0.4	0.077	0.222	0.06182	0.015	0.14
165					0.5	0.097	0.220	0.07728	0.019	0.17
180					0.5	0.097	0.217	0.07728	0.019	0.17
195					0.5	0.097	0.214	0.07728	0.019	0.17
210					0.5	0.097	0.212	0.07728	0.019	0.17
225					0.5	0.097	0.209	0.07728	0.019	0.17
240					0.6	0.116	0.206	0.09274	0.023	0.21
255					0.6	0.116	0.204	0.09274	0.023	0.21
270					0.7	0.135	0.201	0.10819	0.027	0.24
285					0.7	0.135	0.199	0.10819	0.027	0.24
300					0.8	0.155	0.196	0.12365	0.031	0.28
315					0.6	0.116	0.193	0.09274	0.023	0.21
330					0.7	0.135	0.191	0.10819	0.027	0.24
345					0.8	0.155	0.188	0.12365	0.031	0.28
360					0.8	0.155	0.186	0.12365	0.031	0.28
375					0.9	0.174	0.183	0.1391	0.035	0.31
390					0.9	0.174	0.181	0.1391	0.035	0.31
405					1	0.193	0.179	0.15456	0.015	0.13
420					1	0.193	0.176	0.15456	0.017	0.15
435					1	0.193	0.174	0.15456	0.019	0.17
450					1.1	0.213	0.171	0.17002	0.041	0.37
465					1.2	0.232	0.169	0.18547	0.063	0.56
480					1.3	0.251	0.167	0.20093	0.084	0.75
495					1.5	0.290	0.164	0.23184	0.125	1.12
510					1.5	0.290	0.162	0.23184	0.128	1.14
525					1.6	0.309	0.160	0.2473	0.149	1.33
540					1.7	0.328	0.158	0.26275	0.171	1.52
555					1.9	0.367	0.155	0.29366	0.212	1.89
570					2	0.386	0.153	0.30912	0.233	2.08
585					2.1	0.406	0.151	0.32458	0.255	2.27
600					2.2	0.425	0.149	0.34003	0.276	2.46
615					1.5	0.290	0.147	0.23184	0.143	1.28

630					1.5	0.290	0.145	0.23184	0.145	1.29
645					2	0.386	0.142	0.30912	0.244	2.17
660					2	0.386	0.140	0.30912	0.246	2.19
675					1.9	0.367	0.138	0.29366	0.229	2.04
690					1.9	0.367	0.136	0.29366	0.231	2.06
705					1.7	0.328	0.134	0.26275	0.194	1.73
720					1.8	0.348	0.132	0.27821	0.216	1.92
735					2.5	0.483	0.130	0.3864	0.353	3.14
750					2.6	0.502	0.128	0.40186	0.374	3.33
765					2.8	0.541	0.126	0.43277	0.415	3.69
780					2.9	0.560	0.124	0.44822	0.436	3.88
795					3.4	0.657	0.123	0.5255	0.534	4.76
810					3.4	0.657	0.121	0.5255	0.536	4.78
825					2.3	0.444	0.119	0.35549	0.326	2.90
840					2.3	0.444	0.117	0.35549	0.327	2.92
855					2.7	0.522	0.115	0.41731	0.406	3.62
870					2.6	0.502	0.113	0.40186	0.389	3.46
885					2.6	0.502	0.112	0.40186	0.391	3.48
900					2.5	0.483	0.110	0.3864	0.373	3.32
915					2.4	0.464	0.108	0.37094	0.355	3.17
930					2.3	0.444	0.107	0.35549	0.338	3.01
945					1.9	0.367	0.105	0.29366	0.262	2.33
960					1.9	0.367	0.103	0.29366	0.264	2.35
975					0.4	0.077	0.102	0.06182	0.015	0.14
990					0.4	0.077	0.100	0.06182	0.015	0.14
1005					0.3	0.058	0.099	0.04637	0.012	0.10
1020					0.3	0.058	0.097	0.04637	0.012	0.10
1035					0.5	0.097	0.096	0.07728	0.001	0.01
1050					0.5	0.097	0.094	0.07728	0.002	0.02
1065					0.5	0.097	0.093	0.07728	0.004	0.03
1080					0.4	0.077	0.092	0.06182	0.015	0.14
1095					0.4	0.077	0.090	0.06182	0.015	0.14
1110					0.4	0.077	0.089	0.06182	0.015	0.14
1125					0.3	0.058	0.088	0.04637	0.012	0.10
1140					0.2	0.039	0.086	0.03091	0.008	0.07
1155					0.3	0.058	0.085	0.04637	0.012	0.10
1170					0.4	0.077	0.084	0.06182	0.015	0.14
1185					0.3	0.058	0.083	0.04637	0.012	0.10
1200					0.2	0.039	0.082	0.03091	0.008	0.07
1215					0.3	0.058	0.081	0.04637	0.012	0.10
1230					0.3	0.058	0.080	0.04637	0.012	0.10
1245					0.3	0.058	0.079	0.04637	0.012	0.10
1260					0.2	0.039	0.078	0.03091	0.008	0.07
1275					0.3	0.058	0.077	0.04637	0.012	0.10
1290					0.2	0.039	0.076	0.03091	0.008	0.07
1305					0.3	0.058	0.075	0.04637	0.012	0.10
1320					0.2	0.039	0.074	0.03091	0.008	0.07
1335					0.3	0.058	0.073	0.04637	0.012	0.10
1350					0.2	0.039	0.073	0.03091	0.008	0.07
1365					0.2	0.039	0.072	0.03091	0.008	0.07
1380					0.2	0.039	0.072	0.03091	0.008	0.07
1395					0.2	0.039	0.071	0.03091	0.008	0.07
1410					0.2	0.039	0.071	0.03091	0.008	0.07
1425					0.2	0.039	0.070	0.03091	0.008	0.07
1440					0.2	0.039	0.070	0.03091	0.008	0.07
				Σ[20] -	100			Σ[23] -	10.372	92.412

Proposed Condition Tank B
2-yr Storm Event

Total Area	Total Impervious Area	%Imp	Fp (infiltration rate based on RI, Plate E-6.2)
8.41	6.928	0.82	0.76

Constant Loss Rate

F= Fp(1-0.9Ai)
F= 0.1965

For 24-hr storms, Ft is variable loss rate

Ft= C[24-(T/60)]^1.55+Fm
Ft= 0.3471

C= (F-Fm)/54
C= 0.0018

Fm= 0.5F
Fm= 0.0983

T= 7.5

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[1] CONCENTRATION POINT					[2] AREA DESIGNATION				
[3] DRAINAGE AREA - ACRES		8.41	ACRES		[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])			N/A	
[5] UNIT TIME - MINUTES		5	MIN PER E-1.2		[6] LAG TIME-MINUTES				MIN
[7] UNIT TIME-PERCENT OF LAG		N/A			[8] S-CURVE			N/A	
[9] STORM FREQUENCY & DURATION		2 YEAR	1 HOUR		[10] TOTAL ADJUSTED STORM RAIN-INCHES			0.475	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR		N/A			[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR			N/A	
[13] CONSTANT LOSS RATE-IN/HR		0.1965		IN/HR	[14] LOW LOSS RATE-PERCENT			0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.00	0	0.000	0.00
5					4.2	0.239	0.20	0.192	0.043	0.36
10					4.3	0.245	0.20	0.196	0.049	0.41
15					5	0.285	0.20	0.228	0.089	0.75
20					5	0.285	0.20	0.228	0.089	0.75
25					5.8	0.331	0.20	0.264	0.134	1.14
30					6.5	0.371	0.20	0.296	0.174	1.48
35					7.4	0.422	0.20	0.337	0.225	1.91
40					8.6	0.490	0.20	0.392	0.294	2.49
45					12.3	0.701	0.20	0.561	0.505	4.28
50					29.1	1.659	0.20	1.327	1.462	12.40
55					6.8	0.388	0.20	0.310	0.191	1.62
60					5	0.285	0.20	0.228	0.089	0.75
				Σ[20] -	100			Σ[23] -	3.34	28.34

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[1] CONCENTRATION POINT			[2] AREA DESIGNATION				
[3] DRAINAGE AREA - ACRES	8.41	ACRES	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])			N/A	
[5] UNIT TIME - MINUTES	5	MIN PER E-1.2	[6] LAG TIME-MINUTES				MIN
[7] UNIT TIME-PERCENT OF LAG	N/A		[8] S-CURVE			N/A	
[9] STORM FREQUENCY & DURATION	2 YEAR	3 HOUR	[10] TOTAL ADJUSTED STORM RAIN-INCHES			0.833	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR	N/A		[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR			N/A	
[13] CONSTANT LOSS RATE-IN/HR	0.1965	IN/HR	[14] LOW LOSS RATE-PERCENT			0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.20	0	0.000	0.00
5					1.3	0.129948	0.20	0.10396	0.026	0.22
10					1.3	0.129948	0.20	0.10396	0.026	0.22
15					1.1	0.109956	0.20	0.08796	0.022	0.18
20					1.5	0.14994	0.20	0.11995	0.030	0.25
25					1.5	0.14994	0.20	0.11995	0.030	0.25
30					1.8	0.179928	0.20	0.14394	0.036	0.30
35					1.5	0.14994	0.20	0.11995	0.030	0.25
40					1.8	0.179928	0.20	0.14394	0.036	0.30
45					1.8	0.179928	0.20	0.14394	0.036	0.30
50					1.5	0.14994	0.20	0.11995	0.030	0.25
55					1.6	0.159936	0.20	0.12795	0.032	0.27
60					1.8	0.179928	0.20	0.14394	0.036	0.30
65					2.2	0.219912	0.20	0.17593	0.023	0.20
70					2.2	0.219912	0.20	0.17593	0.023	0.20
75					2.2	0.219912	0.20	0.17593	0.023	0.20
80					2	0.19992	0.20	0.15994	0.003	0.03
85					2.6	0.259896	0.20	0.20792	0.063	0.53
90					2.7	0.269892	0.20	0.21591	0.073	0.62
95					2.4	0.239904	0.20	0.19192	0.043	0.37
100					2.7	0.269892	0.20	0.21591	0.073	0.62
105					3.3	0.329868	0.20	0.26389	0.133	1.12
110					3.1	0.309876	0.20	0.2479	0.113	0.95
115					2.9	0.289884	0.20	0.23191	0.093	0.79
120					3	0.29988	0.20	0.2399	0.103	0.87
125					3.1	0.309876	0.20	0.2479	0.113	0.95
130					4.2	0.419832	0.20	0.33587	0.223	1.88
135					5	0.4998	0.20	0.39984	0.303	2.55
140					3.5	0.34986	0.20	0.27989	0.153	1.29
145					6.8	0.679728	0.20	0.54378	0.483	4.06
150					7.3	0.729708	0.20	0.58377	0.533	4.48
155					8.2	0.819672	0.20	0.65574	0.623	5.24
160					5.9	0.589764	0.20	0.47181	0.393	3.31
165					2	0.19992	0.20	0.15994	0.003	0.03
170					1.8	0.179928	0.20	0.14394	0.036	0.30
175					1.8	0.179928	0.20	0.14394	0.036	0.30
180					0.6	0.059976	0.20	0.04798	0.012	0.10
				Σ[20] -	100			Σ[23] -	4.05	34.10

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[1] CONCENTRATION POINT			[2] AREA DESIGNATION					
[3] DRAINAGE AREA - ACRES	8.41	ACRES	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])					
[5] UNIT TIME - MINUTES	5	MIN PER E-1.2	[6] LAG TIME-MINUTES					MIN
[7] UNIT TIME-PERCENT OF LAG	N/A		[8] S-CURVE				N/A	
[9] STORM FREQUENCY & DURATION	2 YEAR	6 HOUR	[10] TOTAL ADJUSTED STORM RAIN-INCHES				1.16	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR	N/A		[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR				N/A	
[13] CONSTANT LOSS RATE-IN/HR	0.1965	IN/HR	[14] LOW LOSS RATE-PERCENT				0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.20	0	0.000	0.00
5					0.5	0.0696	0.20	0.05568	0.014	0.12
10					0.6	0.08352	0.20	0.06682	0.017	0.14
15					0.6	0.08352	0.20	0.06682	0.017	0.14
20					0.6	0.08352	0.20	0.06682	0.017	0.14
25					0.6	0.08352	0.20	0.06682	0.017	0.14
30					0.7	0.09744	0.20	0.07795	0.019	0.16
35					0.7	0.09744	0.20	0.07795	0.019	0.16
40					0.7	0.09744	0.20	0.07795	0.019	0.16
45					0.7	0.09744	0.20	0.07795	0.019	0.16
50					0.7	0.09744	0.20	0.07795	0.019	0.16
55					0.7	0.09744	0.20	0.07795	0.019	0.16
60					0.8	0.11136	0.20	0.08909	0.022	0.19
65					0.8	0.11136	0.20	0.08909	0.022	0.19
70					0.8	0.11136	0.20	0.08909	0.022	0.19
75					0.8	0.11136	0.20	0.08909	0.022	0.19
80					0.8	0.11136	0.20	0.08909	0.022	0.19
85					0.8	0.11136	0.20	0.08909	0.022	0.19
90					0.8	0.11136	0.20	0.08909	0.022	0.19
95					0.8	0.11136	0.20	0.08909	0.022	0.19
100					0.8	0.11136	0.20	0.08909	0.022	0.19
105					0.8	0.11136	0.20	0.08909	0.022	0.19
110					0.8	0.11136	0.20	0.08909	0.022	0.19
115					0.8	0.11136	0.20	0.08909	0.022	0.19
120					0.9	0.12528	0.20	0.10022	0.025	0.21
125					0.8	0.11136	0.20	0.08909	0.022	0.19
130					0.9	0.12528	0.20	0.10022	0.025	0.21
135					0.9	0.12528	0.20	0.10022	0.025	0.21
140					0.9	0.12528	0.20	0.10022	0.025	0.21
145					0.9	0.12528	0.20	0.10022	0.025	0.21
150					0.9	0.12528	0.20	0.10022	0.025	0.21
155					0.9	0.12528	0.20	0.10022	0.025	0.21
160					0.9	0.12528	0.20	0.10022	0.025	0.21
165					1	0.1392	0.20	0.11136	0.028	0.23
170					1	0.1392	0.20	0.11136	0.028	0.23
175					1	0.1392	0.20	0.11136	0.028	0.23
180					1	0.1392	0.20	0.11136	0.028	0.23
185					1	0.1392	0.20	0.11136	0.028	0.23
190					1.1	0.15312	0.20	0.1225	0.031	0.26
195					1.1	0.15312	0.20	0.1225	0.031	0.26
200					1.1	0.15312	0.20	0.1225	0.031	0.26
205					1.2	0.16704	0.20	0.13363	0.033	0.28

210						1.3	0.18096	0.20	0.14477	0.036	0.30
215						1.4	0.19488	0.20	0.1559	0.039	0.33
220						1.4	0.19488	0.20	0.1559	0.039	0.33
225						1.5	0.2088	0.20	0.16704	0.012	0.10
230						1.5	0.2088	0.20	0.16704	0.012	0.10
235						1.6	0.22272	0.20	0.17818	0.026	0.22
240						1.6	0.22272	0.20	0.17818	0.026	0.22
245						1.7	0.23664	0.20	0.18931	0.040	0.34
250						1.8	0.25056	0.20	0.20045	0.054	0.45
255						1.9	0.26448	0.20	0.21158	0.068	0.57
260						2	0.2784	0.20	0.22272	0.082	0.69
265						2.1	0.29232	0.20	0.23386	0.096	0.81
270						2.1	0.29232	0.20	0.23386	0.096	0.81
275						2.2	0.30624	0.20	0.24499	0.110	0.92
280						2.3	0.32016	0.20	0.25613	0.124	1.04
285						2.4	0.33408	0.20	0.26726	0.138	1.16
290						2.4	0.33408	0.20	0.26726	0.138	1.16
295						2.5	0.348	0.20	0.2784	0.152	1.27
300						2.6	0.36192	0.20	0.28954	0.165	1.39
305						3.1	0.43152	0.20	0.34522	0.235	1.98
310						3.6	0.50112	0.20	0.4009	0.305	2.56
315						3.9	0.54288	0.20	0.4343	0.346	2.91
320						4.2	0.58464	0.20	0.46771	0.388	3.26
325						4.7	0.65424	0.20	0.52339	0.458	3.85
330						5.6	0.77952	0.20	0.62362	0.583	4.90
335						1.9	0.26448	0.20	0.21158	0.068	0.57
340						0.9	0.12528	0.20	0.10022	0.025	0.21
345						0.6	0.08352	0.20	0.06682	0.017	0.14
350						0.5	0.0696	0.20	0.05568	0.014	0.12
355						0.3	0.04176	0.20	0.03341	0.008	0.07
360						0.2	0.02784	0.20	0.02227	0.006	0.05
					Σ[20] -	100			Σ[23] -	4.86	40.85

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| | | |

600					2.2	0.172	0.207	0.13798	0.034	0.29
615					1.5	0.118	0.204	0.09408	0.024	0.20
630					1.5	0.118	0.201	0.09408	0.024	0.20
645					2	0.157	0.199	0.12544	0.031	0.26
660					2	0.157	0.196	0.12544	0.031	0.26
675					1.9	0.149	0.193	0.11917	0.030	0.25
690					1.9	0.149	0.190	0.11917	0.030	0.25
705					1.7	0.133	0.187	0.10662	0.027	0.22
720					1.8	0.141	0.184	0.1129	0.028	0.24
735					2.5	0.196	0.182	0.1568	0.014	0.12
750					2.6	0.204	0.179	0.16307	0.025	0.21
765					2.8	0.220	0.176	0.17562	0.043	0.36
780					2.9	0.227	0.174	0.18189	0.054	0.45
795					3.4	0.267	0.171	0.21325	0.096	0.80
810					3.4	0.267	0.168	0.21325	0.098	0.83
825					2.3	0.180	0.166	0.14426	0.014	0.12
840					2.3	0.180	0.163	0.14426	0.017	0.14
855					2.7	0.212	0.161	0.16934	0.051	0.43
870					2.6	0.204	0.158	0.16307	0.045	0.38
885					2.6	0.204	0.156	0.16307	0.048	0.40
900					2.5	0.196	0.154	0.1568	0.042	0.36
915					2.4	0.188	0.151	0.15053	0.037	0.31
930					2.3	0.180	0.149	0.14426	0.031	0.26
945					1.9	0.149	0.147	0.11917	0.002	0.02
960					1.9	0.149	0.145	0.11917	0.004	0.04
975					0.4	0.031	0.142	0.02509	0.006	0.05
990					0.4	0.031	0.140	0.02509	0.006	0.05
1005					0.3	0.024	0.138	0.01882	0.005	0.04
1020					0.3	0.024	0.136	0.01882	0.005	0.04
1035					0.5	0.039	0.134	0.03136	0.008	0.07
1050					0.5	0.039	0.132	0.03136	0.008	0.07
1065					0.5	0.039	0.130	0.03136	0.008	0.07
1080					0.4	0.031	0.128	0.02509	0.006	0.05
1095					0.4	0.031	0.126	0.02509	0.006	0.05
1110					0.4	0.031	0.124	0.02509	0.006	0.05
1125					0.3	0.024	0.123	0.01882	0.005	0.04
1140					0.2	0.016	0.121	0.01254	0.003	0.03
1155					0.3	0.024	0.119	0.01882	0.005	0.04
1170					0.4	0.031	0.118	0.02509	0.006	0.05
1185					0.3	0.024	0.116	0.01882	0.005	0.04
1200					0.2	0.016	0.114	0.01254	0.003	0.03
1215					0.3	0.024	0.113	0.01882	0.005	0.04
1230					0.3	0.024	0.112	0.01882	0.005	0.04
1245					0.3	0.024	0.110	0.01882	0.005	0.04
1260					0.2	0.016	0.109	0.01254	0.003	0.03
1275					0.3	0.024	0.108	0.01882	0.005	0.04
1290					0.2	0.016	0.106	0.01254	0.003	0.03
1305					0.3	0.024	0.105	0.01882	0.005	0.04
1320					0.2	0.016	0.104	0.01254	0.003	0.03
1335					0.3	0.024	0.103	0.01882	0.005	0.04
1350					0.2	0.016	0.102	0.01254	0.003	0.03
1365					0.2	0.016	0.101	0.01254	0.003	0.03
1380					0.2	0.016	0.100	0.01254	0.003	0.03
1395					0.2	0.016	0.100	0.01254	0.003	0.03
1410					0.2	0.016	0.099	0.01254	0.003	0.03
1425					0.2	0.016	0.099	0.01254	0.003	0.03
1440					0.2	0.016	0.098	0.01254	0.003	0.03
				Σ[20] -	100			Σ[23] -	1.545	12.996

Proposed Condition Tank B
5-yr Storm Event

Total Area	Total Impervious Area	%Imp	Fp (infiltration rate based on RI, Plate E-6.2)
8.41	6.928	0.82	0.76

Constant Loss Rate

F= Fp(1-0.9Ai)
F= 0.1965

For 24-hr storms, Ft is variable loss rate

Ft= C[24-(T/60)]^1.55+Fm
Ft= 0.3471

C= (F-Fm)/54
C= 0.0018

Fm= 0.5F
Fm= 0.0983

T= 7.5

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[1] CONCENTRATION POINT						[2] AREA DESIGNATION					
[3] DRAINAGE AREA - ACRES			8.41	ACRES		[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])				N/A	
[5] UNIT TIME - MINUTES			5	MIN PER E-1.2		[6] LAG TIME-MINUTES					MIN
[7] UNIT TIME-PERCENT OF LAG			N/A			[8] S-CURVE				N/A	
[9] STORM FREQUENCY & DURATION			5 YEAR	1 HOUR		[10] TOTAL ADJUSTED STORM RAIN-INCHES				0.641	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR			N/A			[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR				N/A	
[13] CONSTANT LOSS RATE-IN/HR			0.1965		IN/HR	[14] LOW LOSS RATE-PERCENT				0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.00	0	0.000	0.00
5					4.2	0.323	0.20	0.258	0.127	1.07
10					4.3	0.331	0.20	0.265	0.134	1.14
15					5	0.385	0.20	0.308	0.188	1.60
20					5	0.385	0.20	0.308	0.188	1.60
25					5.8	0.446	0.20	0.357	0.250	2.12
30					6.5	0.500	0.20	0.400	0.303	2.57
35					7.4	0.569	0.20	0.455	0.373	3.16
40					8.6	0.662	0.20	0.529	0.465	3.94
45					12.3	0.946	0.20	0.757	0.750	6.36
50					29.1	2.238	0.20	1.791	2.042	17.32
55					6.8	0.523	0.20	0.418	0.327	2.77
60					5	0.385	0.20	0.308	0.188	1.60
				Σ[20] -	100			Σ[23] -	5.33	45.23

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[1] CONCENTRATION POINT			[2] AREA DESIGNATION				
[3] DRAINAGE AREA - ACRES	8.41	ACRES	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])			N/A	
[5] UNIT TIME - MINUTES	5	MIN PER E-1.2	[6] LAG TIME-MINUTES				MIN
[7] UNIT TIME-PERCENT OF LAG	N/A		[8] S-CURVE			N/A	
[9] STORM FREQUENCY & DURATION	5 YEAR	3 HOUR	[10] TOTAL ADJUSTED STORM RAIN-INCHES			1.08	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR	N/A		[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR			N/A	
[13] CONSTANT LOSS RATE-IN/HR	0.1965	IN/HR	[14] LOW LOSS RATE-PERCENT			0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.20	0	0.000	0.00
5					1.3	0.16848	0.20	0.13478	0.034	0.28
10					1.3	0.16848	0.20	0.13478	0.034	0.28
15					1.1	0.14256	0.20	0.11405	0.029	0.24
20					1.5	0.1944	0.20	0.15552	0.039	0.33
25					1.5	0.1944	0.20	0.15552	0.039	0.33
30					1.8	0.23328	0.20	0.18662	0.037	0.31
35					1.5	0.1944	0.20	0.15552	0.039	0.33
40					1.8	0.23328	0.20	0.18662	0.037	0.31
45					1.8	0.23328	0.20	0.18662	0.037	0.31
50					1.5	0.1944	0.20	0.15552	0.039	0.33
55					1.6	0.20736	0.20	0.16589	0.011	0.09
60					1.8	0.23328	0.20	0.18662	0.037	0.31
65					2.2	0.28512	0.20	0.2281	0.089	0.75
70					2.2	0.28512	0.20	0.2281	0.089	0.75
75					2.2	0.28512	0.20	0.2281	0.089	0.75
80					2	0.2592	0.20	0.20736	0.063	0.53
85					2.6	0.33696	0.20	0.26957	0.140	1.18
90					2.7	0.34992	0.20	0.27994	0.153	1.29
95					2.4	0.31104	0.20	0.24883	0.115	0.96
100					2.7	0.34992	0.20	0.27994	0.153	1.29
105					3.3	0.42768	0.20	0.34214	0.231	1.94
110					3.1	0.40176	0.20	0.32141	0.205	1.73
115					2.9	0.37584	0.20	0.30067	0.179	1.51
120					3	0.3888	0.20	0.31104	0.192	1.62
125					3.1	0.40176	0.20	0.32141	0.205	1.73
130					4.2	0.54432	0.20	0.43546	0.348	2.93
135					5	0.648	0.20	0.5184	0.452	3.80
140					3.5	0.4536	0.20	0.36288	0.257	2.16
145					6.8	0.88128	0.20	0.70502	0.685	5.76
150					7.3	0.94608	0.20	0.75686	0.750	6.30
155					8.2	1.06272	0.20	0.85018	0.866	7.28
160					5.9	0.76464	0.20	0.61171	0.568	4.78
165					2	0.2592	0.20	0.20736	0.063	0.53
170					1.8	0.23328	0.20	0.18662	0.037	0.31
175					1.8	0.23328	0.20	0.18662	0.037	0.31
180					0.6	0.07776	0.20	0.06221	0.016	0.13
				Σ[20] -	100			Σ[23] -	6.39	53.74

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210						1.3	0.23244	0.20	0.18595	0.036	0.30
215						1.4	0.25032	0.20	0.20026	0.054	0.45
220						1.4	0.25032	0.20	0.20026	0.054	0.45
225						1.5	0.2682	0.20	0.21456	0.072	0.60
230						1.5	0.2682	0.20	0.21456	0.072	0.60
235						1.6	0.28608	0.20	0.22886	0.090	0.75
240						1.6	0.28608	0.20	0.22886	0.090	0.75
245						1.7	0.30396	0.20	0.24317	0.107	0.90
250						1.8	0.32184	0.20	0.25747	0.125	1.05
255						1.9	0.33972	0.20	0.27178	0.143	1.20
260						2	0.3576	0.20	0.28608	0.161	1.35
265						2.1	0.37548	0.20	0.30038	0.179	1.51
270						2.1	0.37548	0.20	0.30038	0.179	1.51
275						2.2	0.39336	0.20	0.31469	0.197	1.66
280						2.3	0.41124	0.20	0.32899	0.215	1.81
285						2.4	0.42912	0.20	0.3433	0.233	1.96
290						2.4	0.42912	0.20	0.3433	0.233	1.96
295						2.5	0.447	0.20	0.3576	0.251	2.11
300						2.6	0.46488	0.20	0.3719	0.268	2.26
305						3.1	0.55428	0.20	0.44342	0.358	3.01
310						3.6	0.64368	0.20	0.51494	0.447	3.76
315						3.9	0.69732	0.20	0.55786	0.501	4.21
320						4.2	0.75096	0.20	0.60077	0.554	4.66
325						4.7	0.84036	0.20	0.67229	0.644	5.41
330						5.6	1.00128	0.20	0.80102	0.805	6.77
335						1.9	0.33972	0.20	0.27178	0.143	1.20
340						0.9	0.16092	0.20	0.12874	0.032	0.27
345						0.6	0.10728	0.20	0.08582	0.021	0.18
350						0.5	0.0894	0.20	0.07152	0.018	0.15
355						0.3	0.05364	0.20	0.04291	0.011	0.09
360						0.2	0.03576	0.20	0.02861	0.007	0.06
					Σ[20] -	100			Σ[23] -	7.38	62.06

RCFC & WCD HYDROLOGY MANUAL	SYNTHETIC UNIT HYDROGRAPH METHOD UNIT HYDROGRAPH AND EFFECTIVE RAIN CALCULATION FORM	PROJECT: ROCAS GRANDES 2 JOB #: 3816 PAGE

[1] CONCENTRATION POINT					[2] AREA DESIGNATION			
[3] DRAINAGE AREA - ACRES	8.41	ACRES			[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])			
[5] UNIT TIME - MINUTES	15	MIN PER E-1.2			[6] LAG TIME-MINUTES			MIN
[7] UNIT TIME-PERCENT OF LAG	N/A				[8] S-CURVE		N/A	
[9] STORM FREQUENCY & DURATION	5 YEAR	24 HOUR			[10] TOTAL ADJUSTED STORM RAIN-INCHES		2.59	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR	0.3471				[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR			
[13] CONSTANT LOSS RATE-IN/HR			IN/HR		[14] LOW LOSS RATE-PERCENT		0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.00	0	0.000	0.00
15					0.2	0.021	0.344	0.01658	0.004	0.03
30					0.3	0.031	0.340	0.02486	0.006	0.05
45					0.3	0.031	0.336	0.02486	0.006	0.05
60					0.4	0.041	0.333	0.03315	0.008	0.07
75					0.3	0.031	0.329	0.02486	0.006	0.05
90					0.3	0.031	0.325	0.02486	0.006	0.05
105					0.3	0.031	0.321	0.02486	0.006	0.05
120					0.4	0.041	0.317	0.03315	0.008	0.07
135					0.4	0.041	0.313	0.03315	0.008	0.07
150					0.4	0.041	0.309	0.03315	0.008	0.07
165					0.5	0.052	0.306	0.04144	0.010	0.09
180					0.5	0.052	0.302	0.04144	0.010	0.09
195					0.5	0.052	0.298	0.04144	0.010	0.09
210					0.5	0.052	0.294	0.04144	0.010	0.09
225					0.5	0.052	0.291	0.04144	0.010	0.09
240					0.6	0.062	0.287	0.04973	0.012	0.10
255					0.6	0.062	0.284	0.04973	0.012	0.10
270					0.7	0.073	0.280	0.05802	0.015	0.12
285					0.7	0.073	0.276	0.05802	0.015	0.12
300					0.8	0.083	0.273	0.0663	0.017	0.14
315					0.6	0.062	0.269	0.04973	0.012	0.10
330					0.7	0.073	0.266	0.05802	0.015	0.12
345					0.8	0.083	0.262	0.0663	0.017	0.14
360					0.8	0.083	0.259	0.0663	0.017	0.14
375					0.9	0.093	0.255	0.07459	0.019	0.16
390					0.9	0.093	0.252	0.07459	0.019	0.16
405					1	0.104	0.249	0.08288	0.021	0.17
420					1	0.104	0.245	0.08288	0.021	0.17
435					1	0.104	0.242	0.08288	0.021	0.17
450					1.1	0.114	0.239	0.09117	0.023	0.19
465					1.2	0.124	0.235	0.09946	0.025	0.21
480					1.3	0.135	0.232	0.10774	0.027	0.23
495					1.5	0.155	0.229	0.12432	0.031	0.26
510					1.5	0.155	0.226	0.12432	0.031	0.26
525					1.6	0.166	0.223	0.13261	0.033	0.28
540					1.7	0.176	0.220	0.1409	0.035	0.30
555					1.9	0.197	0.216	0.15747	0.039	0.33
570					2	0.207	0.213	0.16576	0.041	0.35
585					2.1	0.218	0.210	0.17405	0.007	0.06
600					2.2	0.228	0.207	0.18234	0.021	0.17
615					1.5	0.155	0.204	0.12432	0.031	0.26

