HYDROLOGIC AND WATER QUALITY REPORT
IN SUPPORT OF THE ENVIRONMENTAL IMPACT REPORT
AND TENTATIVE MAP 15576
FOR
THE SPRING TRAILS PROJECT

CITY OF SAN BERNARDINO, CALIFORNIA

Job Number 13565C
January 4, 2010
Revised June 13, 2011

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TENTATIVE MAP 15576
FOR
THE SPRING TRAILS PROJECT
CITY OF SAN BERNARDINO, CALIFORNIA

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1.0 EXECUTIVE SUMMARY

The purpose of this report is to address the hydrologic and water quality impacts on downstream properties due to the development of the proposed Spring Trails Project. The mitigation measures and recommended project design features proposed in this report will be designed to mitigate those impacts to an acceptable level.

The Spring Trails Project is a proposed 352.8-acre residential development located in the unincorporated community of Verdemont within the city of San Bernardino's sphere of influence. The site is in the foothills of the San Bernardino Mountains and is bounded on the north, northwest and east by the San Bernardino National Forest. Rural residential properties bound the project site to the west and south. Primary access is from Meyers Rd. and Secondary access is from Frontage Rd.

Hydrology

Development of the Spring Trails Site will require the collection and conveyance of the 100-year storm flows in a manner that will insure protection of the site and downstream properties. To meet the requirements of on-site flood protection, off-site storm water and on-site flows will be collected and routed through a series of catch basins inlets and storm drain systems that will convey water to 3 on-site Extended Detention Basins for water quality treatment and Detention. These systems will be designed and constructed in accordance with the City of San Bernardino and the San Bernardino County Flood Control District standards.

There are two conditions that are being considered and studied in the Preliminary Hydrology Studies performed for the development of the Spring Trails Project. The first is the existing condition. This condition occurs when both on-site and off-site areas are in their existing condition. The second condition is the proposed condition. This condition occurs when the Spring Trails Project is developed.

The existing ground on the Spring Trails site generally slopes from north to south. There are four major drainage paths that drain through or affect the Spring Trails Project.

Draining from the north into the project are Cable Canyon west and east forks that confluence with an unnamed blue-line stream as it exits our site. The second is a sheet flow drainage area that flows southwesterly through the center of the Spring Trails project and ultimately sheet flows into Cable Creek. The third is a series of offsite sheet flows and well defined flow lines that come into the site and confluence onsite and exit the site on the southeastern part of the project. The fourth (tributaries to Meyers Creek) is only considered for purposes of sizing the storm drain culvert crossing under the primary access road (Street "A"). See Figure 4.0 for these drainage paths.

In the post-project condition the site's drainage system will be designed to mitigate flows from the site by routing storm water through different storm drain systems. The first extended detention basin is located along Street "J" where it is then discharged into Cable Canyon. The second extended detention basin is located along street "I" where it discharges into a natural flow line and flows into Cable Creek downstream of the project. The third extended detention basin is located on Street "A" where it discharges into an unnamed flow-line west of Meyers Creek that then flows into Cable Creek downstream of the project.

Preliminary culvert sizes have been calculated to convey the bulked flows for each of the major road crossings shown on the Tentative Map. These calculations have been performed assuming inlet control for all structures, and assuming that 1-foot of freeboard is maintained at the entrance to each culvert, and sized to pass the 100-year bulked flows calculated above.

Water Quality

The potential pollutants generated due to construction activities are sheet erosion of exposed soils and subsequent deposition of particles in the drainage ways. Storm water contamination may also occur due to storage, refueling, and maintenance of construction equipment on-site. In order to mitigate these pollutants, erosion and sediment control measures will be implemented such as silt fences, fiber rolls, gravel bags, temporary

desilting basins, velocity check dams, temporary ditches or swales, and storm water inlet protection. The implementation of construction Best Management Practices (BMPs) and the Storm Water Pollution Prevention Plan (SWPPP) will mitigate the potential impacts of project construction on stormwater runoff.