630					1.5	0.155	0.201	0.12432	0.031	0.26
645					2	0.207	0.199	0.16576	0.009	0.07
660					2	0.207	0.196	0.16576	0.012	0.10
675					1.9	0.197	0.193	0.15747	0.004	0.03
690					1.9	0.197	0.190	0.15747	0.007	0.06
705					1.7	0.176	0.187	0.1409	0.035	0.30
720					1.8	0.186	0.184	0.14918	0.002	0.02
735					2.5	0.259	0.182	0.2072	0.077	0.65
750					2.6	0.269	0.179	0.21549	0.090	0.76
765					2.8	0.290	0.176	0.23206	0.114	0.96
780					2.9	0.300	0.174	0.24035	0.127	1.07
795					3.4	0.352	0.171	0.28179	0.181	1.52
810					3.4	0.352	0.168	0.28179	0.184	1.55
825					2.3	0.238	0.166	0.19062	0.072	0.61
840					2.3	0.238	0.163	0.19062	0.075	0.63
855					2.7	0.280	0.161	0.22378	0.119	1.00
870					2.6	0.269	0.158	0.21549	0.111	0.93
885					2.6	0.269	0.156	0.21549	0.113	0.95
900					2.5	0.259	0.154	0.2072	0.105	0.89
915					2.4	0.249	0.151	0.19891	0.097	0.82
930					2.3	0.238	0.149	0.19062	0.089	0.75
945					1.9	0.197	0.147	0.15747	0.050	0.42
960					1.9	0.197	0.145	0.15747	0.052	0.44
975					0.4	0.041	0.142	0.03315	0.008	0.07
990					0.4	0.041	0.140	0.03315	0.008	0.07
1005					0.3	0.031	0.138	0.02486	0.006	0.05
1020					0.3	0.031	0.136	0.02486	0.006	0.05
1035					0.5	0.052	0.134	0.04144	0.010	0.09
1050					0.5	0.052	0.132	0.04144	0.010	0.09
1065					0.5	0.052	0.130	0.04144	0.010	0.09
1080					0.4	0.041	0.128	0.03315	0.008	0.07
1095					0.4	0.041	0.126	0.03315	0.008	0.07
1110					0.4	0.041	0.124	0.03315	0.008	0.07
1125					0.3	0.031	0.123	0.02486	0.006	0.05
1140					0.2	0.021	0.121	0.01658	0.004	0.03
1155					0.3	0.031	0.119	0.02486	0.006	0.05
1170					0.4	0.041	0.118	0.03315	0.008	0.07
1185					0.3	0.031	0.116	0.02486	0.006	0.05
1200					0.2	0.021	0.114	0.01658	0.004	0.03
1215					0.3	0.031	0.113	0.02486	0.006	0.05
1230					0.3	0.031	0.112	0.02486	0.006	0.05
1245					0.3	0.031	0.110	0.02486	0.006	0.05
1260					0.2	0.021	0.109	0.01658	0.004	0.03
1275					0.3	0.031	0.108	0.02486	0.006	0.05
1290					0.2	0.021	0.106	0.01658	0.004	0.03
1305					0.3	0.031	0.105	0.02486	0.006	0.05
1320					0.2	0.021	0.104	0.01658	0.004	0.03
1335					0.3	0.031	0.103	0.02486	0.006	0.05
1350					0.2	0.021	0.102	0.01658	0.004	0.03
1365					0.2	0.021	0.101	0.01658	0.004	0.03
1380					0.2	0.021	0.100	0.01658	0.004	0.03
1395					0.2	0.021	0.100	0.01658	0.004	0.03
1410					0.2	0.021	0.099	0.01658	0.004	0.03
1425					0.2	0.021	0.099	0.01658	0.004	0.03
1440					0.2	0.021	0.098	0.01658	0.004	0.03
				Σ[20] -	100			Σ[23] -	2.651	22.294

Proposed Condition Tank B
10-yr Storm Event

Total Area	Total Impervious Area	%Imp	Fp (infiltration rate based on RI, Plate E-6.2)
8.41	6.928	0.82	0.38

Constant Loss Rate

F= Fp(1-0.9Ai)
F= 0.0983

For 24-hr storms, Ft is variable loss rate

Ft= C[24-(T/60)]^1.55+Fm
Ft= 0.1735

C= (F-Fm)/54
C= 0.0009

Fm= 0.5F
Fm= 0.0491

T= 7.5

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[1] CONCENTRATION POINT						[2] AREA DESIGNATION					
[3] DRAINAGE AREA - ACRES			8.41	ACRES		[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])				N/A	
[5] UNIT TIME - MINUTES			5	MIN PER E-1.2		[6] LAG TIME-MINUTES					MIN
[7] UNIT TIME-PERCENT OF LAG			N/A			[8] S-CURVE				N/A	
[9] STORM FREQUENCY & DURATION			10 YEAR	1 HOUR		[10] TOTAL ADJUSTED STORM RAIN-INCHES				0.778	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR			N/A			[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR				N/A	
[13] CONSTANT LOSS RATE-IN/HR			0.0983		IN/HR	[14] LOW LOSS RATE-PERCENT				0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.00	0	0.000	0.00
5					4.2	0.392	0.10	0.314	0.294	2.49
10					4.3	0.401	0.10	0.321	0.303	2.57
15					5	0.467	0.10	0.373	0.369	3.12
20					5	0.467	0.10	0.373	0.369	3.12
25					5.8	0.541	0.10	0.433	0.443	3.76
30					6.5	0.607	0.10	0.485	0.509	4.31
35					7.4	0.691	0.10	0.553	0.593	5.02
40					8.6	0.803	0.10	0.642	0.705	5.98
45					12.3	1.148	0.10	0.919	1.050	8.90
50					29.1	2.717	0.10	2.173	2.618	22.20
55					6.8	0.635	0.10	0.508	0.537	4.55
60					5	0.467	0.10	0.373	0.369	3.12
				Σ[20] -	100			Σ[23] -	8.16	69.17

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[1] CONCENTRATION POINT			[2] AREA DESIGNATION				
[3] DRAINAGE AREA - ACRES	8.41	ACRES	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])			N/A	
[5] UNIT TIME - MINUTES	5	MIN PER E-1.2	[6] LAG TIME-MINUTES				MIN
[7] UNIT TIME-PERCENT OF LAG	N/A		[8] S-CURVE			N/A	
[9] STORM FREQUENCY & DURATION	10 YEAR	3 HOUR	[10] TOTAL ADJUSTED STORM RAIN-INCHES			1.29	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR	N/A		[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR			N/A	
[13] CONSTANT LOSS RATE-IN/HR	0.0983	IN/HR	[14] LOW LOSS RATE-PERCENT			0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.10	0	0.000	0.00
5					1.3	0.20124	0.10	0.16099	0.103	0.87
10					1.3	0.20124	0.10	0.16099	0.103	0.87
15					1.1	0.17028	0.10	0.13622	0.072	0.61
20					1.5	0.2322	0.10	0.18576	0.134	1.13
25					1.5	0.2322	0.10	0.18576	0.134	1.13
30					1.8	0.27864	0.10	0.22291	0.180	1.52
35					1.5	0.2322	0.10	0.18576	0.134	1.13
40					1.8	0.27864	0.10	0.22291	0.180	1.52
45					1.8	0.27864	0.10	0.22291	0.180	1.52
50					1.5	0.2322	0.10	0.18576	0.134	1.13
55					1.6	0.24768	0.10	0.19814	0.149	1.26
60					1.8	0.27864	0.10	0.22291	0.180	1.52
65					2.2	0.34056	0.10	0.27245	0.242	2.04
70					2.2	0.34056	0.10	0.27245	0.242	2.04
75					2.2	0.34056	0.10	0.27245	0.242	2.04
80					2	0.3096	0.10	0.24768	0.211	1.78
85					2.6	0.40248	0.10	0.32198	0.304	2.56
90					2.7	0.41796	0.10	0.33437	0.320	2.69
95					2.4	0.37152	0.10	0.29722	0.273	2.30
100					2.7	0.41796	0.10	0.33437	0.320	2.69
105					3.3	0.51084	0.10	0.40867	0.413	3.47
110					3.1	0.47988	0.10	0.3839	0.382	3.21
115					2.9	0.44892	0.10	0.35914	0.351	2.95
120					3	0.4644	0.10	0.37152	0.366	3.08
125					3.1	0.47988	0.10	0.3839	0.382	3.21
130					4.2	0.65016	0.10	0.52013	0.552	4.64
135					5	0.774	0.10	0.6192	0.676	5.68
140					3.5	0.5418	0.10	0.43344	0.444	3.73
145					6.8	1.05264	0.10	0.84211	0.954	8.03
150					7.3	1.13004	0.10	0.90403	1.032	8.68
155					8.2	1.26936	0.10	1.01549	1.171	9.85
160					5.9	0.91332	0.10	0.73066	0.815	6.85
165					2	0.3096	0.10	0.24768	0.211	1.78
170					1.8	0.27864	0.10	0.22291	0.180	1.52
175					1.8	0.27864	0.10	0.22291	0.180	1.52
180					0.6	0.09288	0.10	0.0743	0.019	0.16
				Σ[20] -	100			Σ[23] -	11.97	100.63

RCFC & WCD HYDROLOGY MANUAL	SYNTHETIC UNIT HYDROGRAPH METHOD UNIT HYDROGRAPH AND EFFECTIVE RAIN CALCULATION FORM	PROJECT: ROCAS GRANDES 2 JOB #: 3816 PAGE

[1] CONCENTRATION POINT					[2] AREA DESIGNATION			
[3] DRAINAGE AREA - ACRES	8.41	ACRES			[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])			
[5] UNIT TIME - MINUTES	5	MIN	PER E-1.2		[6] LAG TIME-MINUTES			MIN
[7] UNIT TIME-PERCENT OF LAG	N/A				[8] S-CURVE		N/A	
[9] STORM FREQUENCY & DURATION	10 YEAR	6 HOUR			[10] TOTAL ADJUSTED STORM RAIN-INCHES		1.77	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR	N/A				[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR		N/A	
[13] CONSTANT LOSS RATE-IN/HR	0.0983		IN/HR		[14] LOW LOSS RATE-PERCENT		0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.10	0	0.000	0.00
5					0.5	0.1062	0.10	0.08496	0.008	0.07
10					0.6	0.12744	0.10	0.10195	0.029	0.25
15					0.6	0.12744	0.10	0.10195	0.029	0.25
20					0.6	0.12744	0.10	0.10195	0.029	0.25
25					0.6	0.12744	0.10	0.10195	0.029	0.25
30					0.7	0.14868	0.10	0.11894	0.050	0.42
35					0.7	0.14868	0.10	0.11894	0.050	0.42
40					0.7	0.14868	0.10	0.11894	0.050	0.42
45					0.7	0.14868	0.10	0.11894	0.050	0.42
50					0.7	0.14868	0.10	0.11894	0.050	0.42
55					0.7	0.14868	0.10	0.11894	0.050	0.42
60					0.8	0.16992	0.10	0.13594	0.072	0.60
65					0.8	0.16992	0.10	0.13594	0.072	0.60
70					0.8	0.16992	0.10	0.13594	0.072	0.60
75					0.8	0.16992	0.10	0.13594	0.072	0.60
80					0.8	0.16992	0.10	0.13594	0.072	0.60
85					0.8	0.16992	0.10	0.13594	0.072	0.60
90					0.8	0.16992	0.10	0.13594	0.072	0.60
95					0.8	0.16992	0.10	0.13594	0.072	0.60
100					0.8	0.16992	0.10	0.13594	0.072	0.60
105					0.8	0.16992	0.10	0.13594	0.072	0.60
110					0.8	0.16992	0.10	0.13594	0.072	0.60
115					0.8	0.16992	0.10	0.13594	0.072	0.60
120					0.9	0.19116	0.10	0.15293	0.093	0.78
125					0.8	0.16992	0.10	0.13594	0.072	0.60
130					0.9	0.19116	0.10	0.15293	0.093	0.78
135					0.9	0.19116	0.10	0.15293	0.093	0.78
140					0.9	0.19116	0.10	0.15293	0.093	0.78
145					0.9	0.19116	0.10	0.15293	0.093	0.78
150					0.9	0.19116	0.10	0.15293	0.093	0.78
155					0.9	0.19116	0.10	0.15293	0.093	0.78
160					0.9	0.19116	0.10	0.15293	0.093	0.78
165					1	0.2124	0.10	0.16992	0.114	0.96
170					1	0.2124	0.10	0.16992	0.114	0.96
175					1	0.2124	0.10	0.16992	0.114	0.96
180					1	0.2124	0.10	0.16992	0.114	0.96
185					1	0.2124	0.10	0.16992	0.114	0.96
190					1.1	0.23364	0.10	0.18691	0.135	1.14
195					1.1	0.23364	0.10	0.18691	0.135	1.14
200					1.1	0.23364	0.10	0.18691	0.135	1.14
205					1.2	0.25488	0.10	0.2039	0.157	1.32

210						1.3	0.27612	0.10	0.2209	0.178	1.50
215						1.4	0.29736	0.10	0.23789	0.199	1.67
220						1.4	0.29736	0.10	0.23789	0.199	1.67
225						1.5	0.3186	0.10	0.25488	0.220	1.85
230						1.5	0.3186	0.10	0.25488	0.220	1.85
235						1.6	0.33984	0.10	0.27187	0.242	2.03
240						1.6	0.33984	0.10	0.27187	0.242	2.03
245						1.7	0.36108	0.10	0.28886	0.263	2.21
250						1.8	0.38232	0.10	0.30586	0.284	2.39
255						1.9	0.40356	0.10	0.32285	0.305	2.57
260						2	0.4248	0.10	0.33984	0.327	2.75
265						2.1	0.44604	0.10	0.35683	0.348	2.92
270						2.1	0.44604	0.10	0.35683	0.348	2.92
275						2.2	0.46728	0.10	0.37382	0.369	3.10
280						2.3	0.48852	0.10	0.39082	0.390	3.28
285						2.4	0.50976	0.10	0.40781	0.411	3.46
290						2.4	0.50976	0.10	0.40781	0.411	3.46
295						2.5	0.531	0.10	0.4248	0.433	3.64
300						2.6	0.55224	0.10	0.44179	0.454	3.82
305						3.1	0.65844	0.10	0.52675	0.560	4.71
310						3.6	0.76464	0.10	0.61171	0.666	5.60
315						3.9	0.82836	0.10	0.66269	0.730	6.14
320						4.2	0.89208	0.10	0.71366	0.794	6.68
325						4.7	0.99828	0.10	0.79862	0.900	7.57
330						5.6	1.18944	0.10	0.95155	1.091	9.18
335						1.9	0.40356	0.10	0.32285	0.305	2.57
340						0.9	0.19116	0.10	0.15293	0.093	0.78
345						0.6	0.12744	0.10	0.10195	0.029	0.25
350						0.5	0.1062	0.10	0.08496	0.008	0.07
355						0.3	0.06372	0.10	0.05098	0.013	0.11
360						0.2	0.04248	0.10	0.03398	0.008	0.07
					Σ[20] -	100			Σ[23] -	14.27	120.04

RCFC & WCD HYDROLOGY MANUAL	SYNTHETIC UNIT HYDROGRAPH METHOD UNIT HYDROGRAPH AND EFFECTIVE RAIN CALCULATION FORM	PROJECT: ROCAS GRANDES 2 JOB #: 3816 PAGE

[1] CONCENTRATION POINT			[2] AREA DESIGNATION				
[3] DRAINAGE AREA - ACRES	8.41	ACRES	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])				
[5] UNIT TIME - MINUTES	15	MIN PER E-1.2	[6] LAG TIME-MINUTES				MIN
[7] UNIT TIME-PERCENT OF LAG	N/A		[8] S-CURVE			N/A	
[9] STORM FREQUENCY & DURATION	10 YEAR	24 HOUR	[10] TOTAL ADJUSTED STORM RAIN-INCHES			3.1	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR	0.1735		[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR				
[13] CONSTANT LOSS RATE-IN/HR		IN/HR	[14] LOW LOSS RATE-PERCENT			0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.00	0	0.000	0.00
15					0.2	0.025	0.172	0.01984	0.005	0.04
30					0.3	0.037	0.170	0.02976	0.007	0.06
45					0.3	0.037	0.168	0.02976	0.007	0.06
60					0.4	0.050	0.166	0.03968	0.010	0.08
75					0.3	0.037	0.164	0.02976	0.007	0.06
90					0.3	0.037	0.162	0.02976	0.007	0.06
105					0.3	0.037	0.160	0.02976	0.007	0.06
120					0.4	0.050	0.158	0.03968	0.010	0.08
135					0.4	0.050	0.157	0.03968	0.010	0.08
150					0.4	0.050	0.155	0.03968	0.010	0.08
165					0.5	0.062	0.153	0.0496	0.012	0.10
180					0.5	0.062	0.151	0.0496	0.012	0.10
195					0.5	0.062	0.149	0.0496	0.012	0.10
210					0.5	0.062	0.147	0.0496	0.012	0.10
225					0.5	0.062	0.145	0.0496	0.012	0.10
240					0.6	0.074	0.144	0.05952	0.015	0.13
255					0.6	0.074	0.142	0.05952	0.015	0.13
270					0.7	0.087	0.140	0.06944	0.017	0.15
285					0.7	0.087	0.138	0.06944	0.017	0.15
300					0.8	0.099	0.136	0.07936	0.020	0.17
315					0.6	0.074	0.135	0.05952	0.015	0.13
330					0.7	0.087	0.133	0.06944	0.017	0.15
345					0.8	0.099	0.131	0.07936	0.020	0.17
360					0.8	0.099	0.129	0.07936	0.020	0.17
375					0.9	0.112	0.128	0.08928	0.022	0.19
390					0.9	0.112	0.126	0.08928	0.022	0.19
405					1	0.124	0.124	0.0992	0.025	0.21
420					1	0.124	0.123	0.0992	0.001	0.01
435					1	0.124	0.121	0.0992	0.003	0.03
450					1.1	0.136	0.119	0.10912	0.017	0.14
465					1.2	0.149	0.118	0.11904	0.031	0.26
480					1.3	0.161	0.116	0.12896	0.045	0.38
495					1.5	0.186	0.114	0.1488	0.072	0.60
510					1.5	0.186	0.113	0.1488	0.073	0.61
525					1.6	0.198	0.111	0.15872	0.087	0.73
540					1.7	0.211	0.110	0.16864	0.101	0.85
555					1.9	0.236	0.108	0.18848	0.127	1.07
570					2	0.248	0.107	0.1984	0.141	1.19
585					2.1	0.260	0.105	0.20832	0.155	1.31
600					2.2	0.273	0.104	0.21824	0.169	1.42
615					1.5	0.186	0.102	0.1488	0.084	0.71

630					1.5	0.186	0.101	0.1488	0.085	0.72
645					2	0.248	0.099	0.1984	0.149	1.25
660					2	0.248	0.098	0.1984	0.150	1.26
675					1.9	0.236	0.096	0.18848	0.139	1.17
690					1.9	0.236	0.095	0.18848	0.141	1.18
705					1.7	0.211	0.094	0.16864	0.117	0.99
720					1.8	0.223	0.092	0.17856	0.131	1.10
735					2.5	0.310	0.091	0.248	0.219	1.84
750					2.6	0.322	0.089	0.25792	0.233	1.96
765					2.8	0.347	0.088	0.27776	0.259	2.18
780					2.9	0.360	0.087	0.28768	0.273	2.29
795					3.4	0.422	0.085	0.33728	0.336	2.83
810					3.4	0.422	0.084	0.33728	0.337	2.84
825					2.3	0.285	0.083	0.22816	0.202	1.70
840					2.3	0.285	0.082	0.22816	0.204	1.71
855					2.7	0.335	0.080	0.26784	0.254	2.14
870					2.6	0.322	0.079	0.25792	0.243	2.05
885					2.6	0.322	0.078	0.25792	0.244	2.06
900					2.5	0.310	0.077	0.248	0.233	1.96
915					2.4	0.298	0.076	0.23808	0.222	1.87
930					2.3	0.285	0.074	0.22816	0.211	1.77
945					1.9	0.236	0.073	0.18848	0.162	1.36
960					1.9	0.236	0.072	0.18848	0.163	1.37
975					0.4	0.050	0.071	0.03968	0.010	0.08
990					0.4	0.050	0.070	0.03968	0.010	0.08
1005					0.3	0.037	0.069	0.02976	0.007	0.06
1020					0.3	0.037	0.068	0.02976	0.007	0.06
1035					0.5	0.062	0.067	0.0496	0.012	0.10
1050					0.5	0.062	0.066	0.0496	0.012	0.10
1065					0.5	0.062	0.065	0.0496	0.012	0.10
1080					0.4	0.050	0.064	0.03968	0.010	0.08
1095					0.4	0.050	0.063	0.03968	0.010	0.08
1110					0.4	0.050	0.062	0.03968	0.010	0.08
1125					0.3	0.037	0.061	0.02976	0.007	0.06
1140					0.2	0.025	0.060	0.01984	0.005	0.04
1155					0.3	0.037	0.060	0.02976	0.007	0.06
1170					0.4	0.050	0.059	0.03968	0.010	0.08
1185					0.3	0.037	0.058	0.02976	0.007	0.06
1200					0.2	0.025	0.057	0.01984	0.005	0.04
1215					0.3	0.037	0.056	0.02976	0.007	0.06
1230					0.3	0.037	0.056	0.02976	0.007	0.06
1245					0.3	0.037	0.055	0.02976	0.007	0.06
1260					0.2	0.025	0.054	0.01984	0.005	0.04
1275					0.3	0.037	0.054	0.02976	0.007	0.06
1290					0.2	0.025	0.053	0.01984	0.005	0.04
1305					0.3	0.037	0.053	0.02976	0.007	0.06
1320					0.2	0.025	0.052	0.01984	0.005	0.04
1335					0.3	0.037	0.051	0.02976	0.007	0.06
1350					0.2	0.025	0.051	0.01984	0.005	0.04
1365					0.2	0.025	0.051	0.01984	0.005	0.04
1380					0.2	0.025	0.050	0.01984	0.005	0.04
1395					0.2	0.025	0.050	0.01984	0.005	0.04
1410					0.2	0.025	0.050	0.01984	0.005	0.04
1425					0.2	0.025	0.049	0.01984	0.005	0.04
1440					0.2	0.025	0.049	0.01984	0.005	0.04
				Σ[20] -	100			Σ[23] -	6.425	54.032

Proposed Condition Tank B
100-yr Storm Event

Total Area	Total Impervious Area	%Imp	Fp (infiltration rate based on RI, Plate E-6.2)
8.41	6.928	0.82	0.38

Constant Loss Rate

F= Fp(1-0.9Ai)
F= 0.0983

For 24-hr storms, Ft is variable loss rate

Ft= C[24-(T/60)]^1.55+Fm
Ft= 0.1735

C= (F-Fm)/54
C= 0.0009

Fm= 0.5F
Fm= 0.0491

T= 7.5

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[1] CONCENTRATION POINT						[2] AREA DESIGNATION					
[3] DRAINAGE AREA - ACRES			8.41	ACRES		[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])				N/A	
[5] UNIT TIME - MINUTES			5	MIN PER E-1.2		[6] LAG TIME-MINUTES					MIN
[7] UNIT TIME-PERCENT OF LAG			N/A			[8] S-CURVE				N/A	
[9] STORM FREQUENCY & DURATION			100 YEAR	1 HOUR		[10] TOTAL ADJUSTED STORM RAIN-INCHES				1.27	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR			N/A			[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR				N/A	
[13] CONSTANT LOSS RATE-IN/HR			0.0983		IN/HR	[14] LOW LOSS RATE-PERCENT				0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.00	0	0.000	0.00
5					4.2	0.640	0.10	0.512	0.542	4.59
10					4.3	0.655	0.10	0.524	0.557	4.72
15					5	0.762	0.10	0.610	0.664	5.63
20					5	0.762	0.10	0.610	0.664	5.63
25					5.8	0.884	0.10	0.707	0.786	6.66
30					6.5	0.991	0.10	0.792	0.892	7.57
35					7.4	1.128	0.10	0.902	1.029	8.73
40					8.6	1.311	0.10	1.049	1.212	10.28
45					12.3	1.875	0.10	1.500	1.776	15.06
50					29.1	4.435	0.10	3.548	4.337	36.77
55					6.8	1.036	0.10	0.829	0.938	7.95
60					5	0.762	0.10	0.610	0.664	5.63
				Σ[20] -	100			Σ[23] -	14.06	119.23

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[1] CONCENTRATION POINT			[2] AREA DESIGNATION				
[3] DRAINAGE AREA - ACRES	8.41	ACRES		[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])		N/A	
[5] UNIT TIME - MINUTES	5	MIN PER E-1.2		[6] LAG TIME-MINUTES			MIN
[7] UNIT TIME-PERCENT OF LAG	N/A			[8] S-CURVE		N/A	
[9] STORM FREQUENCY & DURATION	100 YEAR	3 HOUR		[10] TOTAL ADJUSTED STORM RAIN-INCHES		2.01	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR	N/A			[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR		N/A	
[13] CONSTANT LOSS RATE-IN/HR	0.0983	IN/HR		[14] LOW LOSS RATE-PERCENT		0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.10	0	0.000	0.00
5					1.3	0.31356	0.10	0.25085	0.215	1.81
10					1.3	0.31356	0.10	0.25085	0.215	1.81
15					1.1	0.26532	0.10	0.21226	0.167	1.40
20					1.5	0.3618	0.10	0.28944	0.264	2.22
25					1.5	0.3618	0.10	0.28944	0.264	2.22
30					1.8	0.43416	0.10	0.34733	0.336	2.82
35					1.5	0.3618	0.10	0.28944	0.264	2.22
40					1.8	0.43416	0.10	0.34733	0.336	2.82
45					1.8	0.43416	0.10	0.34733	0.336	2.82
50					1.5	0.3618	0.10	0.28944	0.264	2.22
55					1.6	0.38592	0.10	0.30874	0.288	2.42
60					1.8	0.43416	0.10	0.34733	0.336	2.82
65					2.2	0.53064	0.10	0.42451	0.432	3.64
70					2.2	0.53064	0.10	0.42451	0.432	3.64
75					2.2	0.53064	0.10	0.42451	0.432	3.64
80					2	0.4824	0.10	0.38592	0.384	3.23
85					2.6	0.62712	0.10	0.5017	0.529	4.45
90					2.7	0.65124	0.10	0.52099	0.553	4.65
95					2.4	0.57888	0.10	0.4631	0.481	4.04
100					2.7	0.65124	0.10	0.52099	0.553	4.65
105					3.3	0.79596	0.10	0.63677	0.698	5.87
110					3.1	0.74772	0.10	0.59818	0.649	5.46
115					2.9	0.69948	0.10	0.55958	0.601	5.06
120					3	0.7236	0.10	0.57888	0.625	5.26
125					3.1	0.74772	0.10	0.59818	0.649	5.46
130					4.2	1.01304	0.10	0.81043	0.915	7.69
135					5	1.206	0.10	0.9648	1.108	9.32
140					3.5	0.8442	0.10	0.67536	0.746	6.27
145					6.8	1.64016	0.10	1.31213	1.542	12.97
150					7.3	1.76076	0.10	1.40861	1.662	13.98
155					8.2	1.97784	0.10	1.58227	1.880	15.81
160					5.9	1.42308	0.10	1.13846	1.325	11.14
165					2	0.4824	0.10	0.38592	0.384	3.23
170					1.8	0.43416	0.10	0.34733	0.336	2.82
175					1.8	0.43416	0.10	0.34733	0.336	2.82
180					0.6	0.14472	0.10	0.11578	0.046	0.39
				Σ[20] -	100			Σ[23] -	20.58	173.09

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[1] CONCENTRATION POINT			[2] AREA DESIGNATION				
[3] DRAINAGE AREA - ACRES	8.41	ACRES	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])				
[5] UNIT TIME - MINUTES	5	MIN PER E-1.2	[6] LAG TIME-MINUTES				MIN
[7] UNIT TIME-PERCENT OF LAG	N/A		[8] S-CURVE			N/A	
[9] STORM FREQUENCY & DURATION	100 YEAR	6 HOUR	[10] TOTAL ADJUSTED STORM RAIN-INCHES			2.72	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR	N/A		[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR			N/A	
[13] CONSTANT LOSS RATE-IN/HR	0.0983	IN/HR	[14] LOW LOSS RATE-PERCENT			0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.10	0	0.000	0.00
5					0.5	0.1632	0.10	0.13056	0.065	0.55
10					0.6	0.19584	0.10	0.15667	0.098	0.82
15					0.6	0.19584	0.10	0.15667	0.098	0.82
20					0.6	0.19584	0.10	0.15667	0.098	0.82
25					0.6	0.19584	0.10	0.15667	0.098	0.82
30					0.7	0.22848	0.10	0.18278	0.130	1.09
35					0.7	0.22848	0.10	0.18278	0.130	1.09
40					0.7	0.22848	0.10	0.18278	0.130	1.09
45					0.7	0.22848	0.10	0.18278	0.130	1.09
50					0.7	0.22848	0.10	0.18278	0.130	1.09
55					0.7	0.22848	0.10	0.18278	0.130	1.09
60					0.8	0.26112	0.10	0.2089	0.163	1.37
65					0.8	0.26112	0.10	0.2089	0.163	1.37
70					0.8	0.26112	0.10	0.2089	0.163	1.37
75					0.8	0.26112	0.10	0.2089	0.163	1.37
80					0.8	0.26112	0.10	0.2089	0.163	1.37
85					0.8	0.26112	0.10	0.2089	0.163	1.37
90					0.8	0.26112	0.10	0.2089	0.163	1.37
95					0.8	0.26112	0.10	0.2089	0.163	1.37
100					0.8	0.26112	0.10	0.2089	0.163	1.37
105					0.8	0.26112	0.10	0.2089	0.163	1.37
110					0.8	0.26112	0.10	0.2089	0.163	1.37
115					0.8	0.26112	0.10	0.2089	0.163	1.37
120					0.9	0.29376	0.10	0.23501	0.195	1.64
125					0.8	0.26112	0.10	0.2089	0.163	1.37
130					0.9	0.29376	0.10	0.23501	0.195	1.64
135					0.9	0.29376	0.10	0.23501	0.195	1.64
140					0.9	0.29376	0.10	0.23501	0.195	1.64
145					0.9	0.29376	0.10	0.23501	0.195	1.64
150					0.9	0.29376	0.10	0.23501	0.195	1.64
155					0.9	0.29376	0.10	0.23501	0.195	1.64
160					0.9	0.29376	0.10	0.23501	0.195	1.64
165					1	0.3264	0.10	0.26112	0.228	1.92
170					1	0.3264	0.10	0.26112	0.228	1.92
175					1	0.3264	0.10	0.26112	0.228	1.92
180					1	0.3264	0.10	0.26112	0.228	1.92
185					1	0.3264	0.10	0.26112	0.228	1.92
190					1.1	0.35904	0.10	0.28723	0.261	2.19
195					1.1	0.35904	0.10	0.28723	0.261	2.19
200					1.1	0.35904	0.10	0.28723	0.261	2.19
205					1.2	0.39168	0.10	0.31334	0.293	2.47

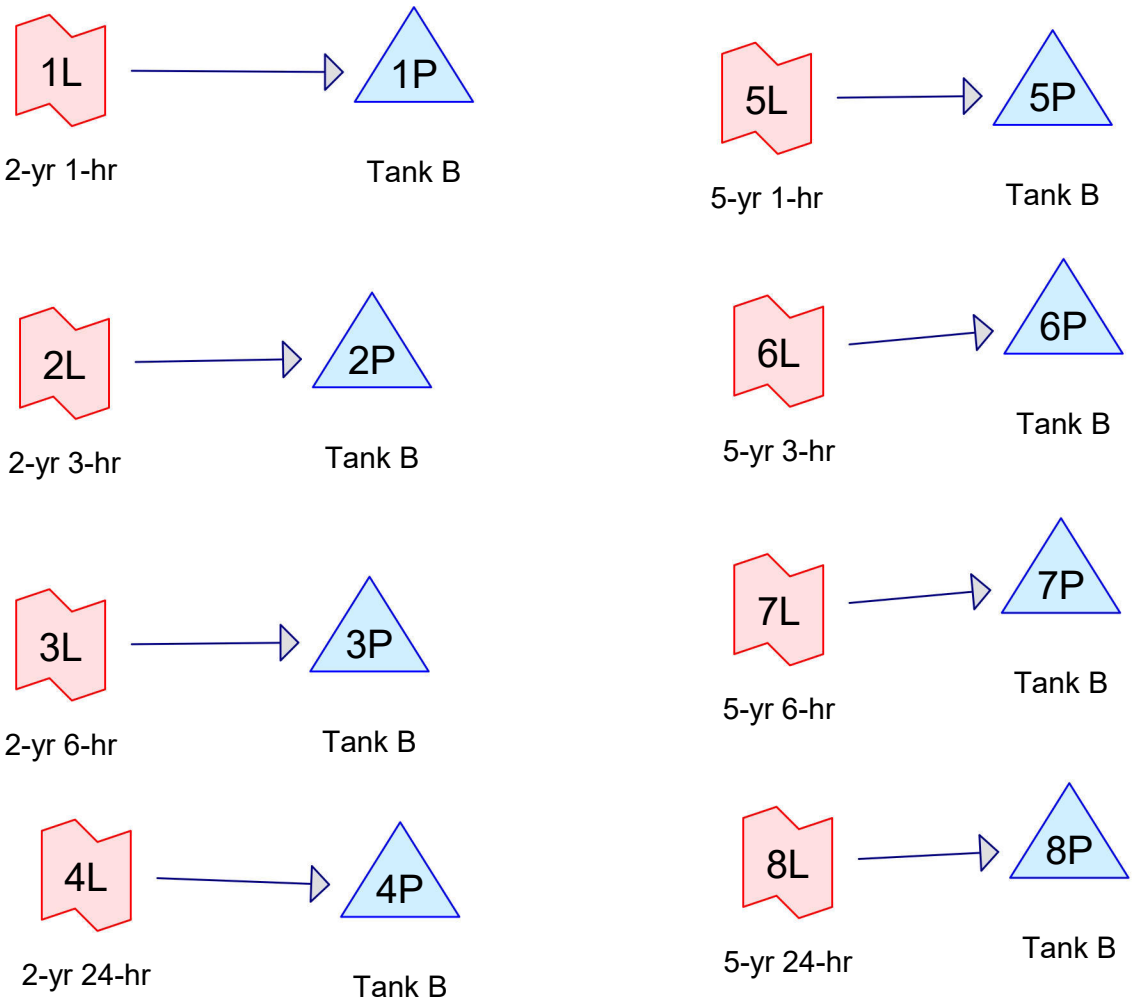
210						1.3	0.42432	0.10	0.33946	0.326	2.74
215						1.4	0.45696	0.10	0.36557	0.359	3.02
220						1.4	0.45696	0.10	0.36557	0.359	3.02
225						1.5	0.4896	0.10	0.39168	0.391	3.29
230						1.5	0.4896	0.10	0.39168	0.391	3.29
235						1.6	0.52224	0.10	0.41779	0.424	3.57
240						1.6	0.52224	0.10	0.41779	0.424	3.57
245						1.7	0.55488	0.10	0.4439	0.457	3.84
250						1.8	0.58752	0.10	0.47002	0.489	4.11
255						1.9	0.62016	0.10	0.49613	0.522	4.39
260						2	0.6528	0.10	0.52224	0.555	4.66
265						2.1	0.68544	0.10	0.54835	0.587	4.94
270						2.1	0.68544	0.10	0.54835	0.587	4.94
275						2.2	0.71808	0.10	0.57446	0.620	5.21
280						2.3	0.75072	0.10	0.60058	0.652	5.49
285						2.4	0.78336	0.10	0.62669	0.685	5.76
290						2.4	0.78336	0.10	0.62669	0.685	5.76
295						2.5	0.816	0.10	0.6528	0.718	6.04
300						2.6	0.84864	0.10	0.67891	0.750	6.31
305						3.1	1.01184	0.10	0.80947	0.914	7.68
310						3.6	1.17504	0.10	0.94003	1.077	9.06
315						3.9	1.27296	0.10	1.01837	1.175	9.88
320						4.2	1.37088	0.10	1.0967	1.273	10.70
325						4.7	1.53408	0.10	1.22726	1.436	12.07
330						5.6	1.82784	0.10	1.46227	1.730	14.55
335						1.9	0.62016	0.10	0.49613	0.522	4.39
340						0.9	0.29376	0.10	0.23501	0.195	1.64
345						0.6	0.19584	0.10	0.15667	0.098	0.82
350						0.5	0.1632	0.10	0.13056	0.065	0.55
355						0.3	0.09792	0.10	0.07834	0.020	0.16
360						0.2	0.06528	0.10	0.05222	0.013	0.11
					Σ[20] -	100			Σ[23] -	25.63	215.54

RCFC & WCD HYDROLOGY MANUAL	SYNTHETIC UNIT HYDROGRAPH METHOD UNIT HYDROGRAPH AND EFFECTIVE RAIN CALCULATION FORM	PROJECT: ROCAS GRANDES 2 JOB #: 3816 PAGE

[1] CONCENTRATION POINT					[2] AREA DESIGNATION			
[3] DRAINAGE AREA - ACRES	8.41	ACRES			[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])			
[5] UNIT TIME - MINUTES	15	MIN	PER E-1.2		[6] LAG TIME-MINUTES			MIN
[7] UNIT TIME-PERCENT OF LAG	N/A				[8] S-CURVE		N/A	
[9] STORM FREQUENCY & DURATION	100 YEAR	24 HOUR			[10] TOTAL ADJUSTED STORM RAIN-INCHES		4.83	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR	0.1735				[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR			
[13] CONSTANT LOSS RATE-IN/HR				IN/HR	[14] LOW LOSS RATE-PERCENT		0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.00	0	0.000	0.00
15					0.2	0.039	0.172	0.03091	0.008	0.06
30					0.3	0.058	0.170	0.04637	0.012	0.10
45					0.3	0.058	0.168	0.04637	0.012	0.10
60					0.4	0.077	0.166	0.06182	0.015	0.13
75					0.3	0.058	0.164	0.04637	0.012	0.10
90					0.3	0.058	0.162	0.04637	0.012	0.10
105					0.3	0.058	0.160	0.04637	0.012	0.10
120					0.4	0.077	0.158	0.06182	0.015	0.13
135					0.4	0.077	0.157	0.06182	0.015	0.13
150					0.4	0.077	0.155	0.06182	0.015	0.13
165					0.5	0.097	0.153	0.07728	0.019	0.16
180					0.5	0.097	0.151	0.07728	0.019	0.16
195					0.5	0.097	0.149	0.07728	0.019	0.16
210					0.5	0.097	0.147	0.07728	0.019	0.16
225					0.5	0.097	0.145	0.07728	0.019	0.16
240					0.6	0.116	0.144	0.09274	0.023	0.19
255					0.6	0.116	0.142	0.09274	0.023	0.19
270					0.7	0.135	0.140	0.10819	0.027	0.23
285					0.7	0.135	0.138	0.10819	0.027	0.23
300					0.8	0.155	0.136	0.12365	0.018	0.15
315					0.6	0.116	0.135	0.09274	0.023	0.19
330					0.7	0.135	0.133	0.10819	0.002	0.02
345					0.8	0.155	0.131	0.12365	0.023	0.20
360					0.8	0.155	0.129	0.12365	0.025	0.21
375					0.9	0.174	0.128	0.1391	0.046	0.39
390					0.9	0.174	0.126	0.1391	0.048	0.40
405					1	0.193	0.124	0.15456	0.069	0.58
420					1	0.193	0.123	0.15456	0.071	0.59
435					1	0.193	0.121	0.15456	0.072	0.61
450					1.1	0.213	0.119	0.17002	0.093	0.78
465					1.2	0.232	0.118	0.18547	0.114	0.96
480					1.3	0.251	0.116	0.20093	0.135	1.14
495					1.5	0.290	0.114	0.23184	0.175	1.47
510					1.5	0.290	0.113	0.23184	0.177	1.49
525					1.6	0.309	0.111	0.2473	0.198	1.66
540					1.7	0.328	0.110	0.26275	0.219	1.84
555					1.9	0.367	0.108	0.29366	0.259	2.18
570					2	0.386	0.107	0.30912	0.280	2.35
585					2.1	0.406	0.105	0.32458	0.301	2.53
600					2.2	0.425	0.104	0.34003	0.321	2.70
615					1.5	0.290	0.102	0.23184	0.188	1.58

630					1.5	0.290	0.101	0.23184	0.189	1.59
645					2	0.386	0.099	0.30912	0.287	2.42
660					2	0.386	0.098	0.30912	0.289	2.43
675					1.9	0.367	0.096	0.29366	0.271	2.28
690					1.9	0.367	0.095	0.29366	0.272	2.29
705					1.7	0.328	0.094	0.26275	0.235	1.98
720					1.8	0.348	0.092	0.27821	0.256	2.15
735					2.5	0.483	0.091	0.3864	0.392	3.30
750					2.6	0.502	0.089	0.40186	0.413	3.47
765					2.8	0.541	0.088	0.43277	0.453	3.81
780					2.9	0.560	0.087	0.44822	0.474	3.98
795					3.4	0.657	0.085	0.5255	0.571	4.81
810					3.4	0.657	0.084	0.5255	0.573	4.82
825					2.3	0.444	0.083	0.35549	0.361	3.04
840					2.3	0.444	0.082	0.35549	0.363	3.05
855					2.7	0.522	0.080	0.41731	0.441	3.71
870					2.6	0.502	0.079	0.40186	0.423	3.56
885					2.6	0.502	0.078	0.40186	0.424	3.57
900					2.5	0.483	0.077	0.3864	0.406	3.42
915					2.4	0.464	0.076	0.37094	0.388	3.26
930					2.3	0.444	0.074	0.35549	0.370	3.11
945					1.9	0.367	0.073	0.29366	0.294	2.47
960					1.9	0.367	0.072	0.29366	0.295	2.48
975					0.4	0.077	0.071	0.06182	0.006	0.05
990					0.4	0.077	0.070	0.06182	0.007	0.06
1005					0.3	0.058	0.069	0.04637	0.012	0.10
1020					0.3	0.058	0.068	0.04637	0.012	0.10
1035					0.5	0.097	0.067	0.07728	0.030	0.25
1050					0.5	0.097	0.066	0.07728	0.031	0.26
1065					0.5	0.097	0.065	0.07728	0.032	0.27
1080					0.4	0.077	0.064	0.06182	0.013	0.11
1095					0.4	0.077	0.063	0.06182	0.014	0.12
1110					0.4	0.077	0.062	0.06182	0.015	0.13
1125					0.3	0.058	0.061	0.04637	0.012	0.10
1140					0.2	0.039	0.060	0.03091	0.008	0.06
1155					0.3	0.058	0.060	0.04637	0.012	0.10
1170					0.4	0.077	0.059	0.06182	0.019	0.16
1185					0.3	0.058	0.058	0.04637	0.012	0.10
1200					0.2	0.039	0.057	0.03091	0.008	0.06
1215					0.3	0.058	0.056	0.04637	0.002	0.01
1230					0.3	0.058	0.056	0.04637	0.002	0.02
1245					0.3	0.058	0.055	0.04637	0.003	0.02
1260					0.2	0.039	0.054	0.03091	0.008	0.06
1275					0.3	0.058	0.054	0.04637	0.004	0.04
1290					0.2	0.039	0.053	0.03091	0.008	0.06
1305					0.3	0.058	0.053	0.04637	0.005	0.05
1320					0.2	0.039	0.052	0.03091	0.008	0.06
1335					0.3	0.058	0.051	0.04637	0.006	0.05
1350					0.2	0.039	0.051	0.03091	0.008	0.06
1365					0.2	0.039	0.051	0.03091	0.008	0.06
1380					0.2	0.039	0.050	0.03091	0.008	0.06
1395					0.2	0.039	0.050	0.03091	0.008	0.06
1410					0.2	0.039	0.050	0.03091	0.008	0.06
1425					0.2	0.039	0.049	0.03091	0.008	0.06
1440					0.2	0.039	0.049	0.03091	0.008	0.06
				Σ[20] -	100			Σ[23] -	11.962	100.597



Subcat Reach Pond Link

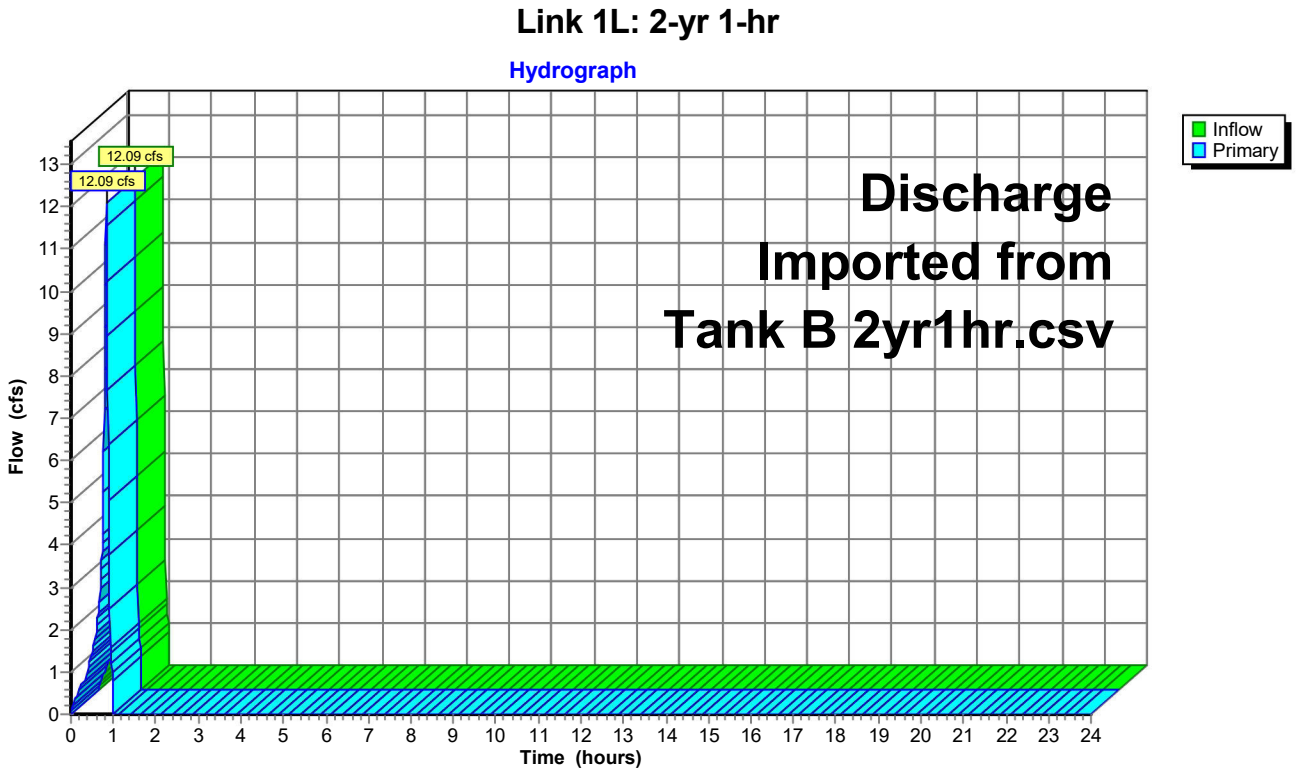
Routing Diagram for 3816 Tank B 2 and 5-yr
Prepared by Pasco Laret Suiter & Assoc, Printed 2/18/2025
HydroCAD® 10.20-6a s/n 10097 © 2024 HydroCAD Software Solutions LLC

Summary for Link 1L: 2-yr 1-hr

Inflow = 12.09 cfs @ 0.83 hrs, Volume= 0.193 af
Primary = 12.09 cfs @ 0.83 hrs, Volume= 0.193 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 1P : Tank B

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Discharge Imported from Tank B 2yr1hr.csv



Summary for Pond 1P: Tank B

Inflow	=	12.09 cfs @	0.83 hrs,	Volume=	0.193 af
Outflow	=	3.19 cfs @	0.90 hrs,	Volume=	0.191 af, Atten= 74%, Lag= 4.4 min
Primary	=	3.19 cfs @	0.90 hrs,	Volume=	0.191 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 1,561.61' @ 0.90 hrs Surf.Area= 5,215 sf Storage= 6,000 cf

Plug-Flow detention time= 56.0 min calculated for 0.191 af (99% of inflow)
Center-of-Mass det. time= 55.8 min (98.6 - 42.8)

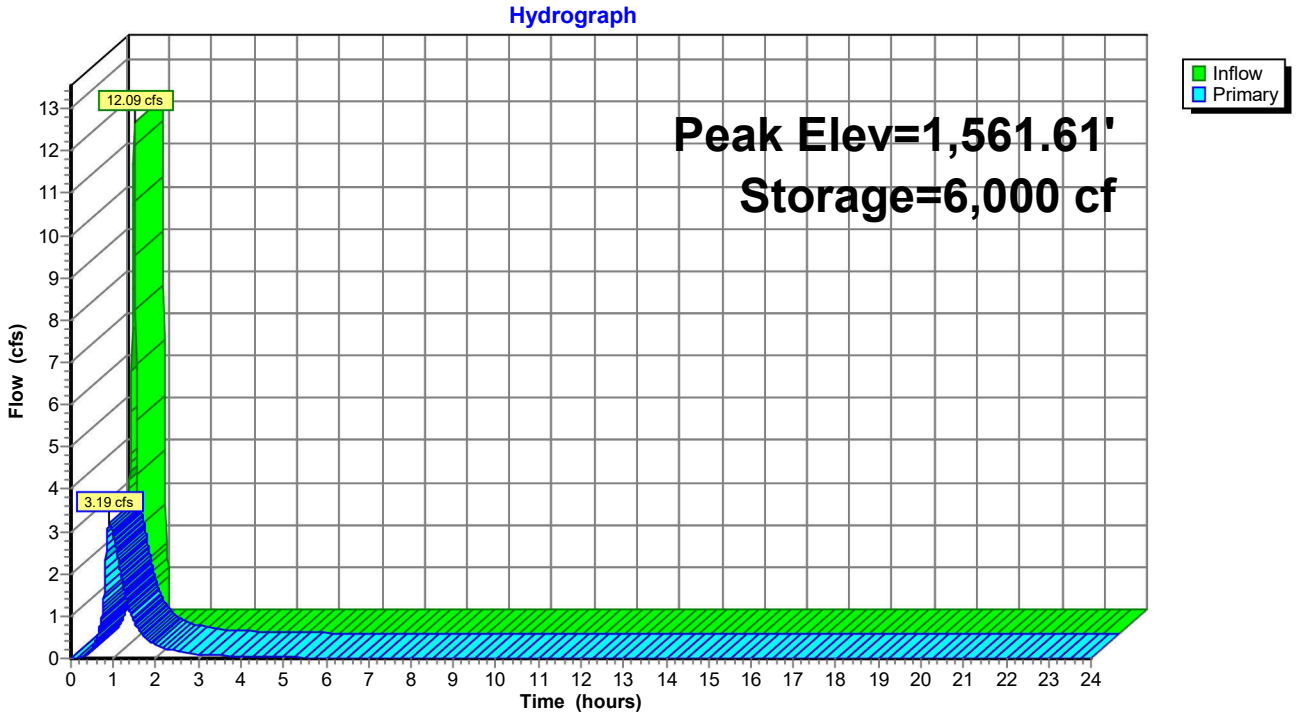
Volume	Invert	Avail.Storage	Storage Description
#1	1,560.40'	24,375 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,560.40	5,215	0.0	0	0	5,215
1,561.40	5,215	95.0	4,954	4,954	5,471
1,562.40	5,215	95.0	4,954	9,909	5,727
1,563.40	5,215	95.0	4,954	14,863	5,983
1,564.40	5,215	95.0	4,954	19,817	6,239
1,565.32	5,215	95.0	4,558	24,375	6,474

Device	Routing	Invert	Outlet Devices
#1	Primary	1,560.40'	**12.00" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#2	Primary	1,564.82'	**Custom Weir, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.50 0.50 Width (feet) 35.00 35.00 0.00

Primary OutFlow Max=3.19 cfs @ 0.90 hrs HW=1,561.61' (Free Discharge)
└**1=Orifice** (Orifice Controls 3.19 cfs @ 4.06 fps)
└**2=Custom Weir** (Controls 0.00 cfs)

Pond 1P: Tank B

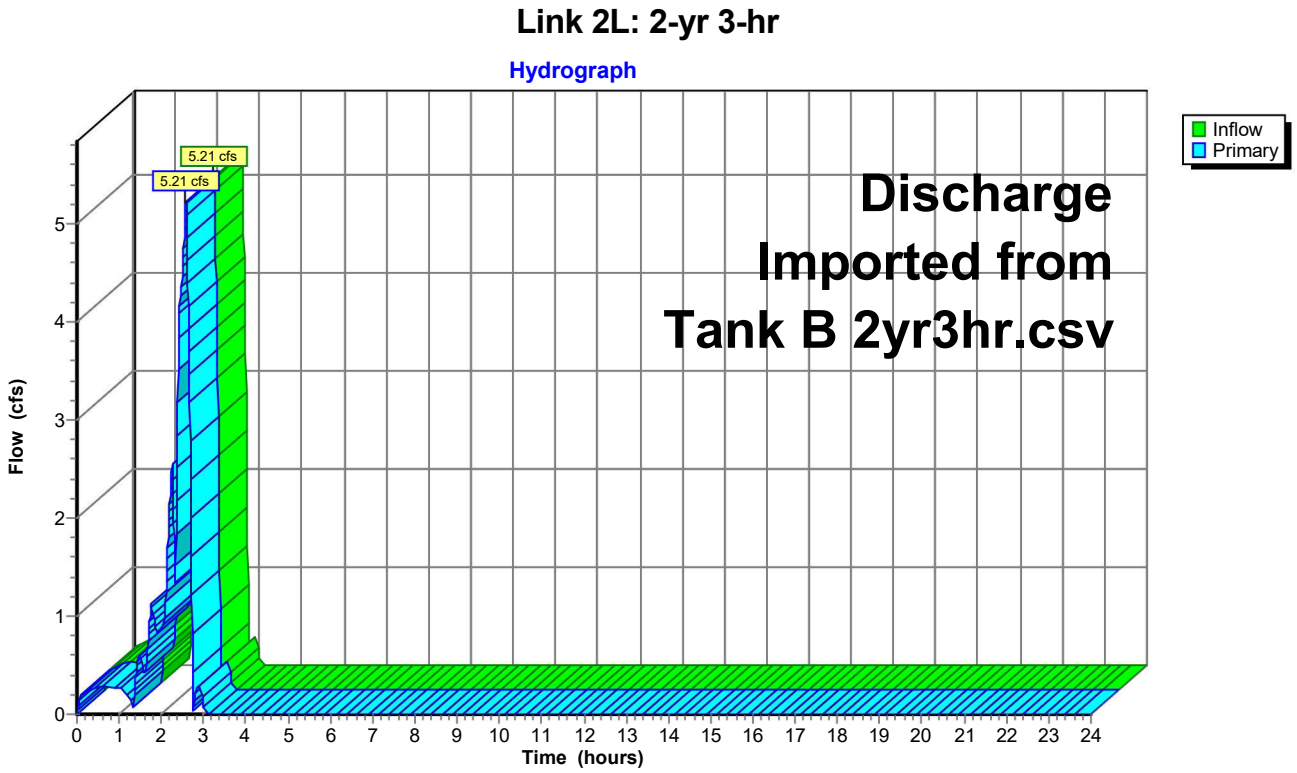


Summary for Link 2L: 2-yr 3-hr

Inflow = 5.21 cfs @ 2.58 hrs, Volume= 0.235 af
Primary = 5.21 cfs @ 2.58 hrs, Volume= 0.235 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 2P : Tank B

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Discharge Imported from Tank B 2yr3hr.csv



Summary for Pond 2P: Tank B

Inflow	=	5.21 cfs @	2.58 hrs,	Volume=	0.235 af
Outflow	=	2.81 cfs @	2.68 hrs,	Volume=	0.233 af, Atten= 46%, Lag= 6.0 min
Primary	=	2.81 cfs @	2.68 hrs,	Volume=	0.233 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 1,561.45' @ 2.68 hrs Surf.Area= 5,215 sf Storage= 5,205 cf

Plug-Flow detention time= 56.5 min calculated for 0.233 af (99% of inflow)
Center-of-Mass det. time= 56.2 min (184.7 - 128.5)

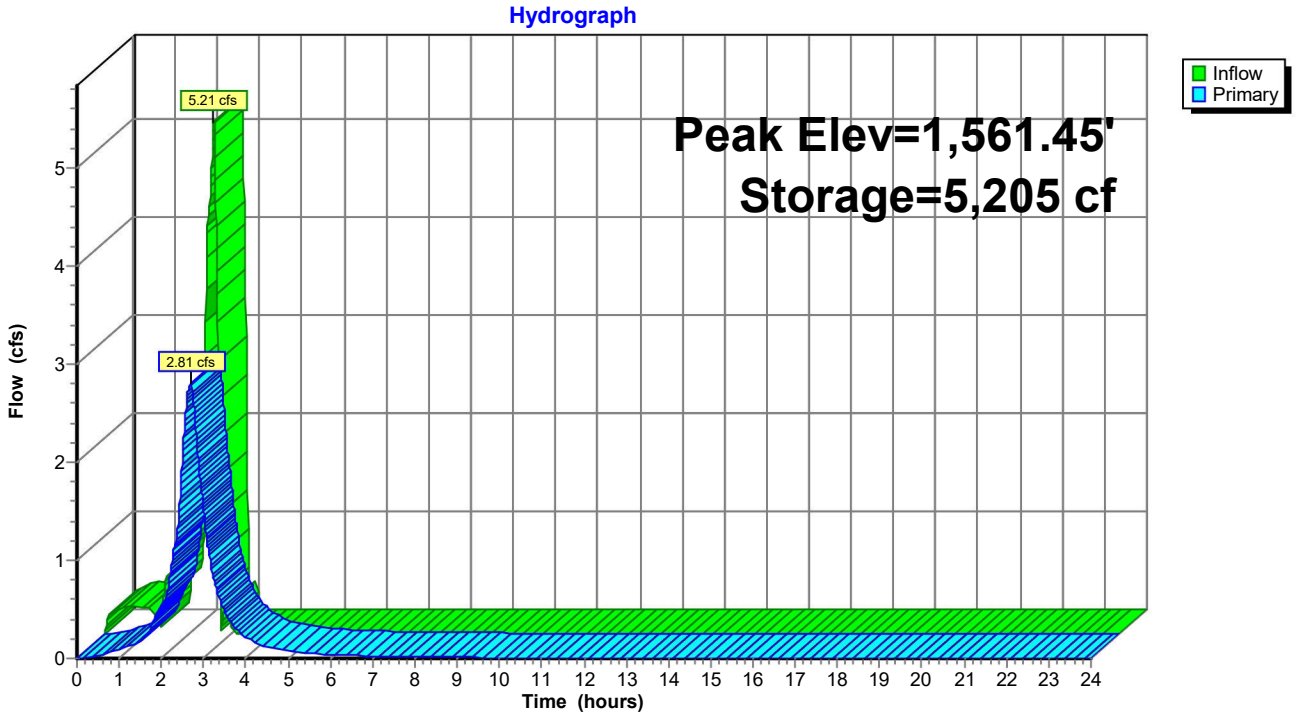
Volume	Invert	Avail.Storage	Storage Description
#1	1,560.40'	24,375 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,560.40	5,215	0.0	0	0	5,215
1,561.40	5,215	95.0	4,954	4,954	5,471
1,562.40	5,215	95.0	4,954	9,909	5,727
1,563.40	5,215	95.0	4,954	14,863	5,983
1,564.40	5,215	95.0	4,954	19,817	6,239
1,565.32	5,215	95.0	4,558	24,375	6,474