The potential pollutants generated due to conversion of vacant land into residential, park sites and streets land uses are sediment/turbidity, nutrients, organic compounds, trash and debris, oxygen demanding substances, bacteria and viruses, oil and grease, pesticides, and metals. The impact of downstream water quality deterioration due to the proposed development would be mitigated by appropriate Site Design, Source Control and Treatment Control BMPs as described in section 6.4.4 of this report. Non-structural source control BMPs such as public education programs, landscape management, litter control, and street sweeping, will be implemented to reduce the pollution near the source. All the proposed structural BMPs (extended detention basin, and media filtration devices) will receive appropriate inspection and maintenance to ensure long-term operation of the project.

The report summarizes the impact of the proposed Spring Trails project on the peak discharges within the creeks and channels downstream of the project, for storms ranging from the 1-year to the 5-year storm. The results of the modeling indicate that storm events less than a 5-year storm will yield lower runoff peak flow rates in the post project condition than in the pre-project condition. Therefore, the Spring Trails project has been designed to meet the City of San Bernardino criteria to address hydrologic conditions of concern.

The groundwater level at the project site is more than 50 ft below the existing ground, so the project is not expected to impact groundwater quality. The project may contribute to the groundwater recharge due to infiltration from the proposed extended detention basins.

2.0 INTRODUCTION

This report addresses the potential impacts of the Spring Trails project with regard to surface water hydrology and water quality. The surface water hydrologic analysis identifies surface water runoff and drainage characteristics, including floodplain hydrology from the overall watershed perspective and local subarea runoff patterns, and identifies mitigation measures for impacts regarding flooding, erosion, and siltation. The surface water quality analysis identifies anticipated pollutants from pre-project and post project land uses, and identifies mitigation measures for impacts to surface water quality.

Pursuant to Title 14, Chapter 3, of the Guidelines for Implementation of the California Environmental Quality Act (CEQA), Appendix G (Environmental Checklist Form), potential environmental effects applicable to hydrology are whether the project would:

- Violate any water quality standards or waste discharge requirements;
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted);
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site;
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;
- Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;
- Otherwise substantially degrade water quality;

- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map;
- Place within a 100-year flood hazard area structures which would impede or redirect flood flows;
- Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of failure of a levee or dam; or
- Inundation by seiche, tsunami, or mudflow.