Device	Routing	Invert	Outlet Devices
#1	Primary	1,560.40'	**12.00" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#2	Primary	1,564.82'	**Custom Weir, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.50 0.50 Width (feet) 35.00 35.00 0.00

Primary OutFlow Max=2.81 cfs @ 2.68 hrs HW=1,561.45' (Free Discharge)
└**1=Orifice** (Orifice Controls 2.81 cfs @ 3.57 fps)
└**2=Custom Weir** (Controls 0.00 cfs)

Pond 2P: Tank B

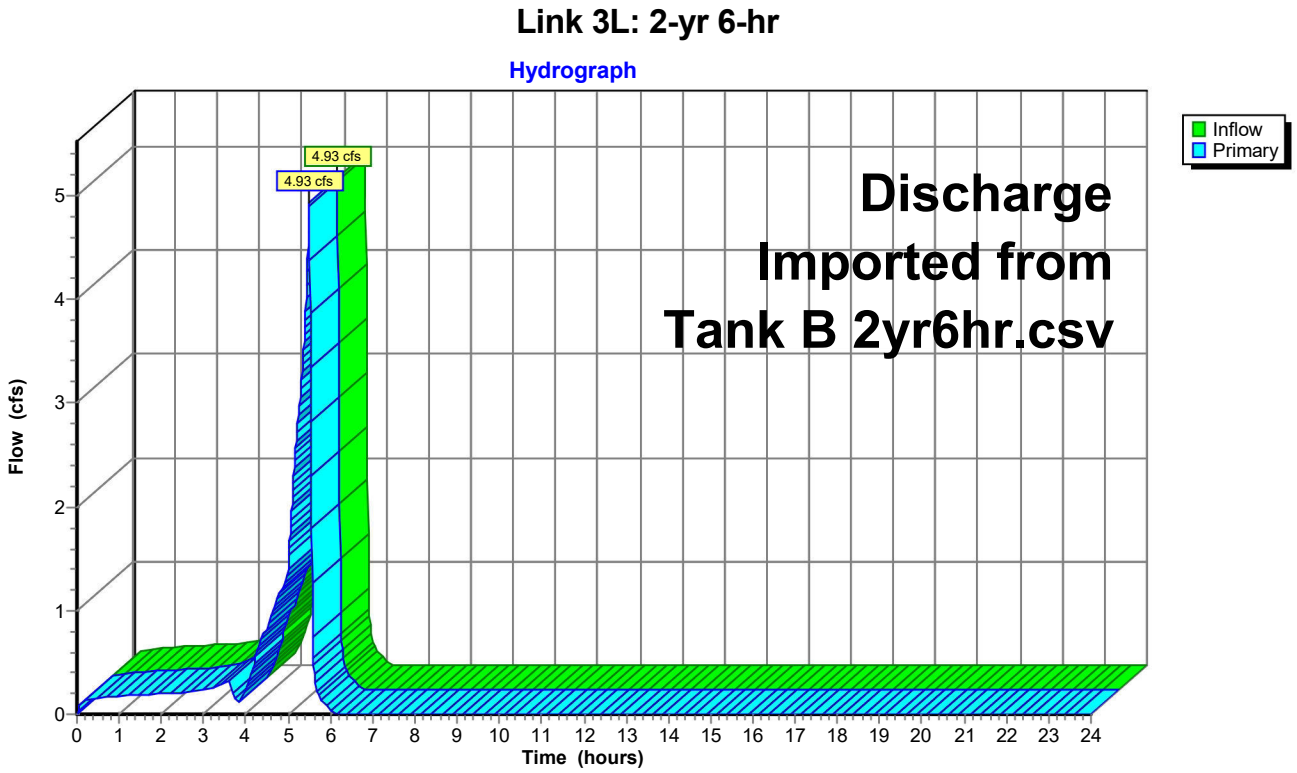


Summary for Link 3L: 2-yr 6-hr

Inflow = 4.93 cfs @ 5.50 hrs, Volume= 0.281 af
Primary = 4.93 cfs @ 5.50 hrs, Volume= 0.281 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 3P : Tank B

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Discharge Imported from Tank B 2yr6hr.csv



Summary for Pond 3P: Tank B

Inflow	=	4.93 cfs @	5.50 hrs,	Volume=	0.281 af
Outflow	=	2.68 cfs @	5.54 hrs,	Volume=	0.279 af, Atten= 46%, Lag= 2.7 min
Primary	=	2.68 cfs @	5.54 hrs,	Volume=	0.279 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 1,561.40' @ 5.54 hrs Surf.Area= 5,215 sf Storage= 4,973 cf

Plug-Flow detention time= 59.9 min calculated for 0.279 af (99% of inflow)
Center-of-Mass det. time= 59.3 min (325.2 - 265.9)

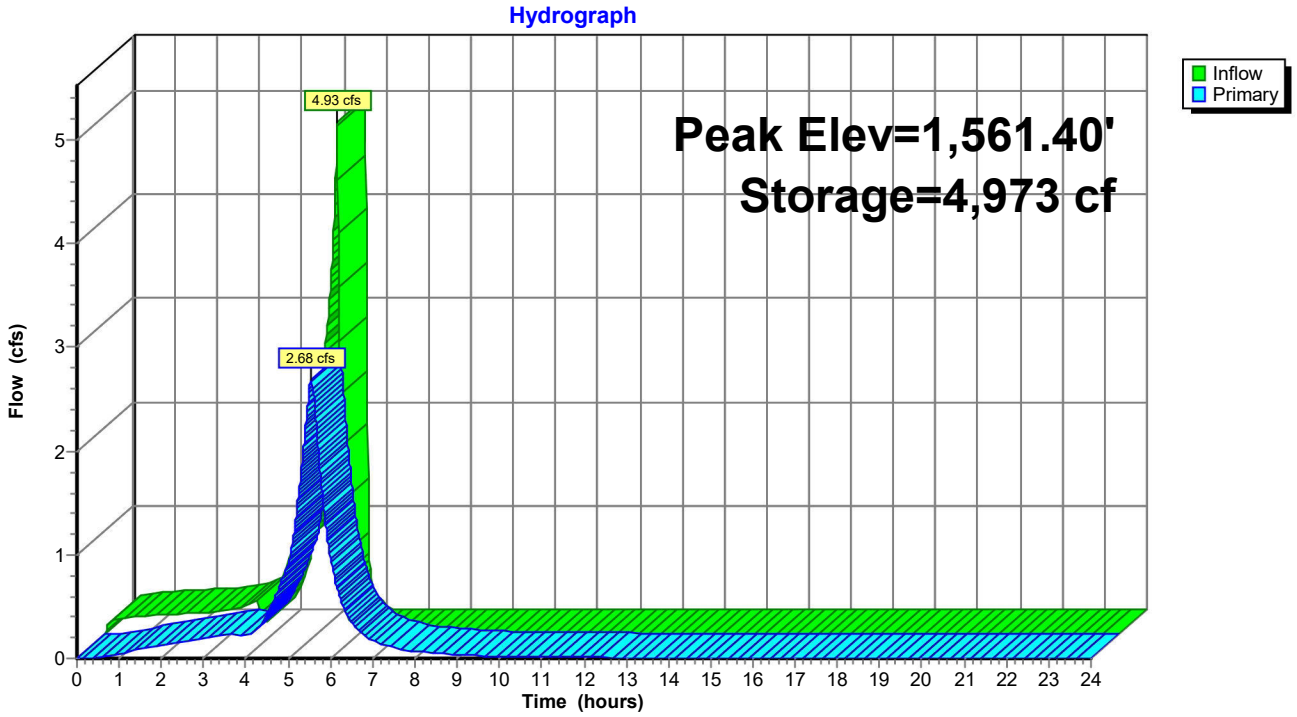
Volume	Invert	Avail.Storage	Storage Description
#1	1,560.40'	24,375 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,560.40	5,215	0.0	0	0	5,215
1,561.40	5,215	95.0	4,954	4,954	5,471
1,562.40	5,215	95.0	4,954	9,909	5,727
1,563.40	5,215	95.0	4,954	14,863	5,983
1,564.40	5,215	95.0	4,954	19,817	6,239
1,565.32	5,215	95.0	4,558	24,375	6,474

Device	Routing	Invert	Outlet Devices
#1	Primary	1,560.40'	**12.00" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#2	Primary	1,564.82'	**Custom Weir, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.50 0.50 Width (feet) 35.00 35.00 0.00

Primary OutFlow Max=2.68 cfs @ 5.54 hrs HW=1,561.40' (Free Discharge)
└**1=Orifice** (Orifice Controls 2.68 cfs @ 3.42 fps)
└**2=Custom Weir** (Controls 0.00 cfs)

Pond 3P: Tank B



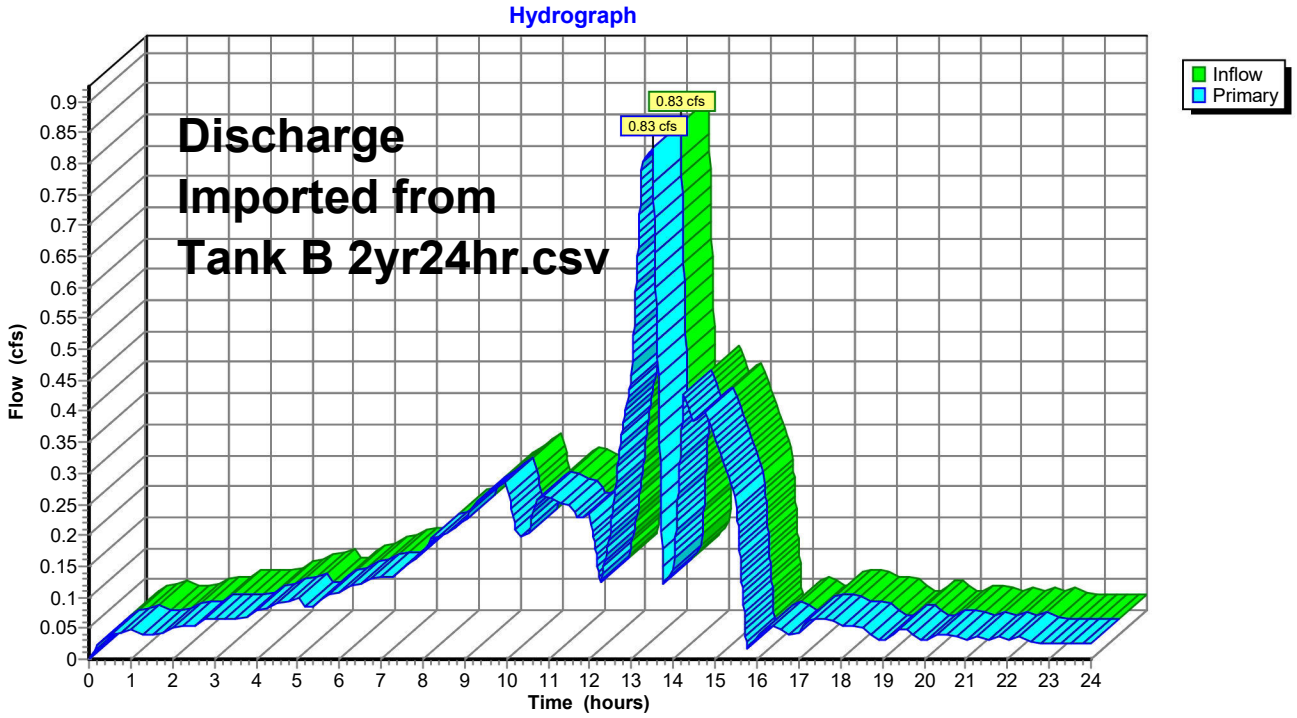
Summary for Link 4L: 2-yr 24-hr

Inflow = 0.83 cfs @ 13.50 hrs, Volume= 0.268 af
Primary = 0.83 cfs @ 13.50 hrs, Volume= 0.268 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 4P : Tank B

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Discharge Imported from Tank B 2yr24hr.csv

Link 4L: 2-yr 24-hr



Summary for Pond 4P: Tank B

Inflow	=	0.83 cfs @	13.50 hrs,	Volume=	0.268 af
Outflow	=	0.58 cfs @	13.59 hrs,	Volume=	0.259 af, Atten= 29%, Lag= 5.2 min
Primary	=	0.58 cfs @	13.59 hrs,	Volume=	0.259 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 1,560.78' @ 13.59 hrs Surf.Area= 5,215 sf Storage= 1,895 cf

Plug-Flow detention time= 93.9 min calculated for 0.259 af (96% of inflow)
Center-of-Mass det. time= 70.7 min (761.8 - 691.0)

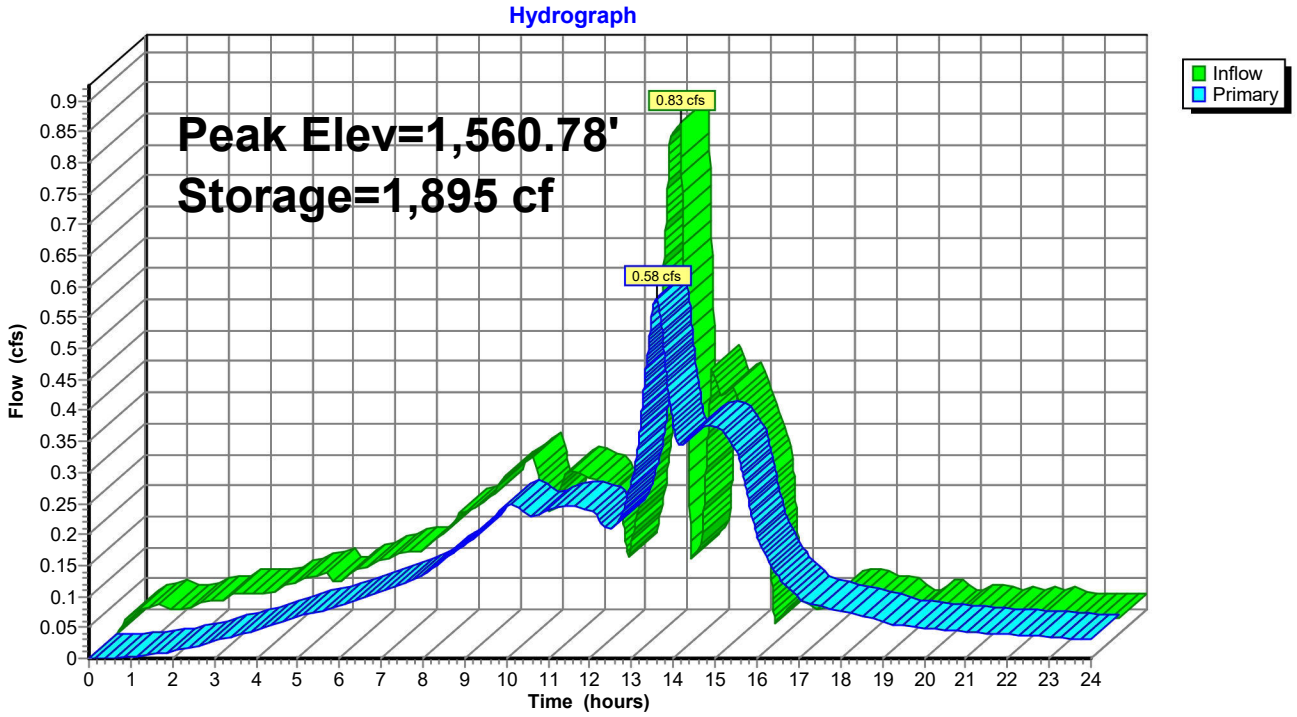
Volume	Invert	Avail.Storage	Storage Description
#1	1,560.40'	24,375 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,560.40	5,215	0.0	0	0	5,215
1,561.40	5,215	95.0	4,954	4,954	5,471
1,562.40	5,215	95.0	4,954	9,909	5,727
1,563.40	5,215	95.0	4,954	14,863	5,983
1,564.40	5,215	95.0	4,954	19,817	6,239
1,565.32	5,215	95.0	4,558	24,375	6,474

Device	Routing	Invert	Outlet Devices
#1	Primary	1,560.40'	**12.00" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#2	Primary	1,564.82'	**Custom Weir, Cv= 2.62 (C= 3.28)**
			Head (feet) 0.00 0.50 0.50
			Width (feet) 35.00 35.00 0.00

Primary OutFlow Max=0.58 cfs @ 13.59 hrs HW=1,560.78' (Free Discharge)
└**1=Orifice** (Orifice Controls 0.58 cfs @ 2.11 fps)
└**2=Custom Weir** (Controls 0.00 cfs)

Pond 4P: Tank B

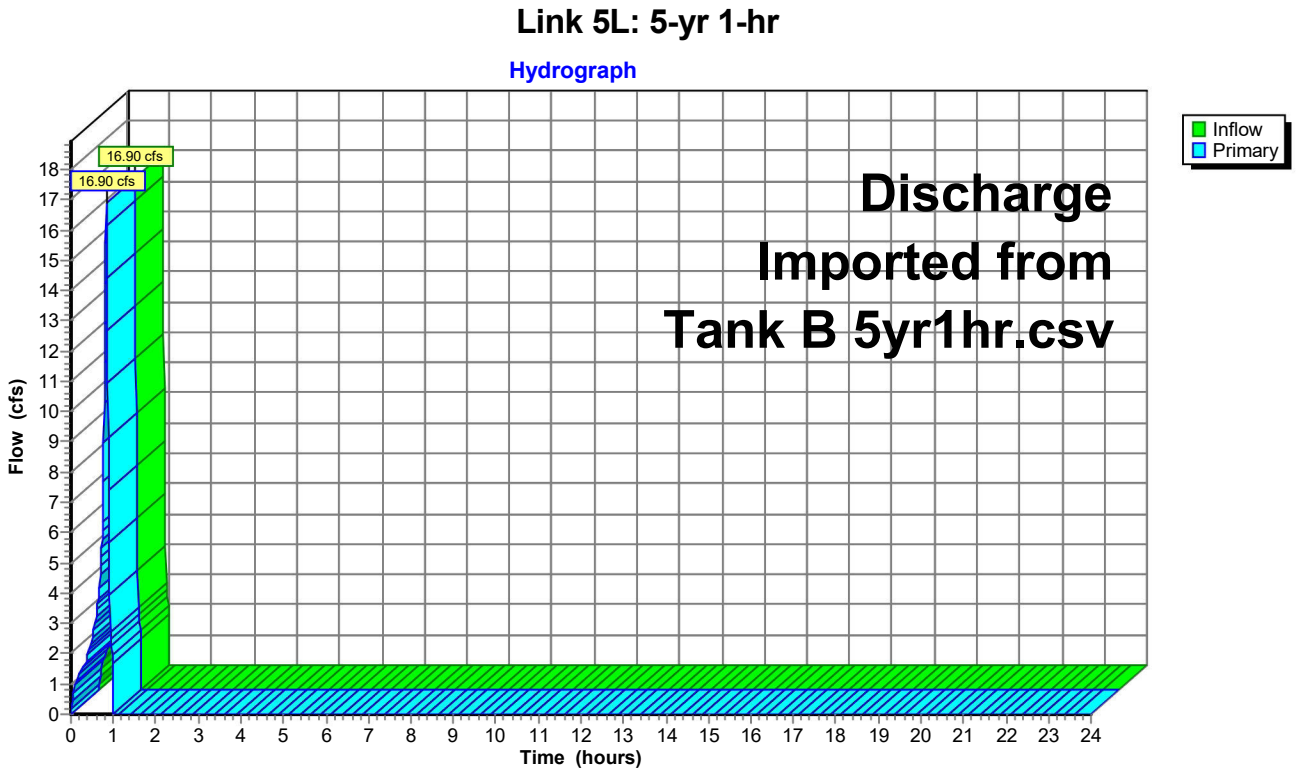


Summary for Link 5L: 5-yr 1-hr

Inflow = 16.90 cfs @ 0.83 hrs, Volume= 0.307 af
Primary = 16.90 cfs @ 0.83 hrs, Volume= 0.307 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 5P : Tank B

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Discharge Imported from Tank B 5yr1hr.csv



Summary for Pond 5P: Tank B

Inflow	=	16.90 cfs @	0.83 hrs,	Volume=	0.307 af
Outflow	=	4.29 cfs @	0.91 hrs,	Volume=	0.305 af, Atten= 75%, Lag= 4.6 min
Primary	=	4.29 cfs @	0.91 hrs,	Volume=	0.305 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 1,562.19' @ 0.91 hrs Surf.Area= 5,215 sf Storage= 8,865 cf

Plug-Flow detention time= 46.8 min calculated for 0.305 af (99% of inflow)
Center-of-Mass det. time= 47.2 min (88.3 - 41.0)

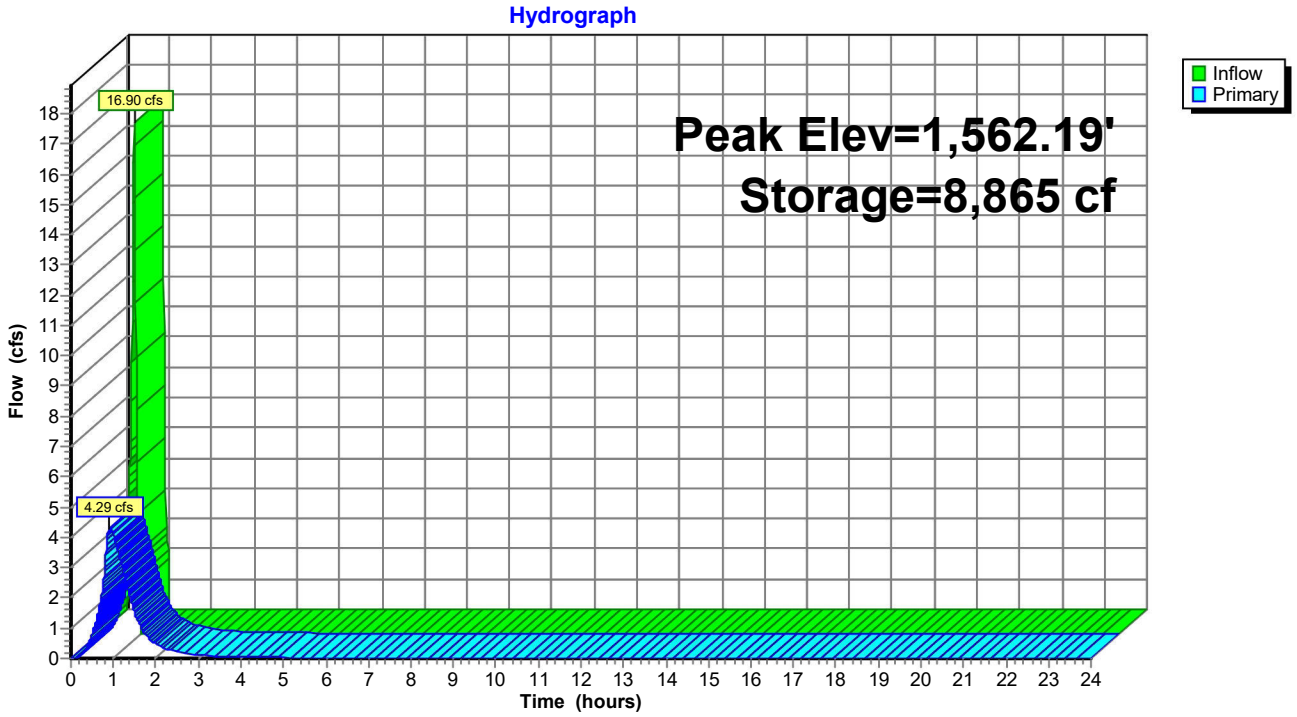
Volume	Invert	Avail.Storage	Storage Description
#1	1,560.40'	24,375 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,560.40	5,215	0.0	0	0	5,215
1,561.40	5,215	95.0	4,954	4,954	5,471
1,562.40	5,215	95.0	4,954	9,909	5,727
1,563.40	5,215	95.0	4,954	14,863	5,983
1,564.40	5,215	95.0	4,954	19,817	6,239
1,565.32	5,215	95.0	4,558	24,375	6,474

Device	Routing	Invert	Outlet Devices
#1	Primary	1,560.40'	**12.00" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#2	Primary	1,564.82'	**Custom Weir, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.50 0.50 Width (feet) 35.00 35.00 0.00

Primary OutFlow Max=4.29 cfs @ 0.91 hrs HW=1,562.19' (Free Discharge)
└**1=Orifice** (Orifice Controls 4.29 cfs @ 5.47 fps)
└**2=Custom Weir** (Controls 0.00 cfs)

Pond 5P: Tank B

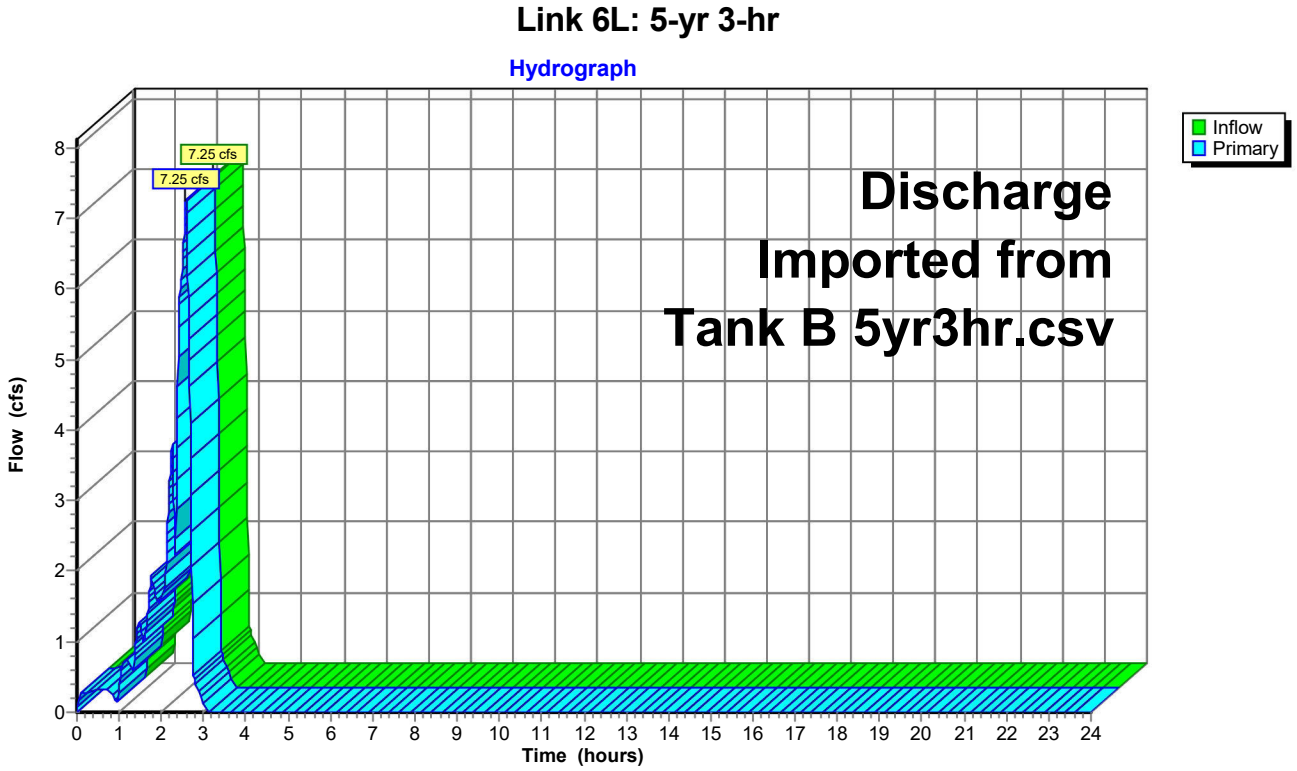


Summary for Link 6L: 5-yr 3-hr

Inflow = 7.25 cfs @ 2.58 hrs, Volume= 0.370 af
Primary = 7.25 cfs @ 2.58 hrs, Volume= 0.370 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 6P : Tank B

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Discharge Imported from Tank B 5yr3hr.csv



Summary for Pond 6P: Tank B

Inflow	=	7.25 cfs @	2.58 hrs,	Volume=	0.370 af
Outflow	=	3.76 cfs @	2.69 hrs,	Volume=	0.368 af, Atten= 48%, Lag= 6.4 min
Primary	=	3.76 cfs @	2.69 hrs,	Volume=	0.368 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 1,561.89' @ 2.69 hrs Surf.Area= 5,215 sf Storage= 7,380 cf

Plug-Flow detention time= 46.5 min calculated for 0.368 af (100% of inflow)
Center-of-Mass det. time= 46.7 min (173.4 - 126.7)

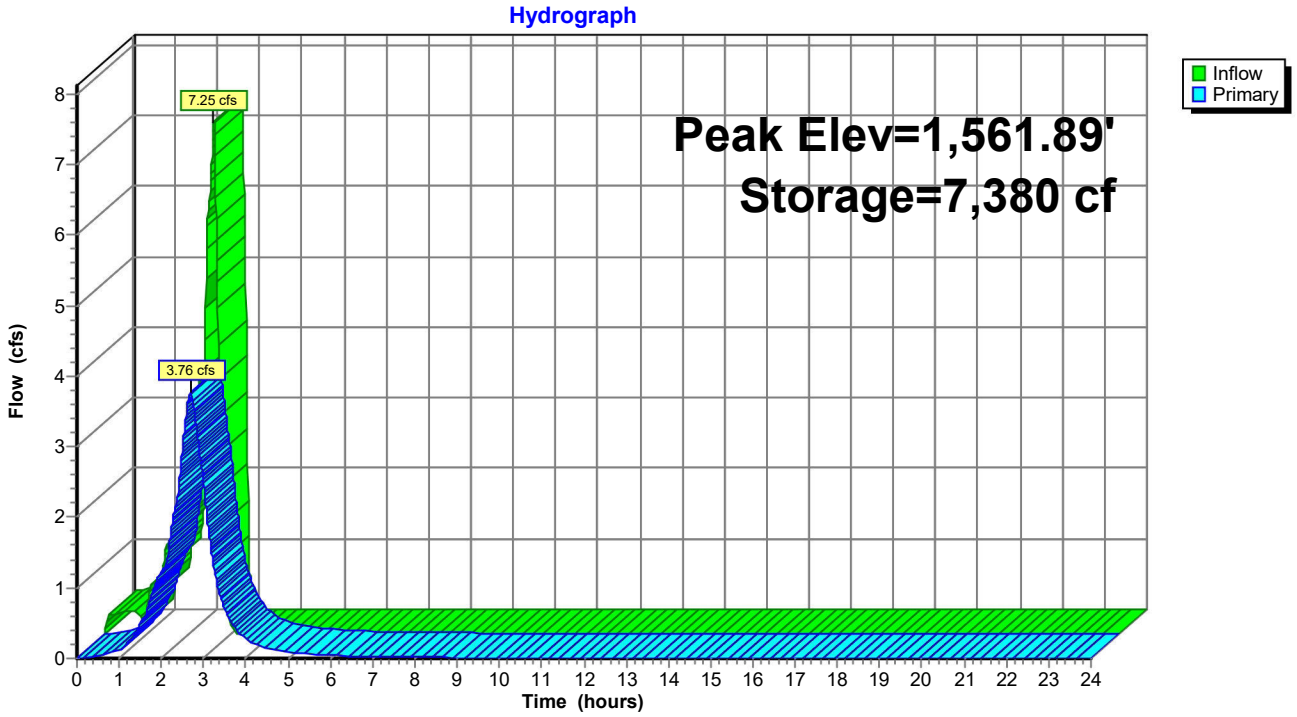
Volume	Invert	Avail.Storage	Storage Description
#1	1,560.40'	24,375 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,560.40	5,215	0.0	0	0	5,215
1,561.40	5,215	95.0	4,954	4,954	5,471
1,562.40	5,215	95.0	4,954	9,909	5,727
1,563.40	5,215	95.0	4,954	14,863	5,983
1,564.40	5,215	95.0	4,954	19,817	6,239
1,565.32	5,215	95.0	4,558	24,375	6,474

Device	Routing	Invert	Outlet Devices
#1	Primary	1,560.40'	**12.00" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#2	Primary	1,564.82'	**Custom Weir, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.50 0.50 Width (feet) 35.00 35.00 0.00

Primary OutFlow Max=3.76 cfs @ 2.69 hrs HW=1,561.89' (Free Discharge)
└**1=Orifice** (Orifice Controls 3.76 cfs @ 4.79 fps)
└**2=Custom Weir** (Controls 0.00 cfs)

Pond 6P: Tank B



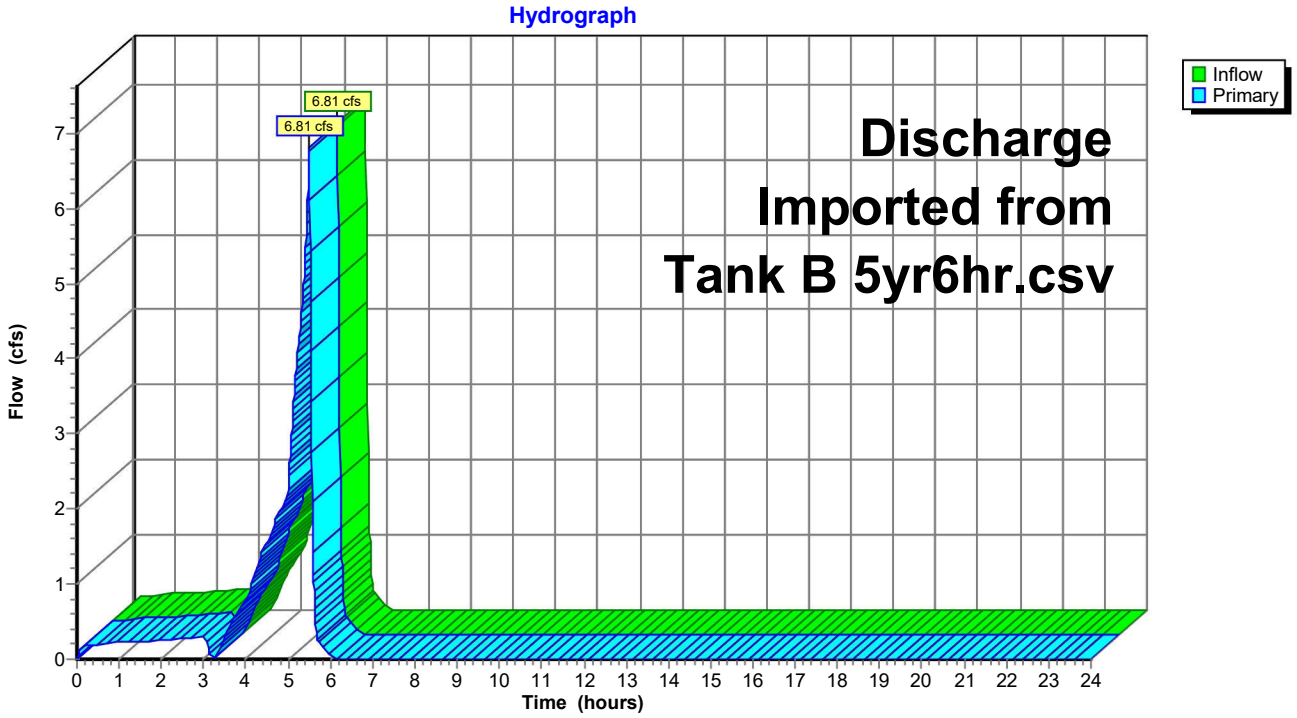
Summary for Link 7L: 5-yr 6-hr

Inflow = 6.81 cfs @ 5.50 hrs, Volume= 0.427 af
Primary = 6.81 cfs @ 5.50 hrs, Volume= 0.427 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 7P : Tank B

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Discharge Imported from Tank B 5yr6hr.csv

Link 7L: 5-yr 6-hr



Summary for Pond 7P: Tank B

Inflow	=	6.81 cfs @	5.50 hrs,	Volume=	0.427 af
Outflow	=	3.59 cfs @	5.55 hrs,	Volume=	0.425 af, Atten= 47%, Lag= 3.0 min
Primary	=	3.59 cfs @	5.55 hrs,	Volume=	0.425 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 1,561.80' @ 5.55 hrs Surf.Area= 5,215 sf Storage= 6,937 cf

Plug-Flow detention time= 49.8 min calculated for 0.425 af (100% of inflow)
Center-of-Mass det. time= 49.4 min (319.1 - 269.7)

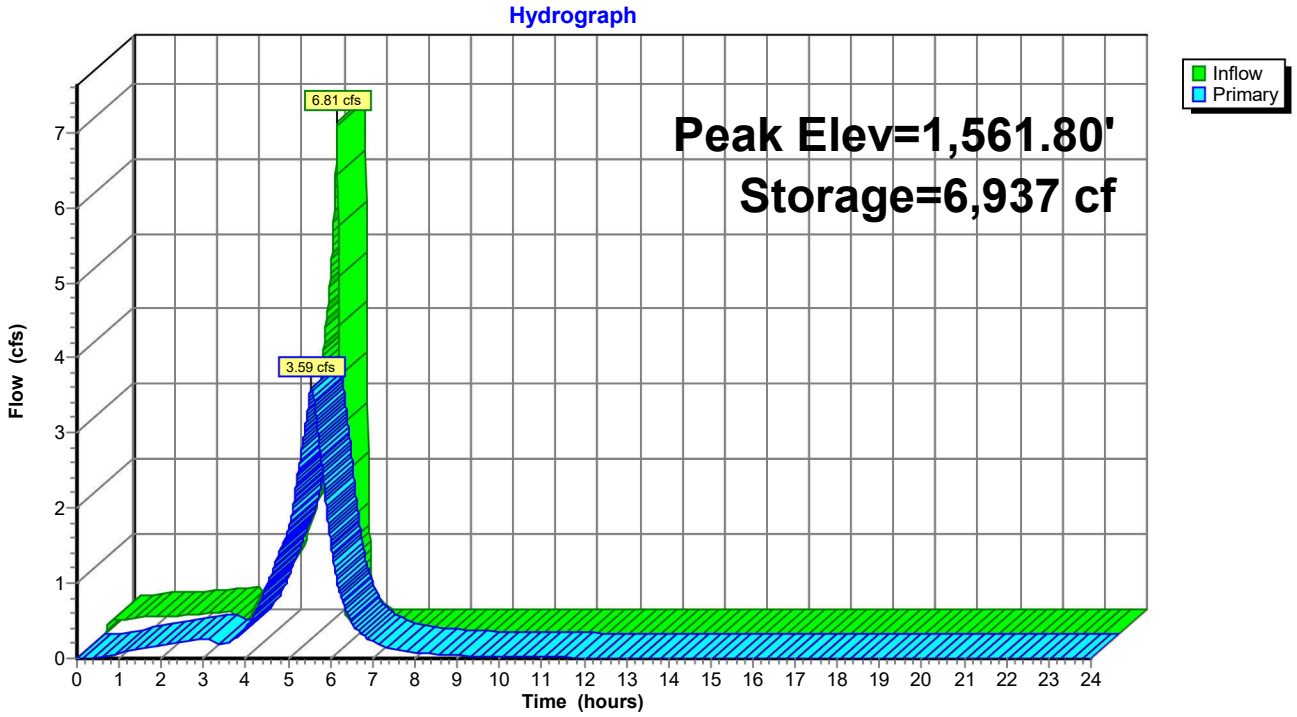
Volume	Invert	Avail.Storage	Storage Description
#1	1,560.40'	24,375 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,560.40	5,215	0.0	0	0	5,215
1,561.40	5,215	95.0	4,954	4,954	5,471
1,562.40	5,215	95.0	4,954	9,909	5,727
1,563.40	5,215	95.0	4,954	14,863	5,983
1,564.40	5,215	95.0	4,954	19,817	6,239
1,565.32	5,215	95.0	4,558	24,375	6,474

Device	Routing	Invert	Outlet Devices
#1	Primary	1,560.40'	**12.00" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#2	Primary	1,564.82'	**Custom Weir, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.50 0.50 Width (feet) 35.00 35.00 0.00

Primary OutFlow Max=3.59 cfs @ 5.55 hrs HW=1,561.80' (Free Discharge)
└**1=Orifice** (Orifice Controls 3.59 cfs @ 4.57 fps)
└**2=Custom Weir** (Controls 0.00 cfs)

Pond 7P: Tank B



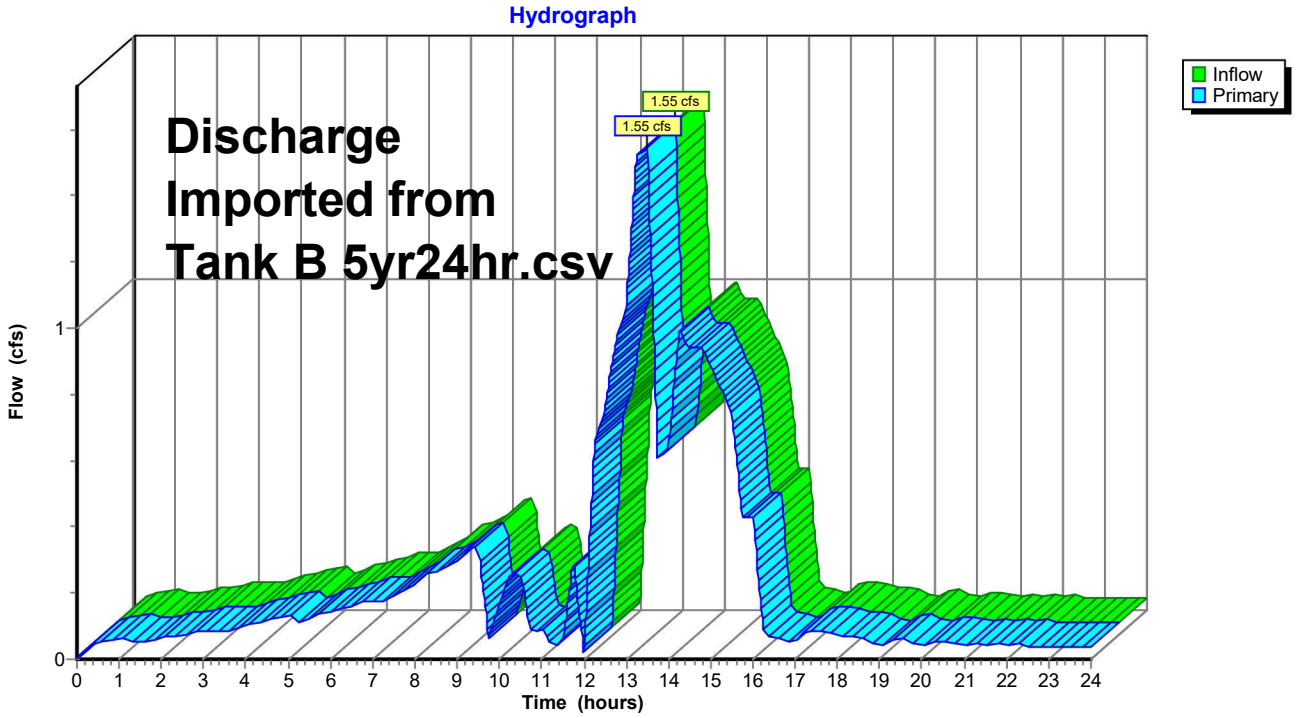
Summary for Link 8L: 5-yr 24-hr

Inflow = 1.55 cfs @ 13.50 hrs, Volume= 0.460 af
Primary = 1.55 cfs @ 13.50 hrs, Volume= 0.460 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 8P : Tank B

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Discharge Imported from Tank B 5yr24hr.csv

Link 8L: 5-yr 24-hr



Summary for Pond 8P: Tank B

Inflow = 1.55 cfs @ 13.50 hrs, Volume= 0.460 af
Outflow = 1.28 cfs @ 13.57 hrs, Volume= 0.449 af, Atten= 17%, Lag= 4.3 min
Primary = 1.28 cfs @ 13.57 hrs, Volume= 0.449 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 1,561.00' @ 13.57 hrs Surf.Area= 5,215 sf Storage= 2,948 cf

Plug-Flow detention time= 69.6 min calculated for 0.449 af (98% of inflow)
Center-of-Mass det. time= 55.4 min (797.3 - 741.9)

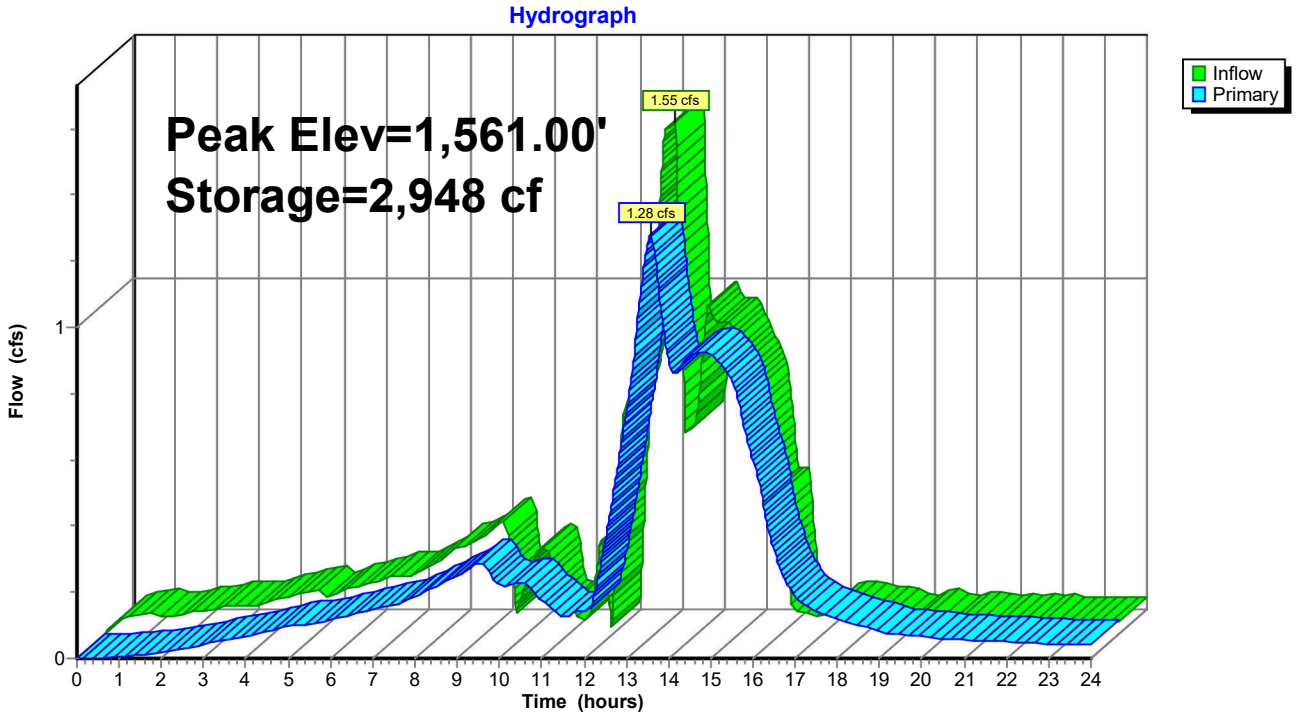
Volume	Invert	Avail.Storage	Storage Description
#1	1,560.40'	24,375 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

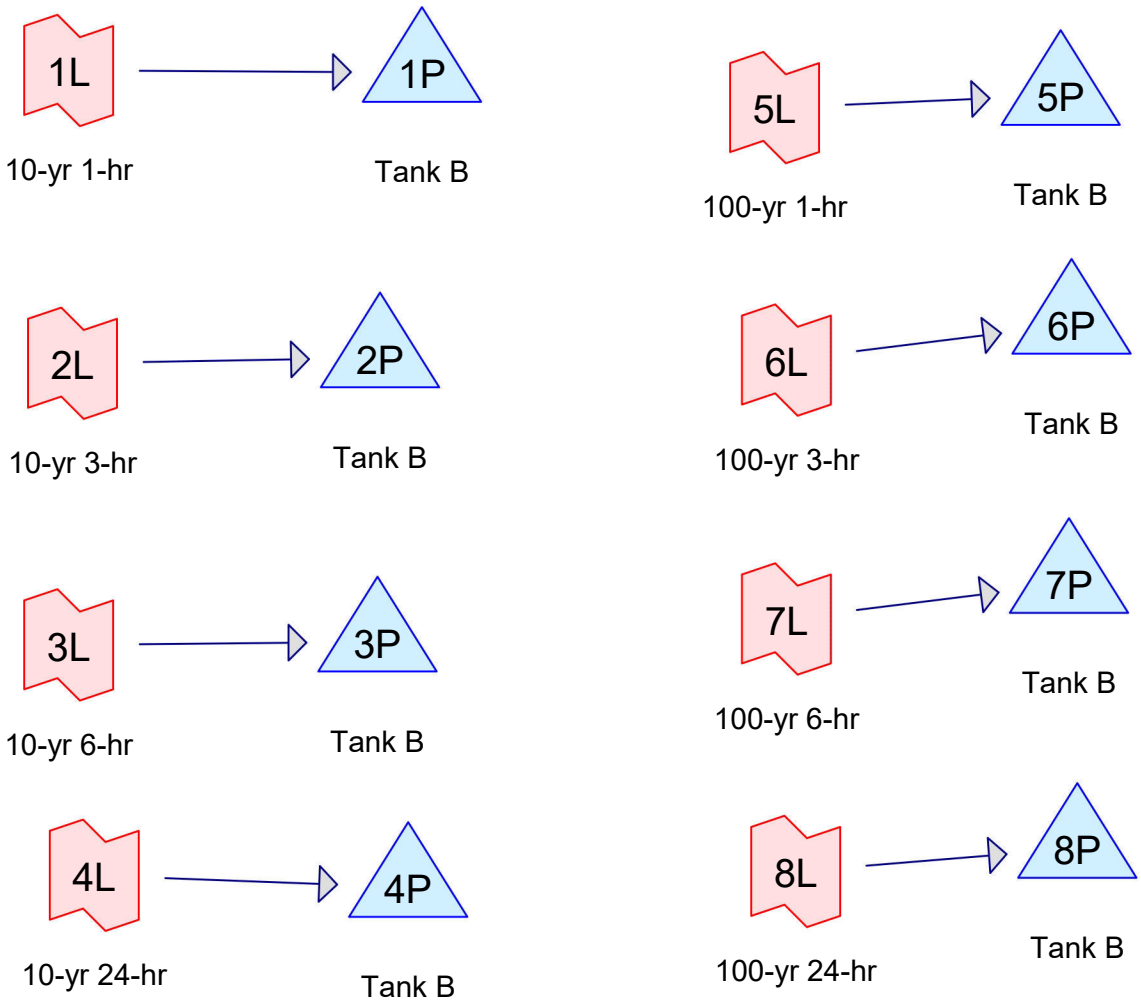
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,560.40	5,215	0.0	0	0	5,215
1,561.40	5,215	95.0	4,954	4,954	5,471
1,562.40	5,215	95.0	4,954	9,909	5,727
1,563.40	5,215	95.0	4,954	14,863	5,983
1,564.40	5,215	95.0	4,954	19,817	6,239
1,565.32	5,215	95.0	4,558	24,375	6,474

Device	Routing	Invert	Outlet Devices
#1	Primary	1,560.40'	**12.00" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#2	Primary	1,564.82'	**Custom Weir, Cv= 2.62 (C= 3.28)**
			Head (feet) 0.00 0.50 0.50
			Width (feet) 35.00 35.00 0.00

Primary OutFlow Max=1.28 cfs @ 13.57 hrs HW=1,561.00' (Free Discharge)
└**1=Orifice** (Orifice Controls 1.28 cfs @ 2.63 fps)
└**2=Custom Weir** (Controls 0.00 cfs)

Pond 8P: Tank B





Subcat Reach Pond Link

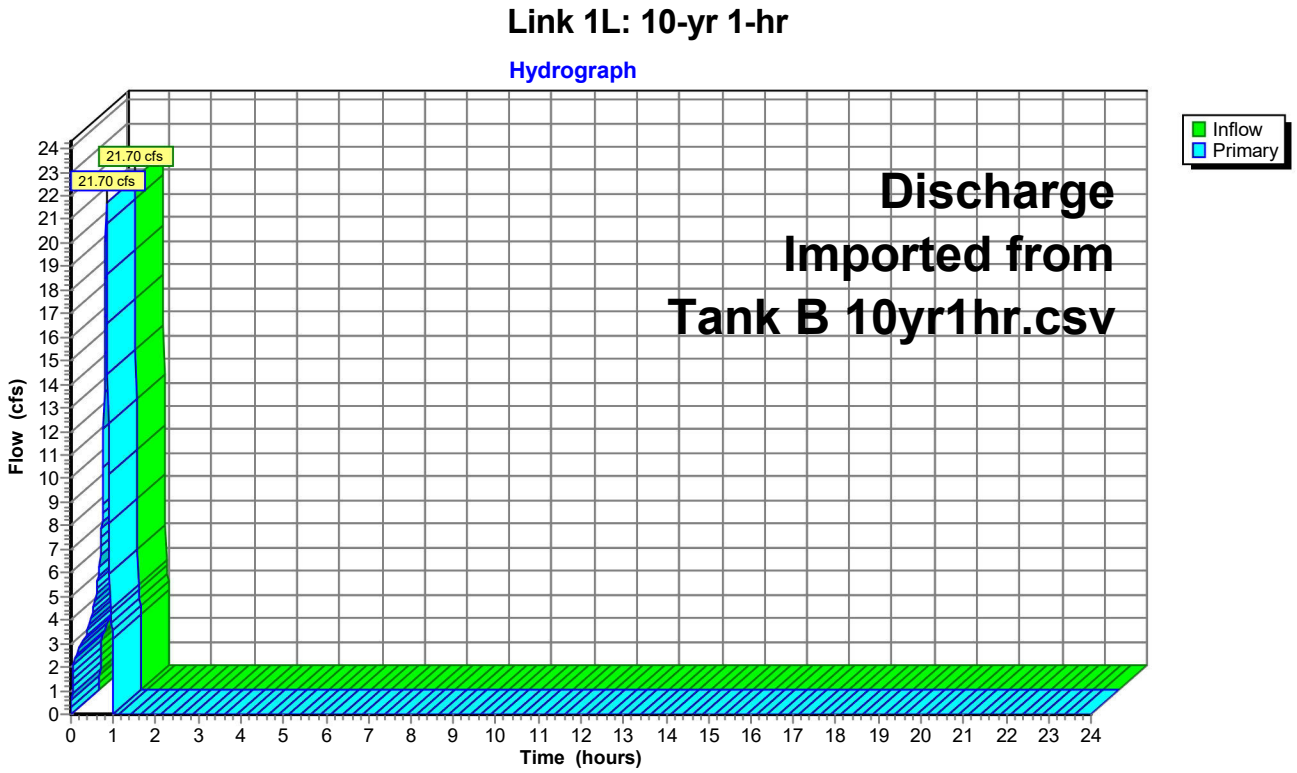
Routing Diagram for 3816 Tank B 10 and 100-yr
Prepared by Pasco Laret Suiter & Assoc, Printed 2/18/2025
HydroCAD® 10.20-6a s/n 10097 © 2024 HydroCAD Software Solutions LLC

Summary for Link 1L: 10-yr 1-hr

Inflow = 21.70 cfs @ 0.83 hrs, Volume= 0.467 af
Primary = 21.70 cfs @ 0.83 hrs, Volume= 0.467 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 1P : Tank B

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Discharge Imported from Tank B 10yr1hr.csv



Summary for Pond 1P: Tank B

Inflow	=	21.70 cfs @	0.83 hrs,	Volume=	0.467 af
Outflow	=	5.41 cfs @	0.91 hrs,	Volume=	0.465 af, Atten= 75%, Lag= 5.0 min
Primary	=	5.41 cfs @	0.91 hrs,	Volume=	0.465 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 1,562.95' @ 0.91 hrs Surf.Area= 5,215 sf Storage= 12,635 cf

Plug-Flow detention time= 42.7 min calculated for 0.465 af (100% of inflow)
Center-of-Mass det. time= 43.1 min (82.2 - 39.1)

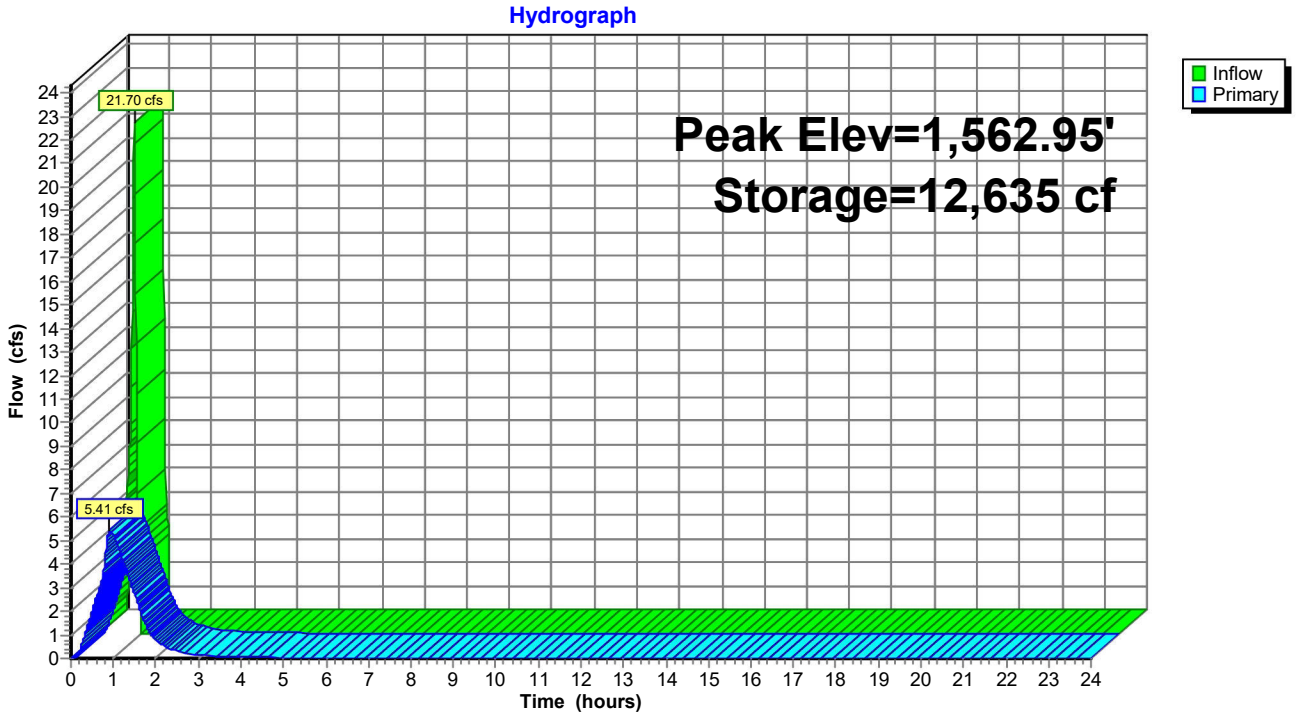
Volume	Invert	Avail.Storage	Storage Description
#1	1,560.40'	24,375 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,560.40	5,215	0.0	0	0	5,215
1,561.40	5,215	95.0	4,954	4,954	5,471
1,562.40	5,215	95.0	4,954	9,909	5,727
1,563.40	5,215	95.0	4,954	14,863	5,983
1,564.40	5,215	95.0	4,954	19,817	6,239
1,565.32	5,215	95.0	4,558	24,375	6,474

Device	Routing	Invert	Outlet Devices
#1	Primary	1,560.40'	**12.00" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#2	Primary	1,564.82'	**Custom Weir, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.50 0.50 Width (feet) 35.00 35.00 0.00

Primary OutFlow Max=5.41 cfs @ 0.91 hrs HW=1,562.95' (Free Discharge)
└**1=Orifice** (Orifice Controls 5.41 cfs @ 6.89 fps)
└**2=Custom Weir** (Controls 0.00 cfs)

Pond 1P: Tank B

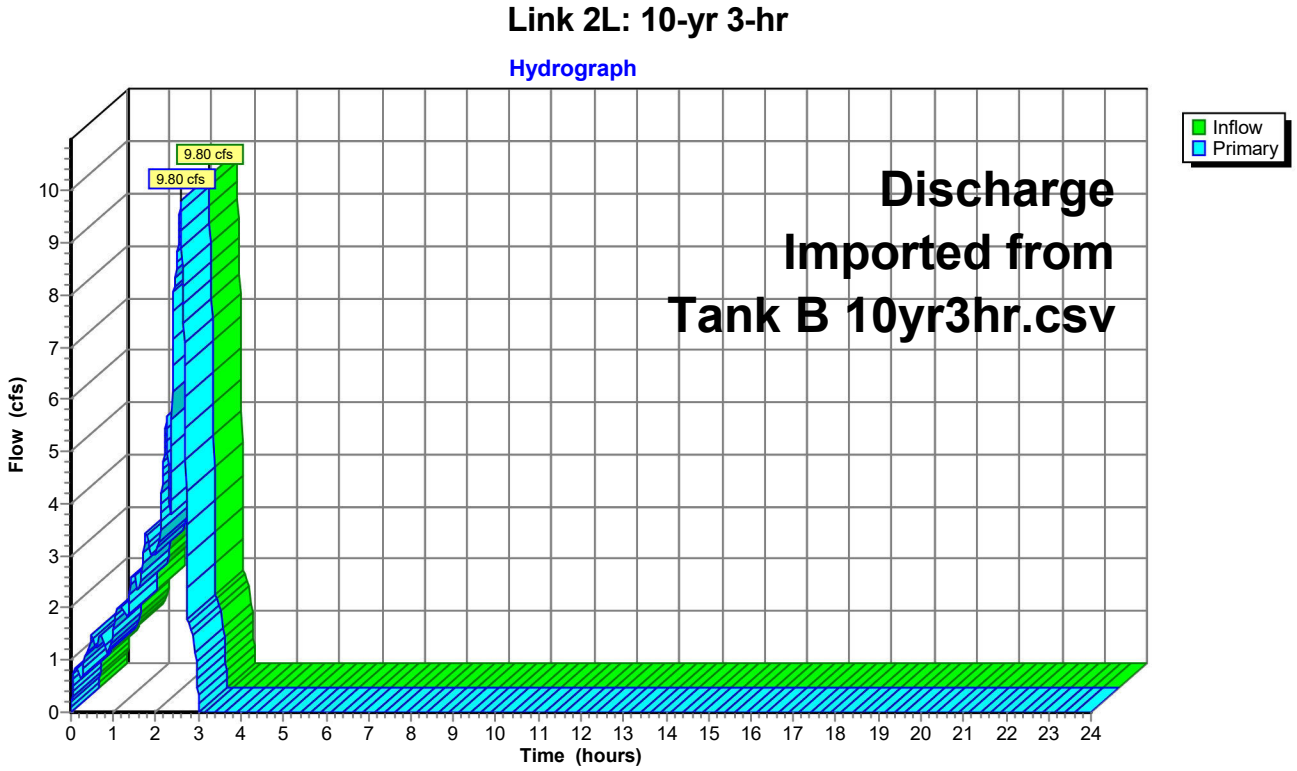


Summary for Link 2L: 10-yr 3-hr

Inflow = 9.80 cfs @ 2.58 hrs, Volume= 0.693 af
Primary = 9.80 cfs @ 2.58 hrs, Volume= 0.693 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 2P : Tank B

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Discharge Imported from Tank B 10yr3hr.csv



Summary for Pond 2P: Tank B

Inflow	=	9.80 cfs @	2.58 hrs,	Volume=	0.693 af
Outflow	=	4.99 cfs @	2.70 hrs,	Volume=	0.691 af, Atten= 49%, Lag= 7.1 min
Primary	=	4.99 cfs @	2.70 hrs,	Volume=	0.691 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 1,562.64' @ 2.70 hrs Surf.Area= 5,215 sf Storage= 11,086 cf

Plug-Flow detention time= 40.1 min calculated for 0.691 af (100% of inflow)
Center-of-Mass det. time= 39.9 min (155.8 - 115.9)

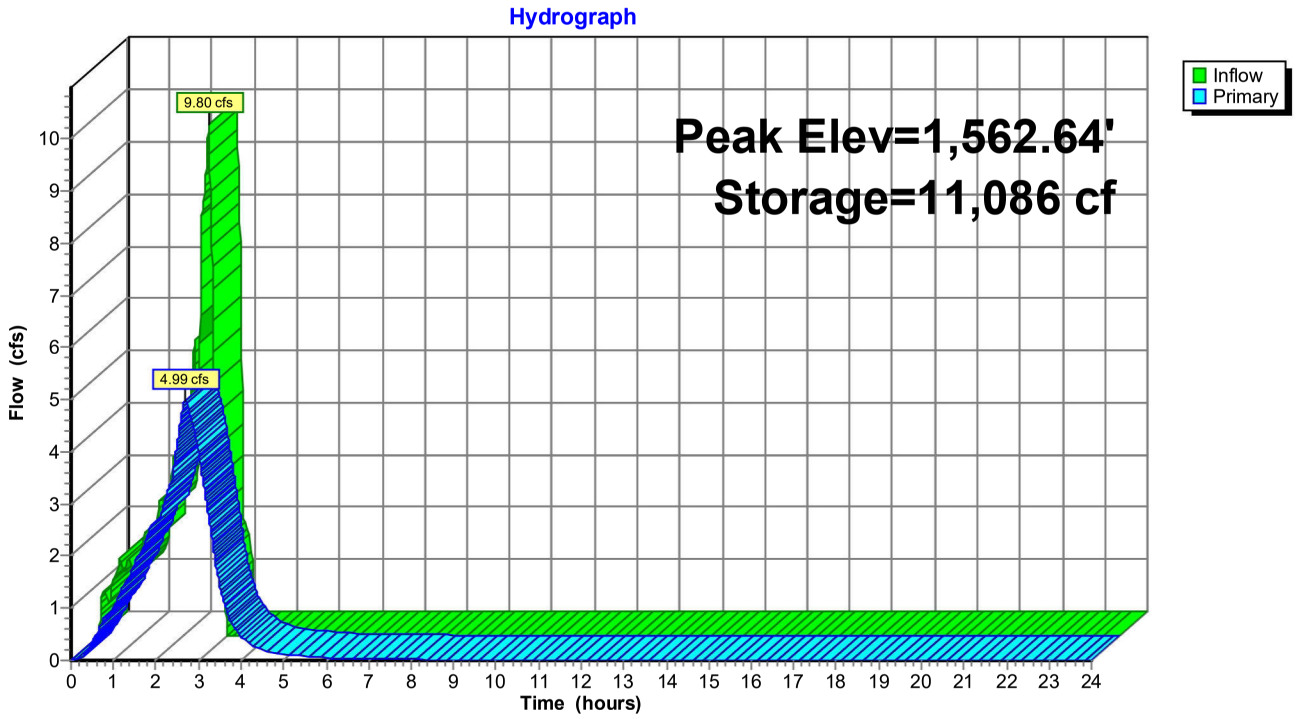
Volume	Invert	Avail.Storage	Storage Description
#1	1,560.40'	24,375 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,560.40	5,215	0.0	0	0	5,215
1,561.40	5,215	95.0	4,954	4,954	5,471
1,562.40	5,215	95.0	4,954	9,909	5,727
1,563.40	5,215	95.0	4,954	14,863	5,983
1,564.40	5,215	95.0	4,954	19,817	6,239
1,565.32	5,215	95.0	4,558	24,375	6,474

Device	Routing	Invert	Outlet Devices
#1	Primary	1,560.40'	**12.00" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#2	Primary	1,564.82'	**Custom Weir, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.50 0.50 Width (feet) 35.00 35.00 0.00

Primary OutFlow Max=4.98 cfs @ 2.70 hrs HW=1,562.64' (Free Discharge)
└**1=Orifice** (Orifice Controls 4.98 cfs @ 6.35 fps)
└**2=Custom Weir** (Controls 0.00 cfs)

Pond 2P: Tank B



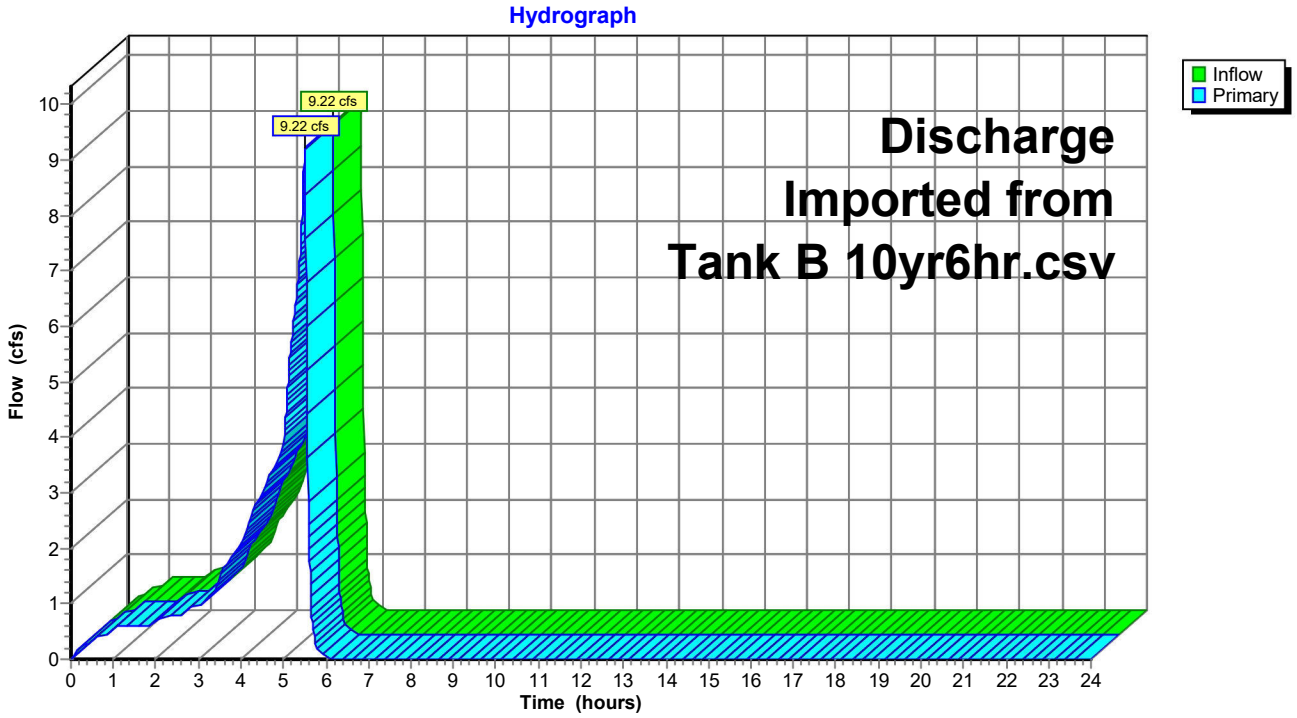
Summary for Link 3L: 10-yr 6-hr

Inflow = 9.22 cfs @ 5.50 hrs, Volume= 0.827 af
Primary = 9.22 cfs @ 5.50 hrs, Volume= 0.827 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 3P : Tank B

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Discharge Imported from Tank B 10yr6hr.csv

Link 3L: 10-yr 6-hr



Summary for Pond 3P: Tank B

Inflow	=	9.22 cfs @	5.50 hrs,	Volume=	0.827 af
Outflow	=	4.82 cfs @	5.55 hrs,	Volume=	0.825 af, Atten= 48%, Lag= 3.5 min
Primary	=	4.82 cfs @	5.55 hrs,	Volume=	0.825 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 1,562.52' @ 5.55 hrs Surf.Area= 5,215 sf Storage= 10,513 cf

Plug-Flow detention time= 40.5 min calculated for 0.824 af (100% of inflow)
Center-of-Mass det. time= 40.6 min (294.1 - 253.4)

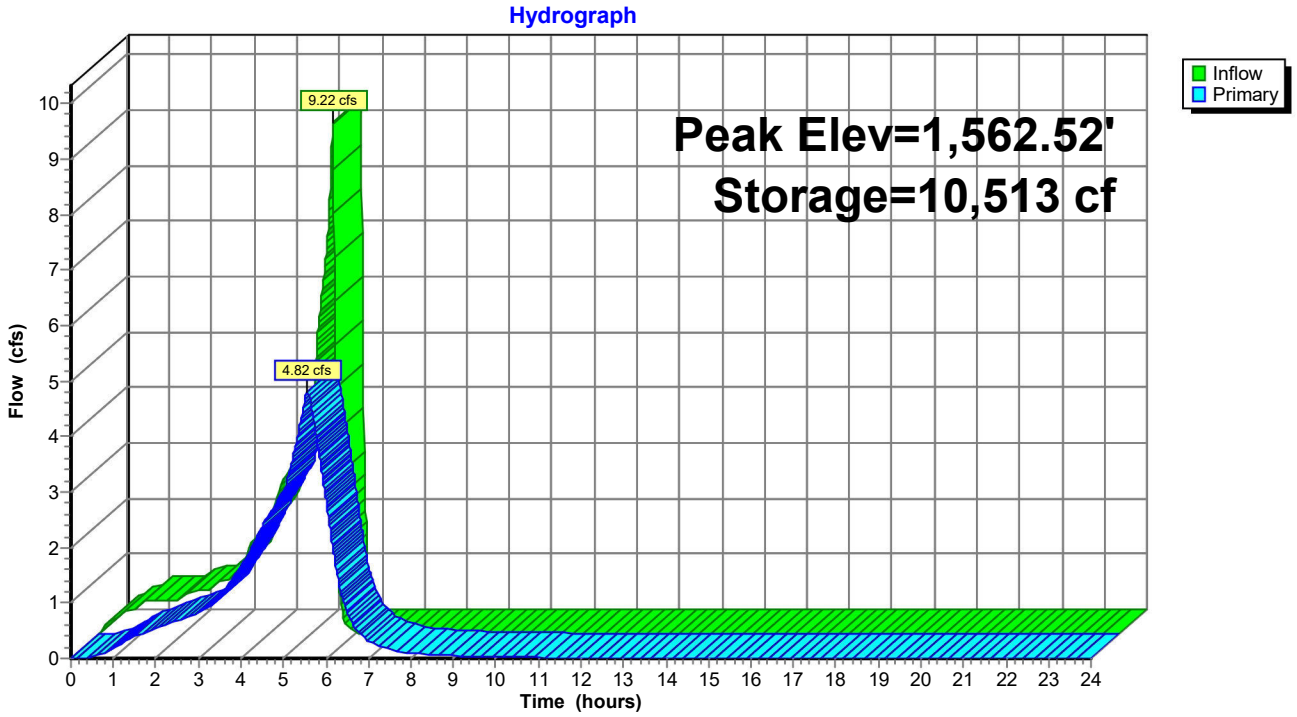
Volume	Invert	Avail.Storage	Storage Description
#1	1,560.40'	24,375 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,560.40	5,215	0.0	0	0	5,215
1,561.40	5,215	95.0	4,954	4,954	5,471
1,562.40	5,215	95.0	4,954	9,909	5,727
1,563.40	5,215	95.0	4,954	14,863	5,983
1,564.40	5,215	95.0	4,954	19,817	6,239
1,565.32	5,215	95.0	4,558	24,375	6,474

Device	Routing	Invert	Outlet Devices
#1	Primary	1,560.40'	**12.00" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#2	Primary	1,564.82'	**Custom Weir, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.50 0.50 Width (feet) 35.00 35.00 0.00

Primary OutFlow Max=4.82 cfs @ 5.55 hrs HW=1,562.52' (Free Discharge)
└**1=Orifice** (Orifice Controls 4.82 cfs @ 6.13 fps)
└**2=Custom Weir** (Controls 0.00 cfs)

Pond 3P: Tank B



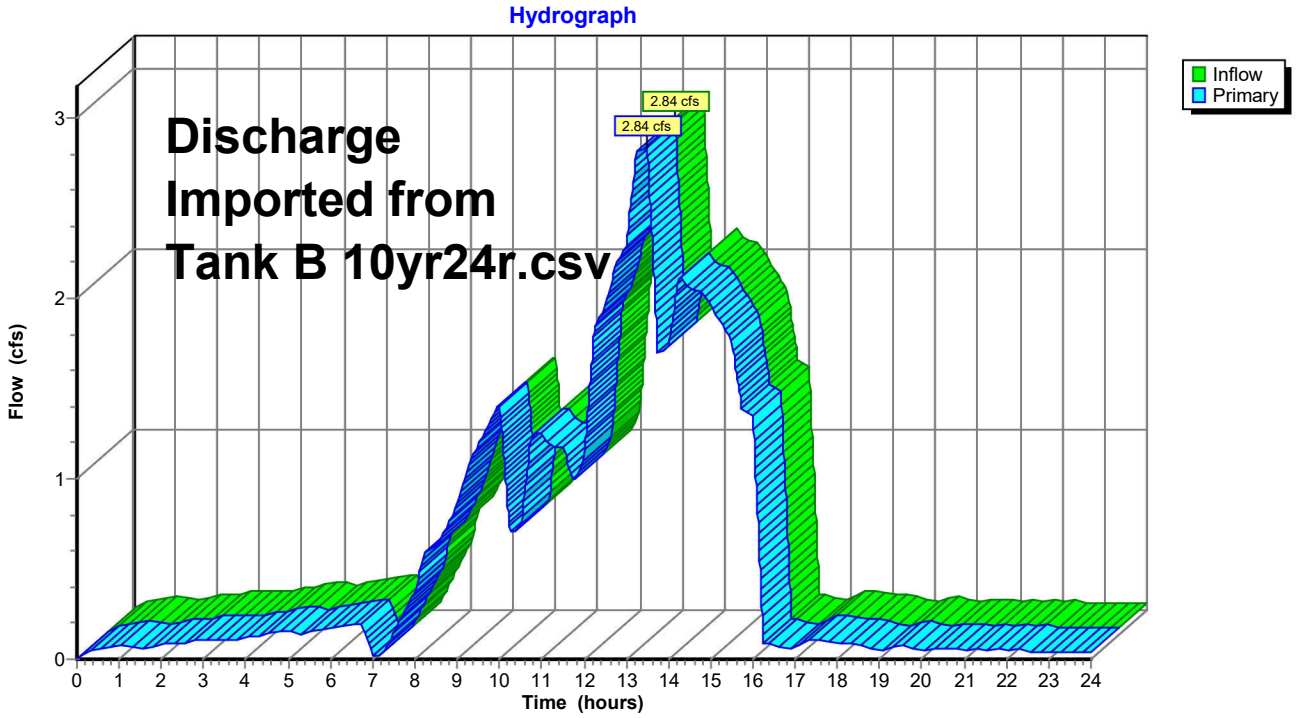
Summary for Link 4L: 10-yr 24-hr

Inflow = 2.84 cfs @ 13.50 hrs, Volume= 1.116 af
Primary = 2.84 cfs @ 13.50 hrs, Volume= 1.116 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 4P : Tank B

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Discharge Imported from Tank B 10yr24r.csv

Link 4L: 10-yr 24-hr



Summary for Pond 4P: Tank B

Inflow	=	2.84 cfs @	13.50 hrs,	Volume=	1.116 af
Outflow	=	2.55 cfs @	13.56 hrs,	Volume=	1.104 af, Atten= 10%, Lag= 3.7 min
Primary	=	2.55 cfs @	13.56 hrs,	Volume=	1.104 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 1,561.35' @ 13.56 hrs Surf.Area= 5,215 sf Storage= 4,702 cf

Plug-Flow detention time= 44.6 min calculated for 1.104 af (99% of inflow)
Center-of-Mass det. time= 38.3 min (784.2 - 745.9)

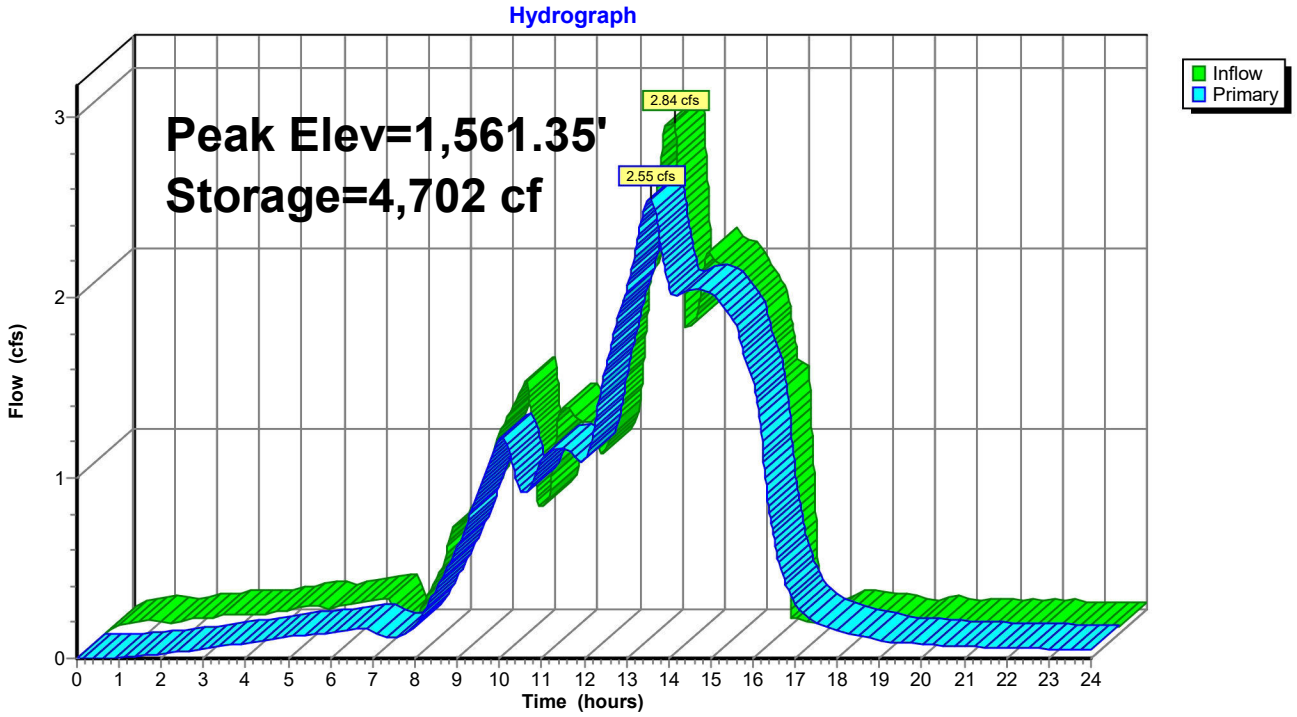
Volume	Invert	Avail.Storage	Storage Description
#1	1,560.40'	24,375 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,560.40	5,215	0.0	0	0	5,215
1,561.40	5,215	95.0	4,954	4,954	5,471
1,562.40	5,215	95.0	4,954	9,909	5,727
1,563.40	5,215	95.0	4,954	14,863	5,983
1,564.40	5,215	95.0	4,954	19,817	6,239
1,565.32	5,215	95.0	4,558	24,375	6,474

Device	Routing	Invert	Outlet Devices
#1	Primary	1,560.40'	**12.00" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#2	Primary	1,564.82'	**Custom Weir, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.50 0.50 Width (feet) 35.00 35.00 0.00

Primary OutFlow Max=2.55 cfs @ 13.56 hrs HW=1,561.35' (Free Discharge)
└**1=Orifice** (Orifice Controls 2.55 cfs @ 3.32 fps)
└**2=Custom Weir** (Controls 0.00 cfs)

Pond 4P: Tank B



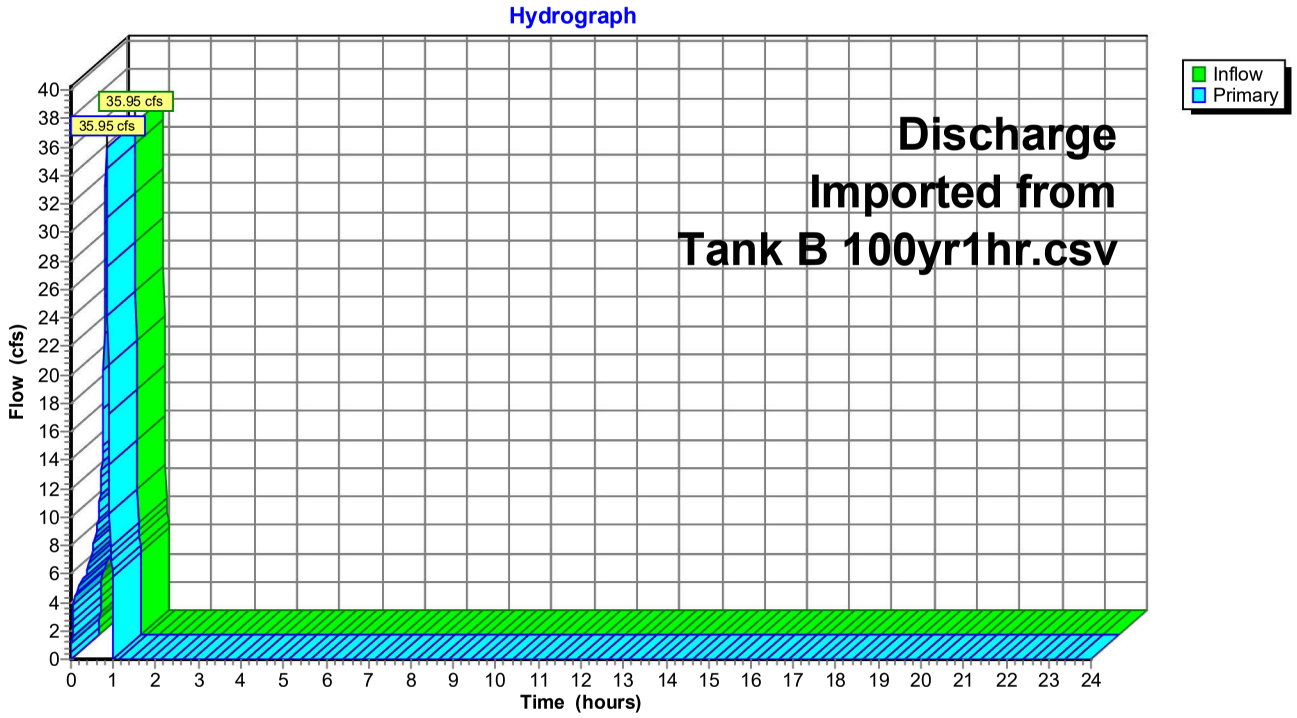
Summary for Link 5L: 100-yr 1-hr

Inflow = 35.95 cfs @ 0.83 hrs, Volume= 0.804 af
Primary = 35.95 cfs @ 0.83 hrs, Volume= 0.804 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 5P : Tank B

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Discharge Imported from Tank B 100yr1hr.csv

Link 5L: 100-yr 1-hr



Summary for Pond 5P: Tank B

Inflow	=	35.95 cfs @	0.83 hrs,	Volume=	0.804 af
Outflow	=	9.77 cfs @	0.91 hrs,	Volume=	0.802 af, Atten= 73%, Lag= 4.9 min
Primary	=	9.77 cfs @	0.91 hrs,	Volume=	0.802 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 1,564.89' @ 0.91 hrs Surf.Area= 5,215 sf Storage= 22,256 cf

Plug-Flow detention time= 42.8 min calculated for 0.802 af (100% of inflow)
Center-of-Mass det. time= 43.3 min (82.0 - 38.7)

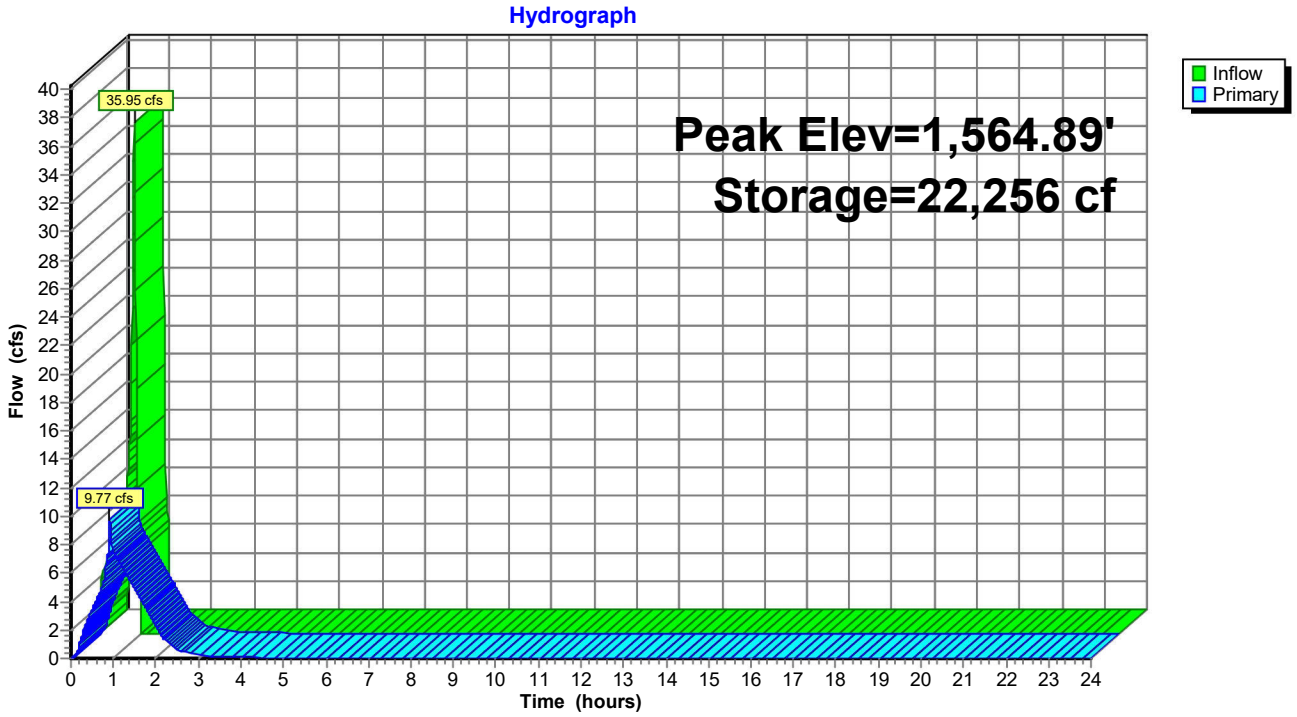
Volume	Invert	Avail.Storage	Storage Description
#1	1,560.40'	24,375 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,560.40	5,215	0.0	0	0	5,215
1,561.40	5,215	95.0	4,954	4,954	5,471
1,562.40	5,215	95.0	4,954	9,909	5,727
1,563.40	5,215	95.0	4,954	14,863	5,983
1,564.40	5,215	95.0	4,954	19,817	6,239
1,565.32	5,215	95.0	4,558	24,375	6,474

Device	Routing	Invert	Outlet Devices
#1	Primary	1,560.40'	**12.00" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#2	Primary	1,564.82'	**Custom Weir, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.50 0.50 Width (feet) 35.00 35.00 0.00

Primary OutFlow Max=9.66 cfs @ 0.91 hrs HW=1,564.89' (Free Discharge)
└**1=Orifice** (Orifice Controls 7.55 cfs @ 9.62 fps)
└**2=Custom Weir** (Weir Controls 2.11 cfs @ 0.86 fps)

Pond 5P: Tank B



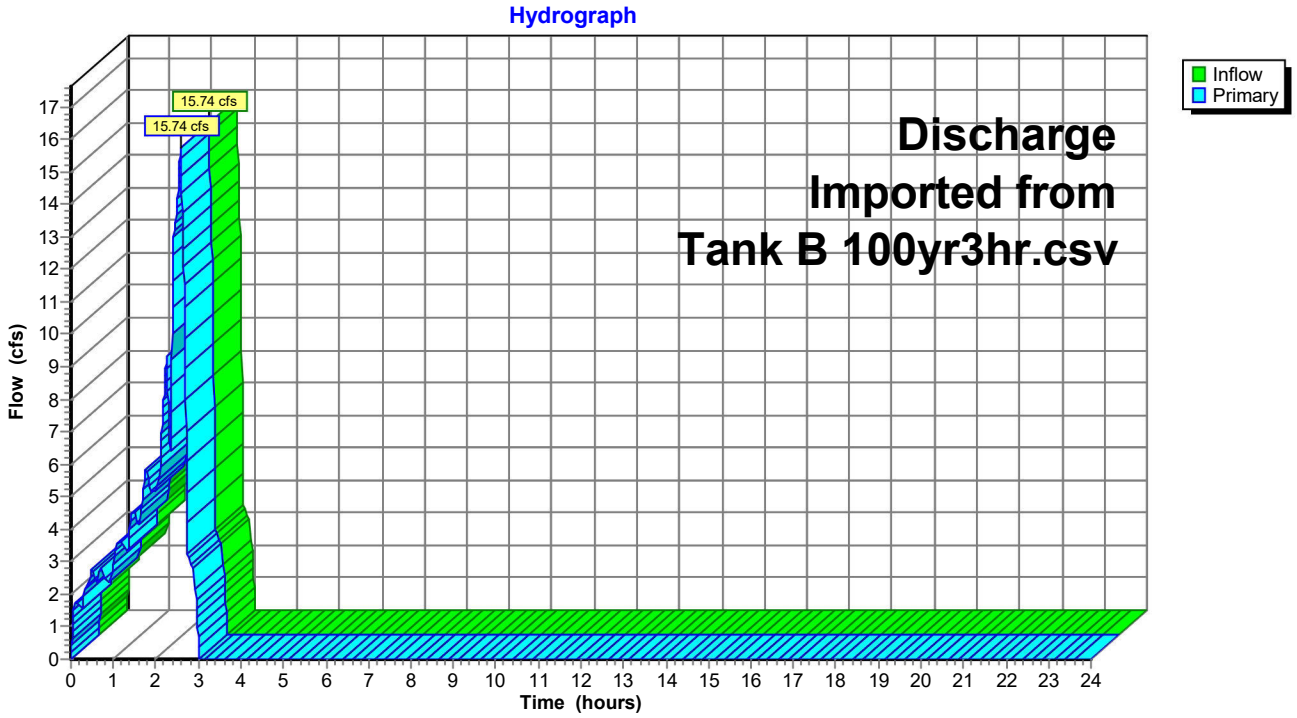
Summary for Link 6L: 100-yr 3-hr

Inflow = 15.74 cfs @ 2.58 hrs, Volume= 1.191 af
Primary = 15.74 cfs @ 2.58 hrs, Volume= 1.191 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 6P : Tank B

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Discharge Imported from Tank B 100yr3hr.csv

Link 6L: 100-yr 3-hr



Summary for Pond 6P: Tank B

Inflow	=	15.74 cfs @	2.58 hrs,	Volume=	1.191 af
Outflow	=	7.10 cfs @	2.71 hrs,	Volume=	1.189 af, Atten= 55%, Lag= 7.8 min
Primary	=	7.10 cfs @	2.71 hrs,	Volume=	1.189 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 1,564.42' @ 2.71 hrs Surf.Area= 5,215 sf Storage= 19,925 cf

Plug-Flow detention time= 40.4 min calculated for 1.189 af (100% of inflow)
Center-of-Mass det. time= 40.3 min (153.9 - 113.6)

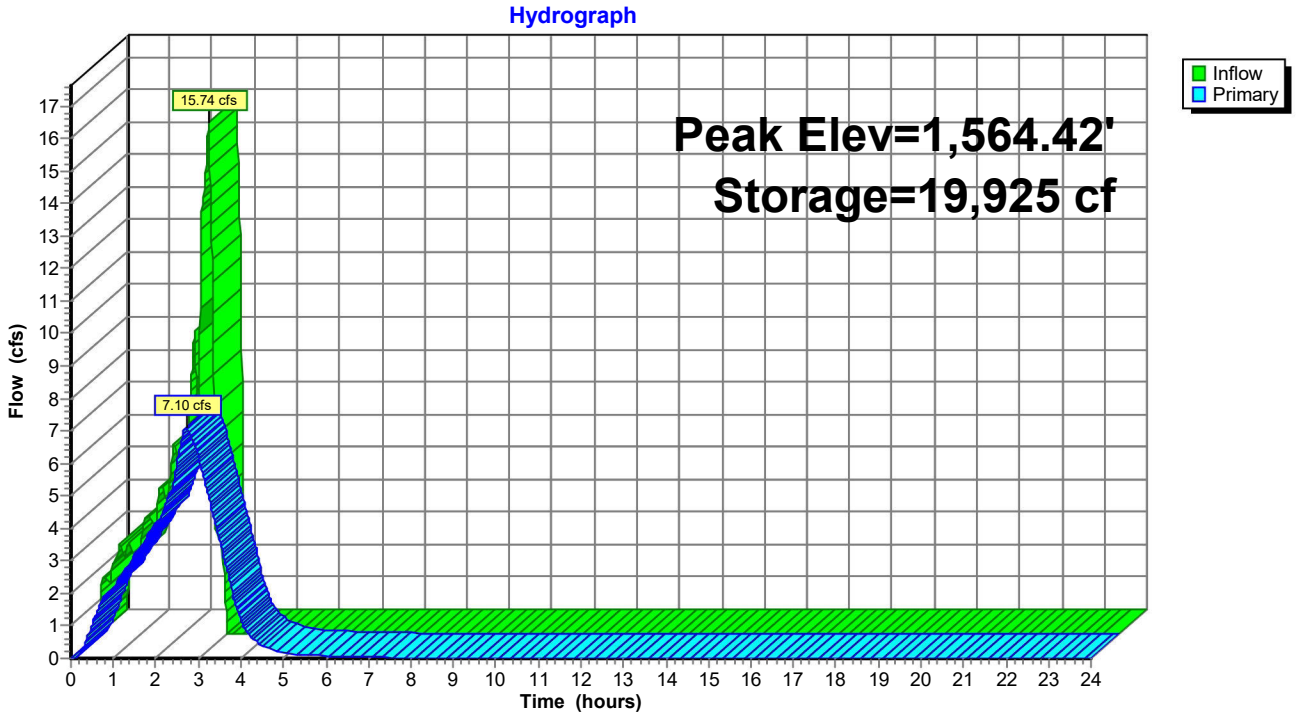
Volume	Invert	Avail.Storage	Storage Description
#1	1,560.40'	24,375 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,560.40	5,215	0.0	0	0	5,215
1,561.40	5,215	95.0	4,954	4,954	5,471
1,562.40	5,215	95.0	4,954	9,909	5,727
1,563.40	5,215	95.0	4,954	14,863	5,983
1,564.40	5,215	95.0	4,954	19,817	6,239
1,565.32	5,215	95.0	4,558	24,375	6,474

Device	Routing	Invert	Outlet Devices
#1	Primary	1,560.40'	**12.00" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#2	Primary	1,564.82'	**Custom Weir, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.50 0.50 Width (feet) 35.00 35.00 0.00

Primary OutFlow Max=7.10 cfs @ 2.71 hrs HW=1,564.42' (Free Discharge)
└**1=Orifice** (Orifice Controls 7.10 cfs @ 9.04 fps)
└**2=Custom Weir** (Controls 0.00 cfs)

Pond 6P: Tank B



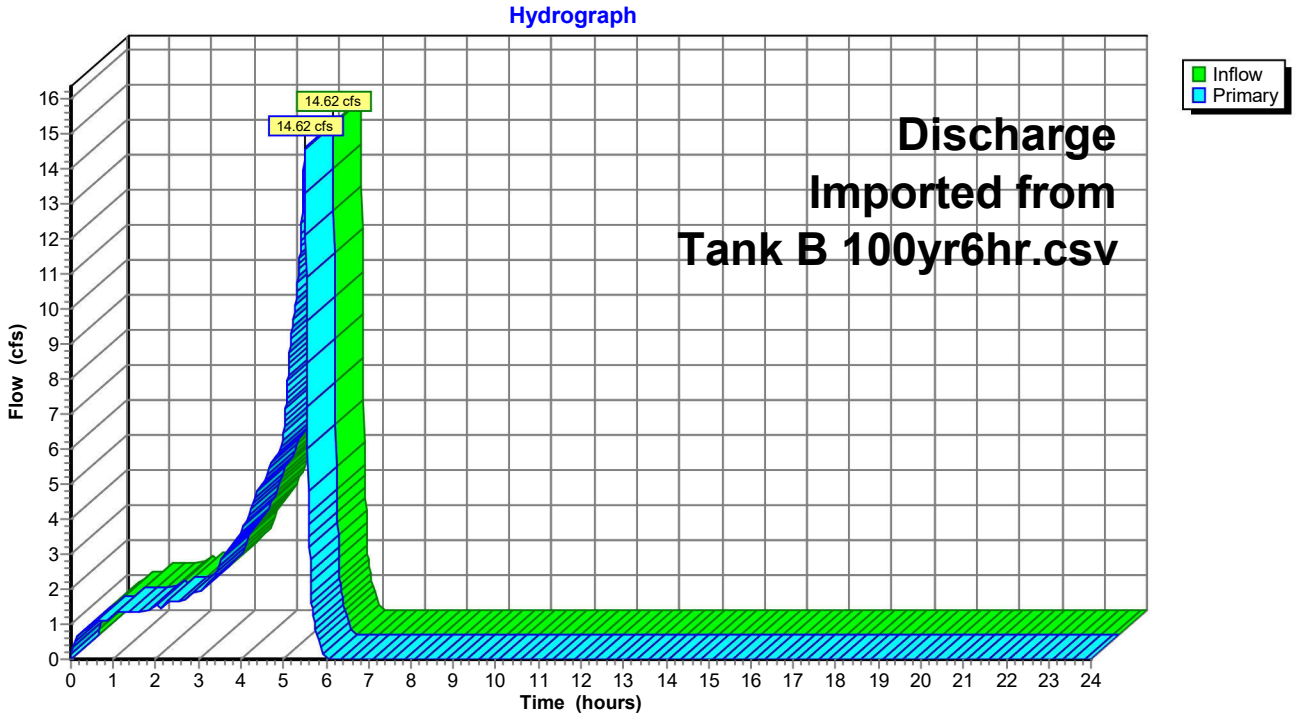
Summary for Link 7L: 100-yr 6-hr

Inflow = 14.62 cfs @ 5.50 hrs, Volume= 1.484 af
Primary = 14.62 cfs @ 5.50 hrs, Volume= 1.484 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 7P : Tank B

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Discharge Imported from Tank B 100yr6hr.csv

Link 7L: 100-yr 6-hr



Summary for Pond 7P: Tank B

Inflow	=	14.62 cfs @	5.50 hrs,	Volume=	1.484 af
Outflow	=	6.87 cfs @	5.56 hrs,	Volume=	1.482 af, Atten= 53%, Lag= 4.0 min
Primary	=	6.87 cfs @	5.56 hrs,	Volume=	1.482 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 1,564.20' @ 5.56 hrs Surf.Area= 5,215 sf Storage= 18,821 cf

Plug-Flow detention time= 38.7 min calculated for 1.482 af (100% of inflow)
Center-of-Mass det. time= 39.0 min (281.5 - 242.5)

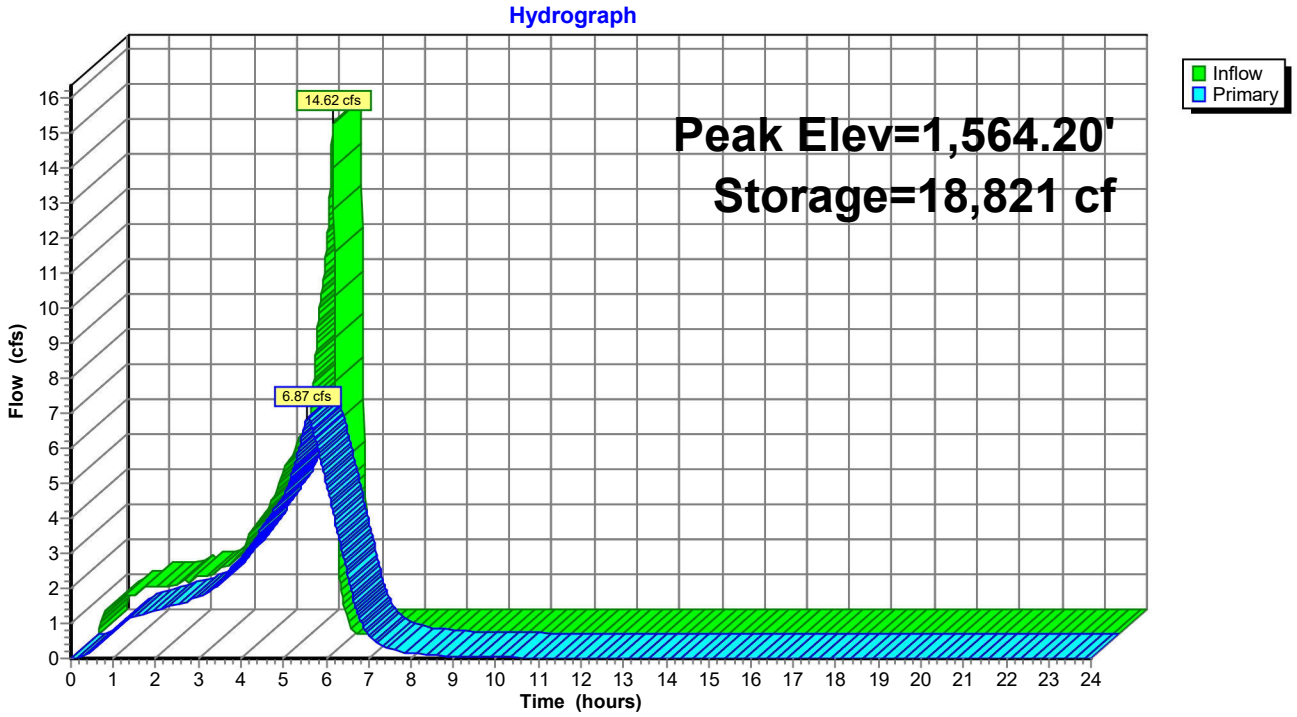
Volume	Invert	Avail.Storage	Storage Description
#1	1,560.40'	24,375 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,560.40	5,215	0.0	0	0	5,215
1,561.40	5,215	95.0	4,954	4,954	5,471
1,562.40	5,215	95.0	4,954	9,909	5,727
1,563.40	5,215	95.0	4,954	14,863	5,983
1,564.40	5,215	95.0	4,954	19,817	6,239
1,565.32	5,215	95.0	4,558	24,375	6,474

Device	Routing	Invert	Outlet Devices
#1	Primary	1,560.40'	**12.00" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#2	Primary	1,564.82'	**Custom Weir, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.50 0.50 Width (feet) 35.00 35.00 0.00

Primary OutFlow Max=6.87 cfs @ 5.56 hrs HW=1,564.20' (Free Discharge)
└**1=Orifice** (Orifice Controls 6.87 cfs @ 8.74 fps)
└**2=Custom Weir** (Controls 0.00 cfs)

Pond 7P: Tank B



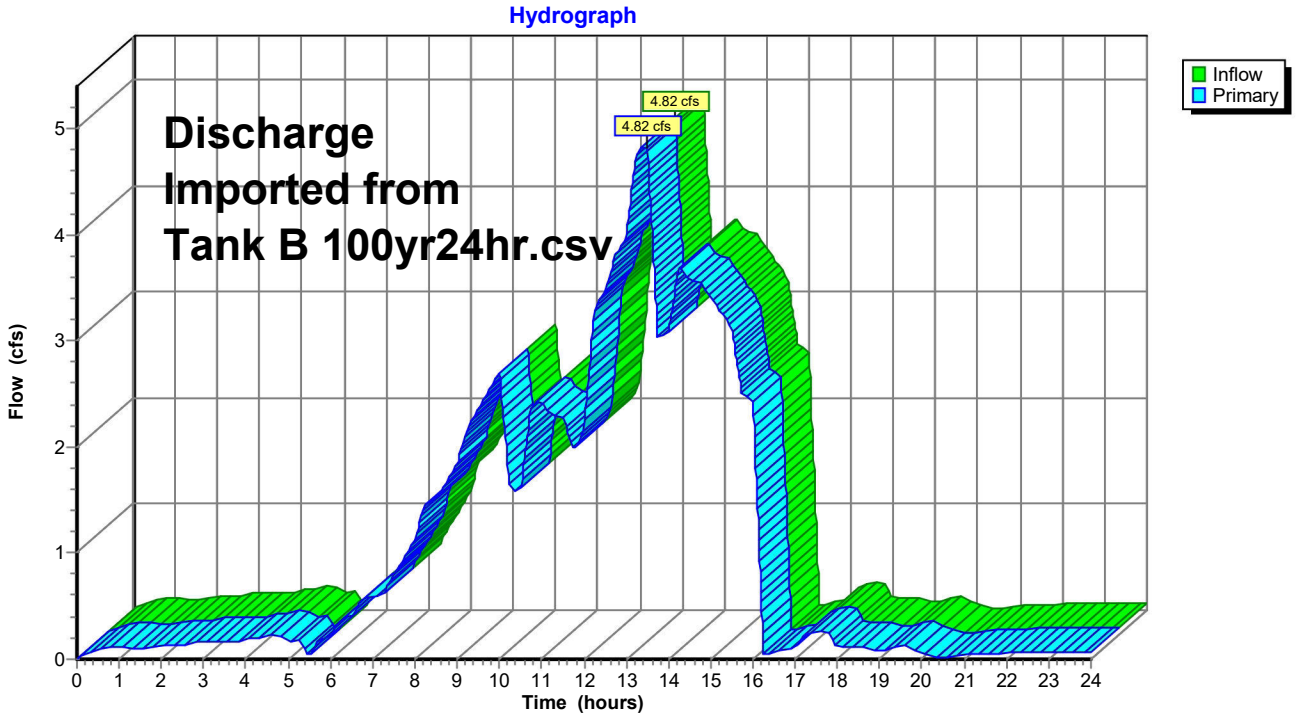
Summary for Link 8L: 100-yr 24-hr

Inflow = 4.82 cfs @ 13.50 hrs, Volume= 2.078 af
Primary = 4.82 cfs @ 13.50 hrs, Volume= 2.078 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 8P : Tank B

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Discharge Imported from Tank B 100yr24hr.csv

Link 8L: 100-yr 24-hr



Summary for Pond 8P: Tank B

Inflow	=	4.82 cfs @	13.50 hrs,	Volume=	2.078 af
Outflow	=	4.06 cfs @	13.61 hrs,	Volume=	2.064 af, Atten= 16%, Lag= 6.4 min
Primary	=	4.06 cfs @	13.61 hrs,	Volume=	2.064 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 1,562.05' @ 13.61 hrs Surf.Area= 5,215 sf Storage= 8,198 cf

Plug-Flow detention time= 37.7 min calculated for 2.064 af (99% of inflow)
Center-of-Mass det. time= 33.5 min (764.7 - 731.2)

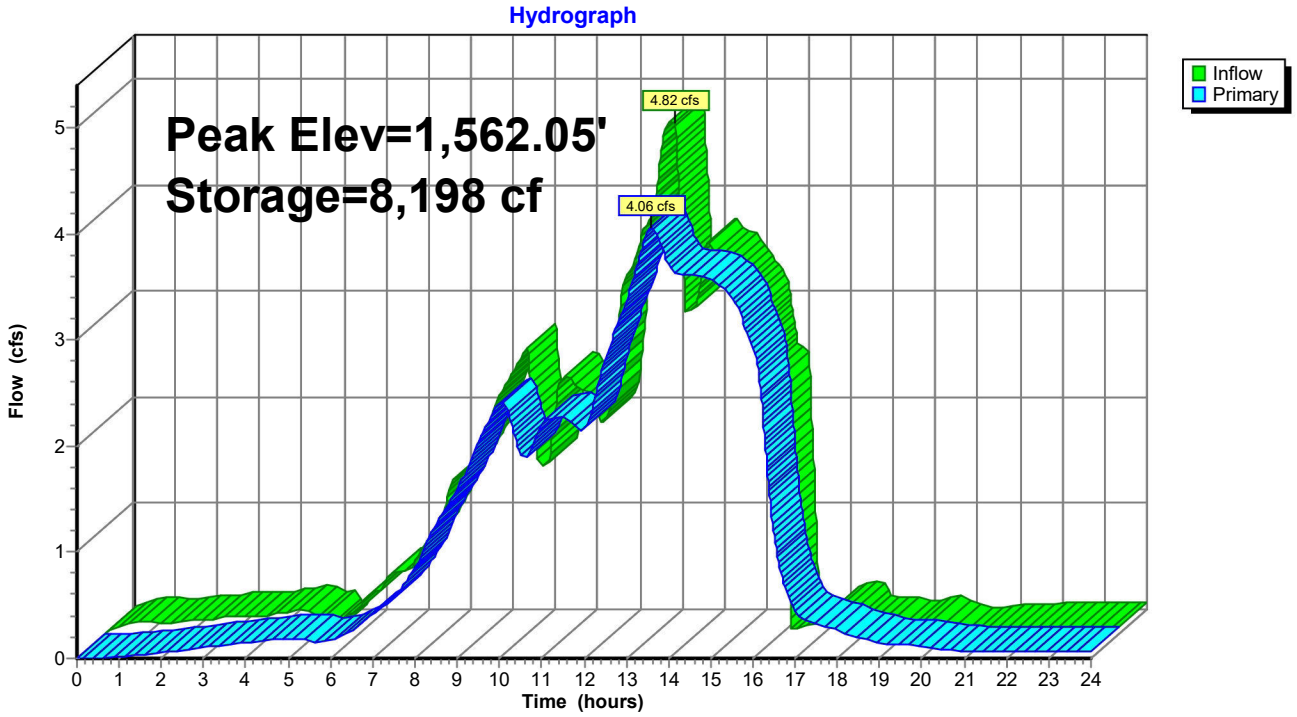
Volume	Invert	Avail.Storage	Storage Description
#1	1,560.40'	24,375 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
1,560.40	5,215	0.0	0	0	5,215
1,561.40	5,215	95.0	4,954	4,954	5,471
1,562.40	5,215	95.0	4,954	9,909	5,727
1,563.40	5,215	95.0	4,954	14,863	5,983
1,564.40	5,215	95.0	4,954	19,817	6,239
1,565.32	5,215	95.0	4,558	24,375	6,474

Device	Routing	Invert	Outlet Devices
#1	Primary	1,560.40'	**12.00" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#2	Primary	1,564.82'	**Custom Weir, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.50 0.50 Width (feet) 35.00 35.00 0.00

Primary OutFlow Max=4.06 cfs @ 13.61 hrs HW=1,562.05' (Free Discharge)
└**1=Orifice** (Orifice Controls 4.06 cfs @ 5.17 fps)
└**2=Custom Weir** (Controls 0.00 cfs)

Pond 8P: Tank B



NOAA Atlas 14, Volume 6, Version 2
Location name: Moreno Valley, California, USA*
Latitude: 33.9174°, Longitude: -117.2089°
Elevation: 1586.68 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.091** (0.076-0.110)	**0.123** (0.103-0.149)	**0.166** (0.138-0.202)	**0.202** (0.166-0.248)	**0.251** (0.200-0.319)	**0.290** (0.226-0.376)	**0.329** (0.250-0.438)	**0.371** (0.274-0.508)	**0.428** (0.303-0.612)	**0.473** (0.323-0.701)
10-min	**0.130** (0.108-0.157)	**0.176** (0.147-0.214)	**0.238** (0.198-0.290)	**0.289** (0.239-0.355)	**0.360** (0.287-0.457)	**0.415** (0.323-0.538)	**0.472** (0.359-0.628)	**0.532** (0.392-0.728)	**0.614** (0.434-0.877)	**0.679** (0.463-1.00)
15-min	**0.157** (0.131-0.190)	**0.213** (0.178-0.259)	**0.288** (0.240-0.350)	**0.350** (0.288-0.429)	**0.435** (0.347-0.552)	**0.502** (0.391-0.651)	**0.571** (0.434-0.760)	**0.643** (0.474-0.880)	**0.742** (0.524-1.06)	**0.821** (0.559-1.22)
30-min	**0.249** (0.208-0.302)	**0.339** (0.282-0.411)	**0.458** (0.380-0.556)	**0.556** (0.458-0.681)	**0.692** (0.550-0.877)	**0.798** (0.621-1.03)	**0.907** (0.689-1.21)	**1.02** (0.753-1.40)	**1.18** (0.833-1.69)	**1.30** (0.889-1.93)
60-min	**0.349** (0.292-0.423)	**0.475** (0.396-0.575)	**0.641** (0.533-0.779)	**0.778** (0.642-0.954)	**0.968** (0.771-1.23)	**1.12** (0.870-1.45)	**1.27** (0.964-1.69)	**1.43** (1.06-1.96)	**1.65** (1.17-2.36)	**1.83** (1.24-2.70)
2-hr	**0.518** (0.432-0.627)	**0.680** (0.567-0.824)	**0.893** (0.743-1.09)	**1.07** (0.881-1.31)	**1.31** (1.04-1.66)	**1.50** (1.16-1.94)	**1.69** (1.28-2.24)	**1.88** (1.39-2.58)	**2.15** (1.52-3.08)	**2.36** (1.61-3.50)
3-hr	**0.642** (0.536-0.777)	**0.833** (0.694-1.01)	**1.08** (0.901-1.32)	**1.29** (1.06-1.58)	**1.57** (1.25-1.99)	**1.79** (1.39-2.32)	**2.01** (1.52-2.67)	**2.24** (1.65-3.06)	**2.55** (1.80-3.64)	**2.79** (1.90-4.13)
6-hr	**0.898** (0.750-1.09)	**1.16** (0.964-1.40)	**1.49** (1.24-1.82)	**1.77** (1.46-2.17)	**2.14** (1.71-2.72)	**2.43** (1.89-3.15)	**2.72** (2.07-3.62)	**3.02** (2.23-4.14)	**3.43** (2.42-4.90)	**3.74** (2.55-5.54)
12-hr	**1.16** (0.966-1.40)	**1.51** (1.26-1.83)	**1.96** (1.63-2.38)	**2.33** (1.92-2.86)	**2.83** (2.25-3.59)	**3.21** (2.50-4.16)	**3.59** (2.73-4.78)	**3.99** (2.94-5.46)	**4.51** (3.19-6.45)	**4.92** (3.36-7.29)
24-hr	**1.48** (1.31-1.70)	**1.96** (1.73-2.26)	**2.59** (2.28-3.00)	**3.10** (2.71-3.62)	**3.79** (3.21-4.56)	**4.31** (3.57-5.30)	**4.83** (3.92-6.09)	**5.37** (4.23-6.95)	**6.09** (4.61-8.21)	**6.64** (4.86-9.26)
2-day	**1.72** (1.52-1.98)	**2.32** (2.05-2.68)	**3.11** (2.74-3.60)	**3.75** (3.28-4.37)	**4.61** (3.90-5.55)	**5.26** (4.37-6.47)	**5.93** (4.80-7.46)	**6.60** (5.21-8.55)	**7.52** (5.69-10.1)	**8.22** (6.02-11.5)
3-day	**1.82** (1.61-2.10)	**2.48** (2.20-2.87)	**3.36** (2.96-3.89)	**4.07** (3.56-4.75)	**5.03** (4.26-6.07)	**5.77** (4.79-7.10)	**6.52** (5.28-8.21)	**7.29** (5.75-9.44)	**8.33** (6.31-11.2)	**9.14** (6.69-12.7)
4-day	**1.96** (1.74-2.27)	**2.71** (2.39-3.13)	**3.69** (3.25-4.27)	**4.49** (3.92-5.24)	**5.57** (4.72-6.72)	**6.41** (5.32-7.89)	**7.26** (5.88-9.15)	**8.14** (6.42-10.5)	**9.34** (7.07-12.6)	**10.3** (7.51-14.3)
7-day	**2.16** (1.91-2.49)	**3.03** (2.68-3.50)	**4.18** (3.69-4.84)	**5.13** (4.49-5.99)	**6.43** (5.45-7.75)	**7.44** (6.17-9.15)	**8.47** (6.86-10.7)	**9.53** (7.52-12.3)	**11.0** (8.32-14.8)	**12.1** (8.87-16.9)
10-day	**2.23** (1.97-2.57)	**3.16** (2.79-3.65)	**4.41** (3.88-5.10)	**5.44** (4.75-6.34)	**6.86** (5.81-8.26)	**7.96** (6.61-9.79)	**9.10** (7.37-11.5)	**10.3** (8.10-13.3)	**11.9** (9.01-16.0)	**13.2** (9.64-18.3)
20-day	**2.58** (2.28-2.98)	**3.71** (3.28-4.28)	**5.25** (4.62-6.07)	**6.53** (5.71-7.62)	**8.34** (7.06-10.1)	**9.77** (8.11-12.0)	**11.3** (9.12-14.2)	**12.8** (10.1-16.6)	**15.0** (11.4-20.2)	**16.7** (12.2-23.3)
30-day	**2.96** (2.62-3.41)	**4.24** (3.75-4.90)	**6.02** (5.30-6.97)	**7.52** (6.58-8.78)	**9.66** (8.18-11.6)	**11.4** (9.44-14.0)	**13.2** (10.7-16.6)	**15.1** (11.9-19.5)	**17.7** (13.4-23.9)	**19.8** (14.5-27.7)
45-day	**3.47** (3.07-4.00)	**4.92** (4.35-5.68)	**6.95** (6.13-8.04)	**8.70** (7.60-10.1)	**11.2** (9.50-13.5)	**13.3** (11.0-16.3)	**15.4** (12.5-19.4)	**17.7** (14.0-22.9)	**21.0** (15.9-28.3)	**23.6** (17.3-33.0)
60-day	**3.94** (3.49-4.54)	**5.51** (4.87-6.36)	**7.73** (6.81-8.95)	**9.66** (8.45-11.3)	**12.5** (10.6-15.0)	**14.8** (12.3-18.2)	**17.2** (14.0-21.7)	**19.9** (15.7-25.7)	**23.7** (17.9-31.9)	**26.8** (19.6-37.3)

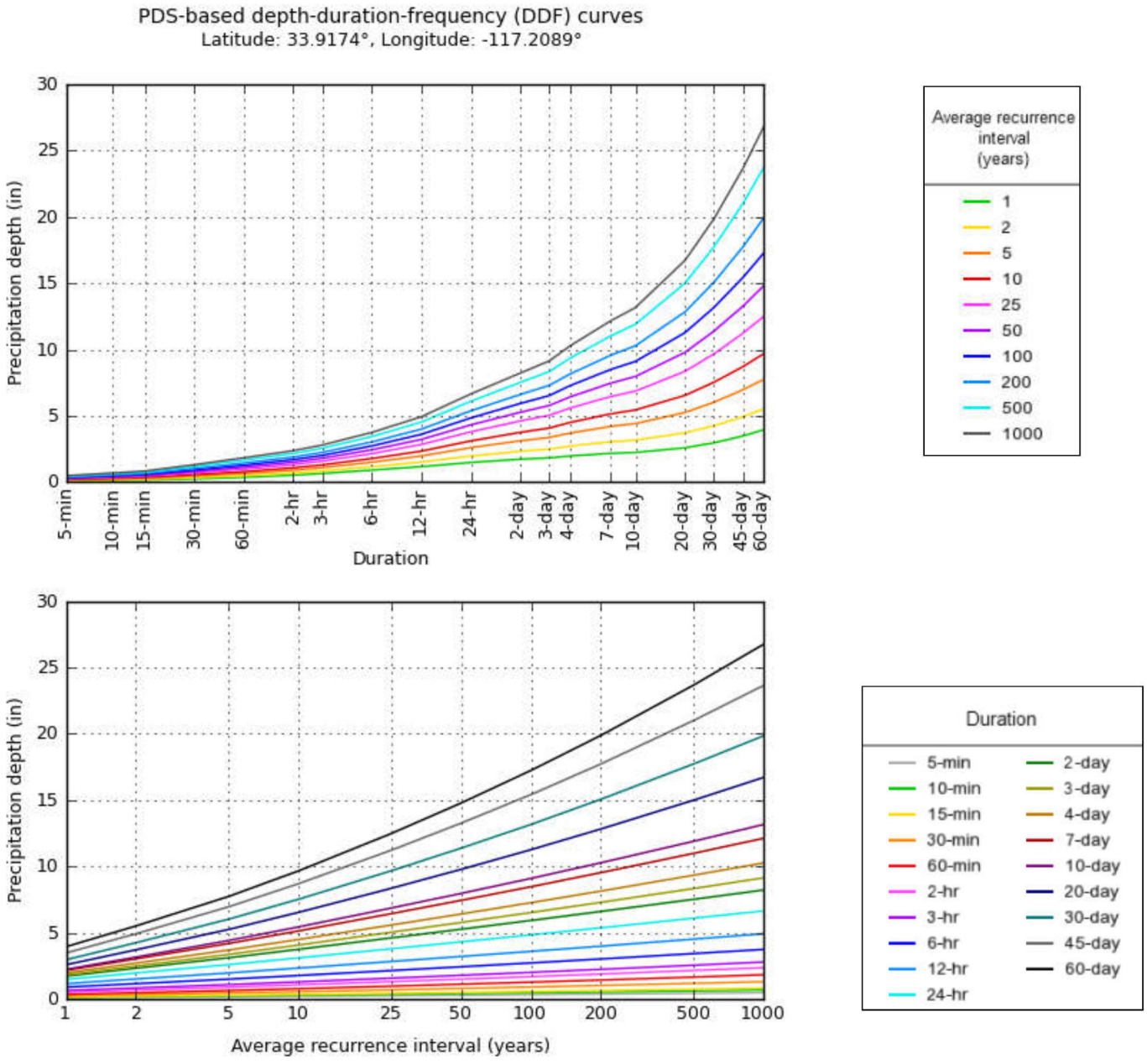
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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PF graphical

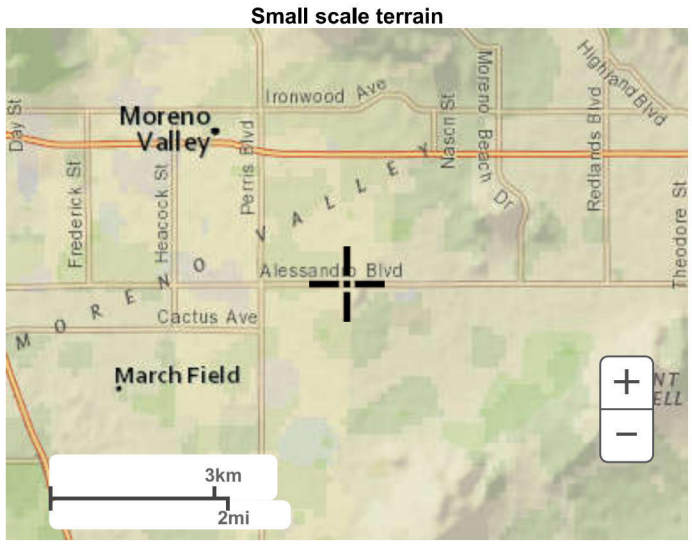


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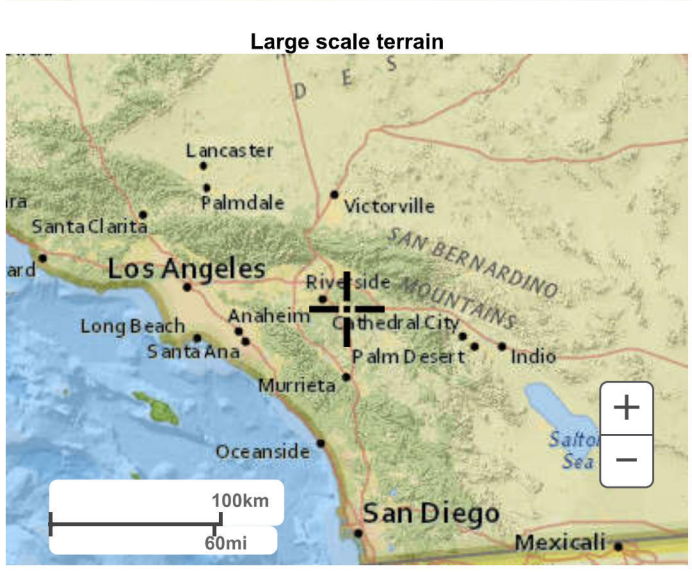
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Maps & aerials

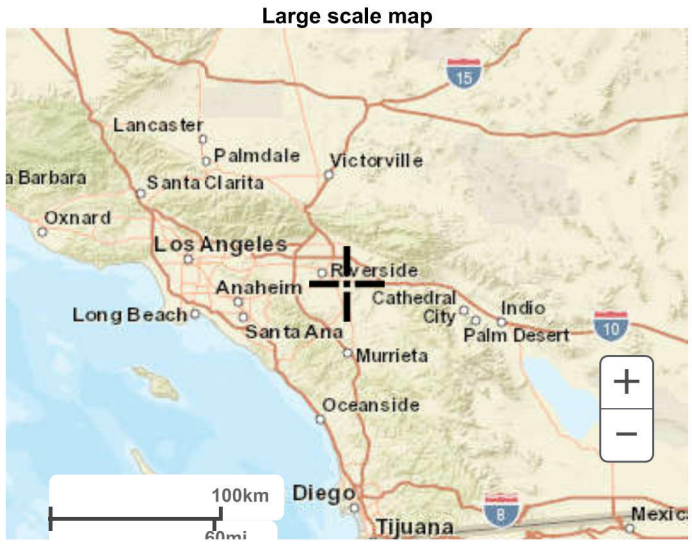
Small scale terrain



Large scale terrain



Large scale map



RUNOFF INDEX NUMBERS OF HYDROLOGIC SOIL-COVER COMPLEXES FOR PERVIOUS AREAS-AMC II

Cover Type (3)	Quality of Cover (2)	Soil Group A	B	C	D	
NATURAL COVERS -						
Barren (Rockland, eroded and graded land)		78	86	91	93	weighted = 89
Chaparrel, Broadleaf (Manzonita, ceanothus and scrub oak)	Poor	53	70	80	85	
	Fair	40	63	75	81	
	Good	31	57	71	78	
Chaparrel, Narrowleaf (Chamise and redshank)	Poor	71	82	88	91	
	Fair	55	72	81	86	
Grass, Annual or Perennial	Poor	67	78	86	89	
	Fair	50	69	79	84	
	Good	38	61	74	80	
Meadows or Cienegas (Areas with seasonally high water table, principal vegetation is sod forming grass)	Poor	63	77	85	88	
	Fair	51	70	80	84	
	Good	30	58	72	78	
Open Brush (Soft wood shrubs - buckwheat, sage, etc.)	Poor	62	76	84	88	
	Fair	46	66	77	83	
	Good	41	63	75	81	
Woodland (Coniferous or broadleaf trees predominate. Canopy density is at least 50 percent)	Poor	45	66	77	83	
	Fair	36	60	73	79	
	Good	28	55	70	77	
Woodland, Grass (Coniferous or broadleaf trees with canopy density from 20 to 50 percent)	Poor	57	73	82	86	
	Fair	44	65	77	82	
	Good	33	58	72	79	
URBAN COVERS -						
Residential or Commercial Landscaping (Lawn, shrubs, etc.)	Good	32	56	69	75	
Turf (Irrigated and mowed grass)	Poor	58	74	83	87	
	Fair	44	65	77	82	
	Good	33	58	72	79	
AGRICULTURAL COVERS -						
Fallow (Land plowed but not tilled or seeded)		76	85	90	92	

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RUNOFF INDEX NUMBERS FOR PERVIOUS AREAS

PLATE E-6.1 (1 of 2)

RUNOFF INDEX NUMBERS OF HYDROLOGIC SOIL-COVER COMPLEXES FOR PERVIOUS AREAS-AMC II

Cover Type (3)	Quality of Cover (2)	Soil Group A	B	C	D
AGRICULTURAL COVERS (cont.) -					
Legumes, Close Seeded (Alfalfa, sweetclover, timothy, etc.)	Poor	66	77	85	89
	Good	58	72	81	85
Orchards, Deciduous (Apples, apricots, pears, walnuts, etc.)		See Note 4			
Orchards, Evergreen (Citrus, avocados, etc.)	Poor	57	73	82	86
	Fair	44	65	77	82
	Good	33	58	72	79
Pasture, Dryland (Annual grasses)	Poor	67	78	86	89
	Fair	50	69	79	84
	Good	38	61	74	80
Pasture, Irrigated (Legumes and perennial grass)	Poor	58	74	83	87
	Fair	44	65	77	82
	Good	33	58	72	79
Row Crops (Field crops - tomatoes, sugar beets, etc.)	Poor	72	81	88	91
	Good	67	78	85	89
Small Grain (Wheat, oats, barley, etc.)	Poor	65	76	84	88
	Good	63	75	83	87
Vineyard		See Note 4			

Notes:

1. All runoff index (RI) numbers are for Antecedent Moisture Condition (AMC) II.

2. Quality of cover definitions:
   Poor-Heavily grazed or regularly burned areas. Less than 50 percent of the ground surface is protected by plant cover or brush and tree canopy.
   Fair-Moderate cover with 50 percent to 75 percent of the ground surface protected.
   Good-Heavy or dense cover with more than 75 percent of the ground surface protected.

3. See Plate C-2 for a detailed description of cover types.

4. Use runoff index numbers based on ground cover type. See discussion under "Cover Type Descriptions" on Plate C-2.

5. Reference Bibliography item 17.

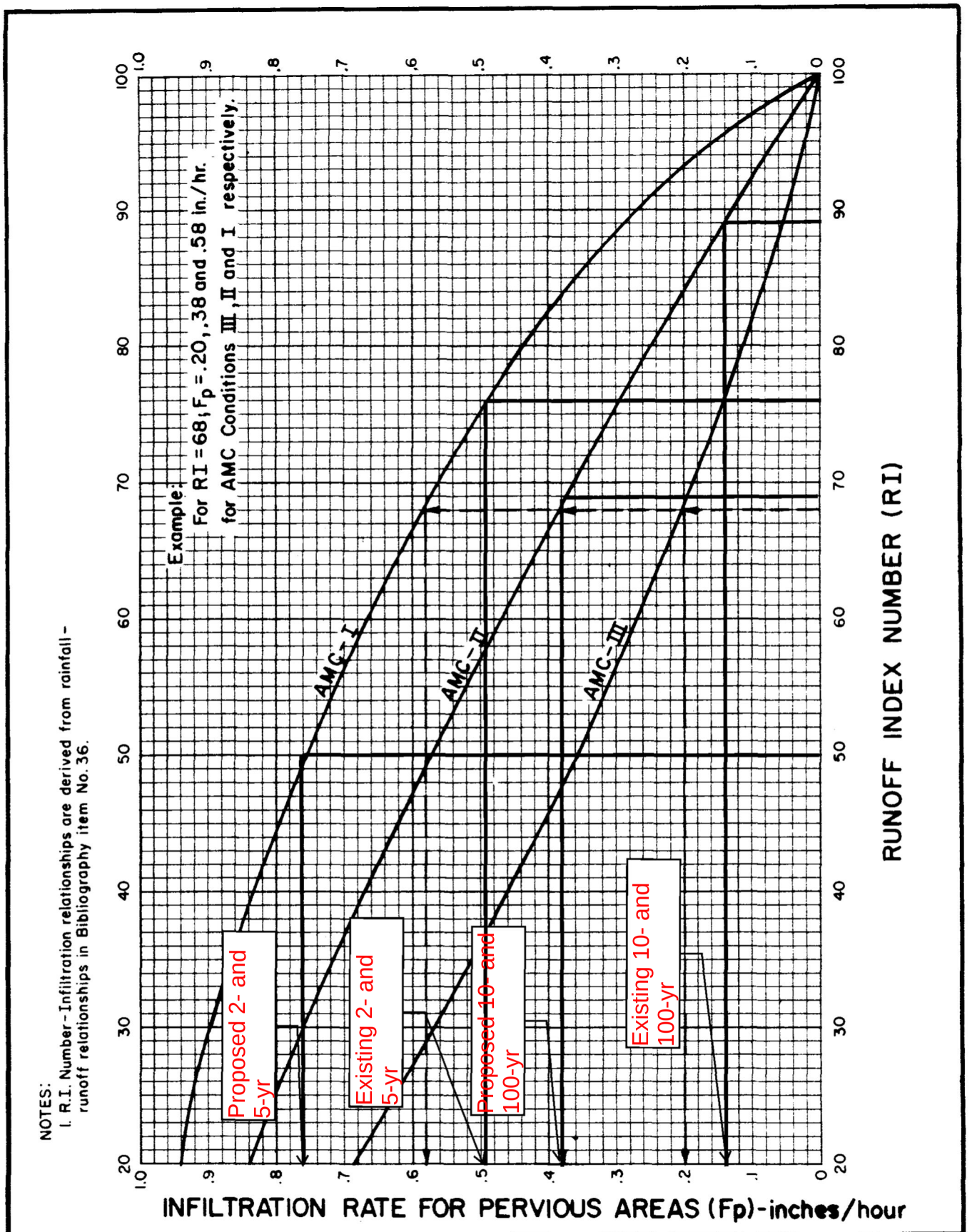
RUNOFF COEFFICIENT CURVE DATA

The data in the following tables may be used to develop runoff coefficient (C) curves for any combination of runoff index (RI) number and antecedent mositure condition (AMC). For an RI number with an AMC of II (from Plate D-5.5) enter the tables on the following pages and plot the "C" curve data directly on Plate D-5.8. "C" curve data is given for even RI numbers only, but values may easily be interpolated for odd RI numbers.

For an AMC of I or III enter the tabulation on this page with the RI for AMC II, and read the appropriate RI for AMC I or III. Use this revised RI to enter the tables on the following pages to determine "C". For example if RI = 40 for AMC II, then RI = 22 for AMC I and RI = 60 for AMC III.

AMC ADJUSTMENT RELATIONSHIPS

RI FOR AMC II	RI FOR OTHER AMC CONDITIONS: AMC I	AMC III	RI FOR AMC II	RI FOR OTHER AMC CONDITIONS: AMC I	AMC III
10	--	22	55	35	74
11	--	24	56	36	75
12	--	25	57	37	75
13	--	27	58	38	76
14	--	28	59	39	77
15	--	30	60	40	78
16	--	31	61	41	78
17	--	33	62	42	79
18	--	34	63	43	80
19	--	36	64	44	81
20	--	37	65	45	82
21	10	38	66	46	82
22	10	39	67	47	83
23	11	41	68	48	84
24	11	42	69	50	84
25	12	43	70	51	85
26	12	44	71	52	86
27	13	46	72	53	86
28	14	47	73	54	87
29	14	49	74	55	88
30	15	50	75	57	88
31	16	51	76	58	89
32	16	52	77	59	89
33	17	53	78	60	90
34	18	54	79	62	91
35	18	55	80	63	91
36	19	56	81	64	92
37	20	57	82	66	92
38	21	58	83	67	93
39	21	59	84	68	93
40	22	60	85	70	94
41	23	61	86	72	94
42	24	62	87	73	95
43	25	63	88	75	95
44	25	64	89	76	96
45	26	65	90	78	96
46	27	66	91	80	97
47	28	67	92	81	97
48	29	68	93	83	98
49	30	69	94	85	98
50	31	70	95	87	98
51	31	70	96	89	99
52	32	71	97	91	99
53	33	72	98	94	99
54	34	73	99	97	--



NOTES:
1. R.I. Number-Infiltration relationships are derived from rainfall-runoff relationships in Bibliography item No. 36.

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INFILTRATION RATE FOR PERVIOUS AREAS VERSUS RUNOFF INDEX NUMBERS

PLATE E-6.2

APPENDIX E

WSPGW STORM PIPE SIZING OUTPUT

APPENDIX F

FHWA HYDRAULIC TOOLBOX INLET SIZING OUTPUT

APPENDIX G

DETENTION SYSTEM DETAILS

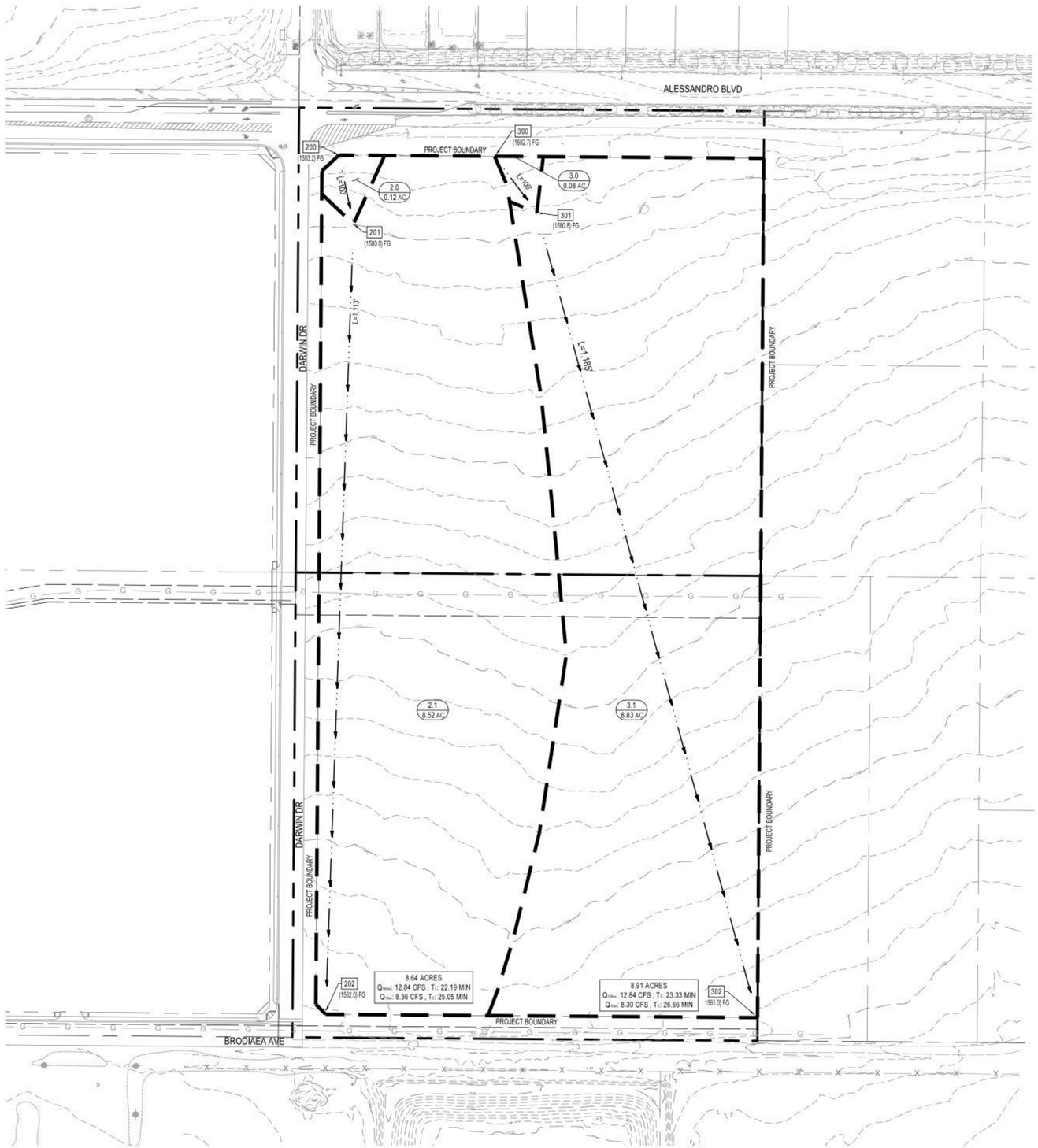
MAP POCKET #1

ROCAS GRANDES II DRAINAGE

PRE-DEVELOPMENT MAP

PRE-PROJECT HYDROLOGY MAP

ROCAS GRANDES II



LEGEND

MAJOR BASIN BOUNDARY	
MINOR BASIN BOUNDARY	
FLOW PATH	
HYDROLOGIC NODE ELEVATION AT NODE	105 (1582.7) FG
HYDROLOGIC SUB-BASIN NUMBER HYDROLOGIC AREA (ACRES)	1.0 0.40 AC
IMPERVIOUS AREA	0.85 AC (37,081 SF)
PERVIOUS AREA	19.16 AC (834,441 SF)
TOTAL AREA	20.01 AC (871,522 SF)

0 40 80 120

SCALE: 1" = 80'

PRE-PROJECT HYDROLOGY MAP

ROCAS GRANDES II

CITY OF MORENO VALLEY

PASCO LARET SUITER & ASSOCIATES

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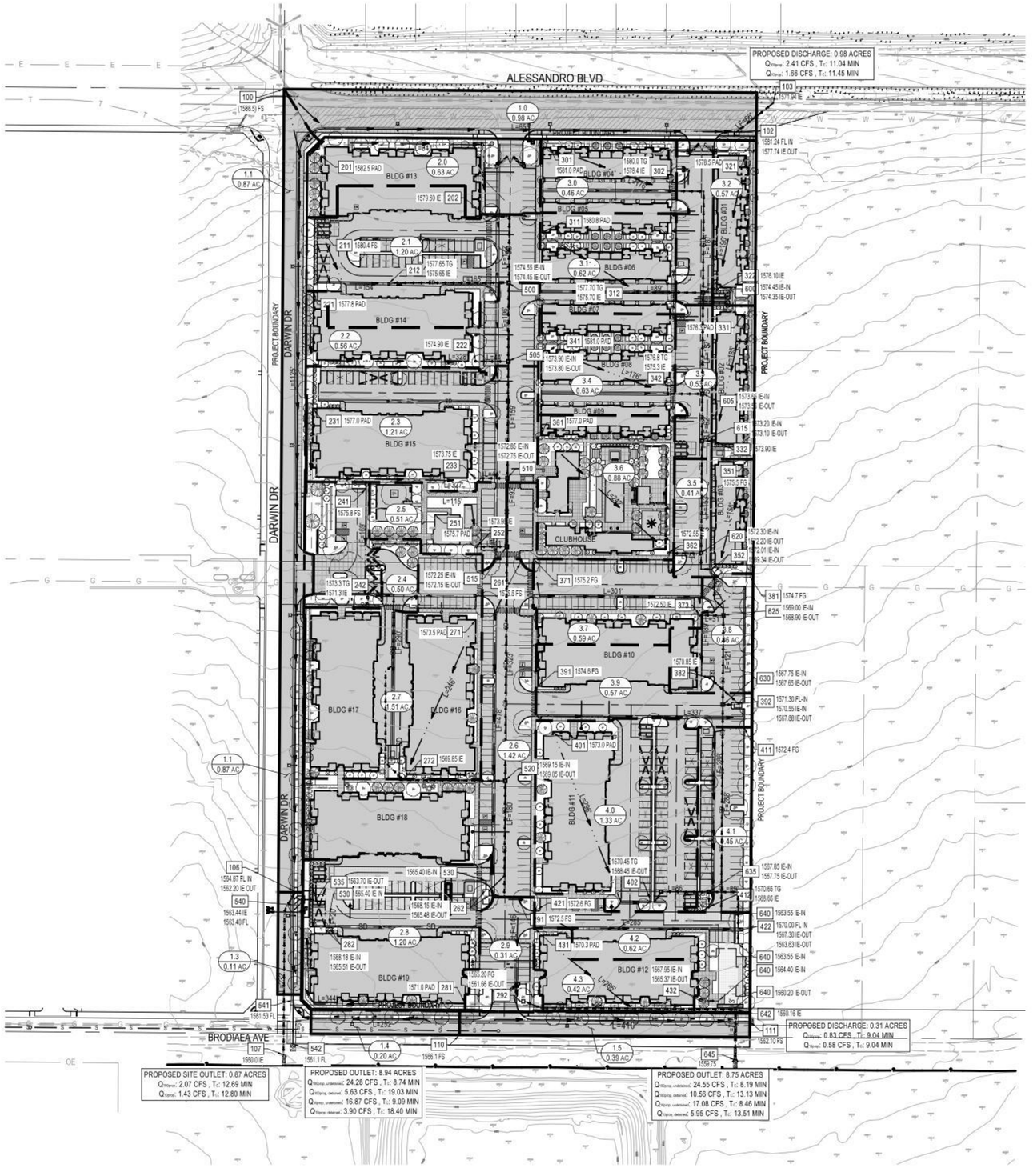
MAP POCKET #2

ROCAS GRANDES II DRAINAGE

POST-DEVELOPMENT MAP

POST-PROJECT HYDROLOGY MAP

ROCAS GRANDES II



LEGEND

- MAJOR BASIN BOUNDARY
- MINOR BASIN BOUNDARY
- FLOW PATH
- HYDROLOGIC NODE / ELEVATION AT NODE — 105 (1582.7') FG
- HYDROLOGIC SUB-BASIN NUMBER / HYDROLOGIC AREA (ACRES)
- IMPERVIOUS AREA — 14.54 AC (632,498 SF)
- PERVIOUS AREA — 2.97 AC (129,483 SF)
- TOTAL AREA — 17.49 AC (761,981 SF)

N

SCALE: 1" = 80'

0 80 160 240

POST-PROJECT HYDROLOGY MAP
ROCAS GRANDES II
CITY OF MORENO VALLEY

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