2.1 Site Description

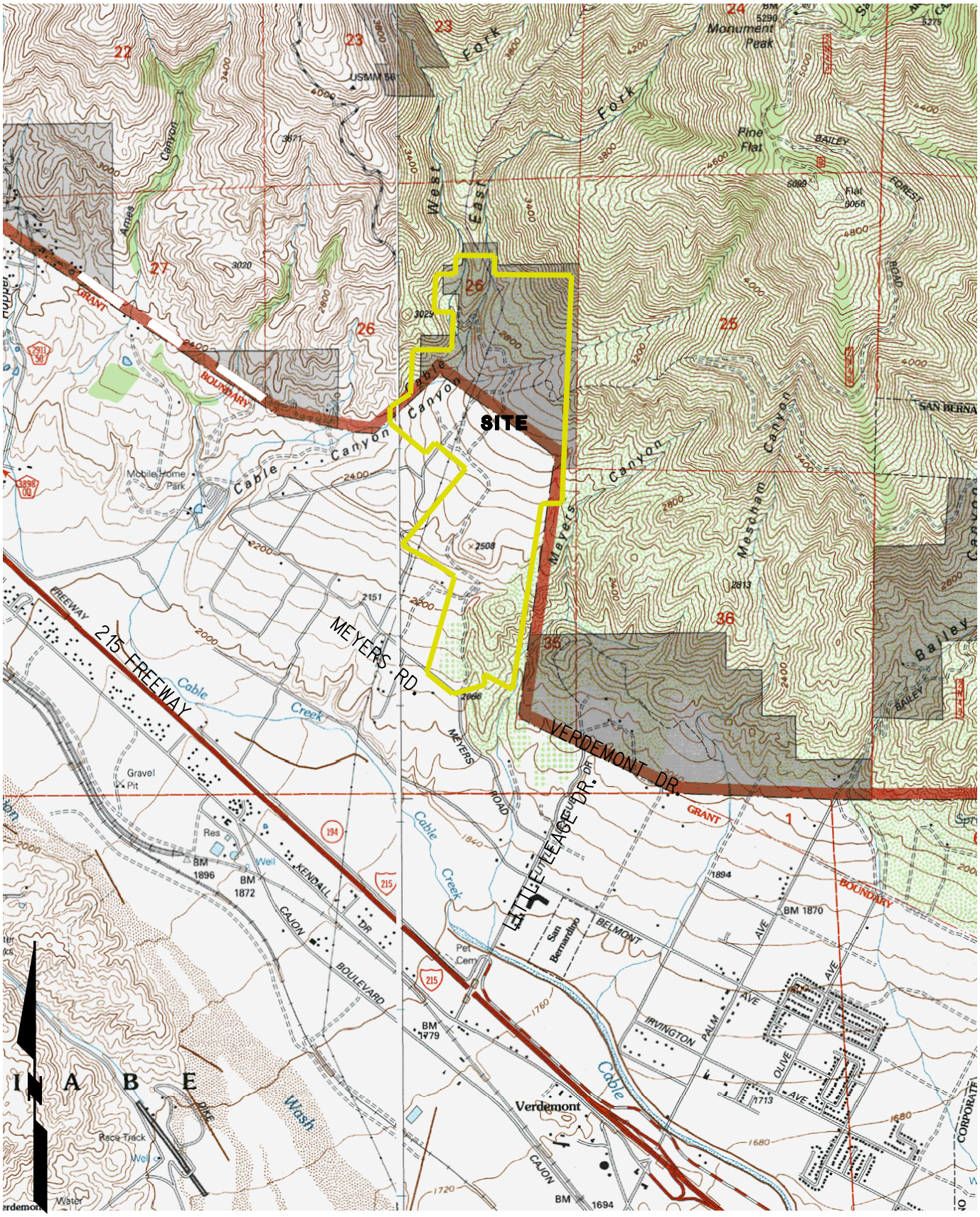
The Spring Trails Site is located in the unincorporated community of Verdemont within the City of San Bernardino's sphere of influence. The location of the project site is shown in Figure 1, Vicinity Map. The site is currently vacant land. The site is in the foothills of the San Bernardino Mountains and is bounded on the north, northwest and east by the San Bernardino National Forest. Rural residential properties bound the project site to the west and south. Primary access is from Meyers Rd. and secondary access is from Frontage Rd. The existing topography of the project site tends from north to south. In the central and southwest portion of the site, the site slopes relatively uniformly in a southwest direction at 10 to 15 percent. The remaining portion of the site consists of relatively steeply sloping terrain (15 to 70 percent) with steeply increased drainage areas.

The property encompasses 352.8 acres located north of Meyers Road, west of Little league Drive, east of Martin Ranch Road and south of the San Bernardino National Forest. The total on-site area of the project is shown in Table 1 on the following page.

The Spring Trails Project proposes to provide approximately 350 acres of residential, park areas, undisturbed open space and hiking trails with approximately 309 residential dwelling units.

Table 1. Land use Distribution

Description		Area (acres)	%
On-site	Residential	161.3	46.0
	Street Right-of-Way	32.3	9.2
	Open Space/Park/ Extended Detention Basins	157.0	44.8
		350.6	100



SOURCE:USGS QUADRANGLES FOR DEVORE, SAN BERNARDINO NORTH

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SPRING TRAILS
VICINITY MAP
FIGURE 1.0

SCALE: 1"=2400'

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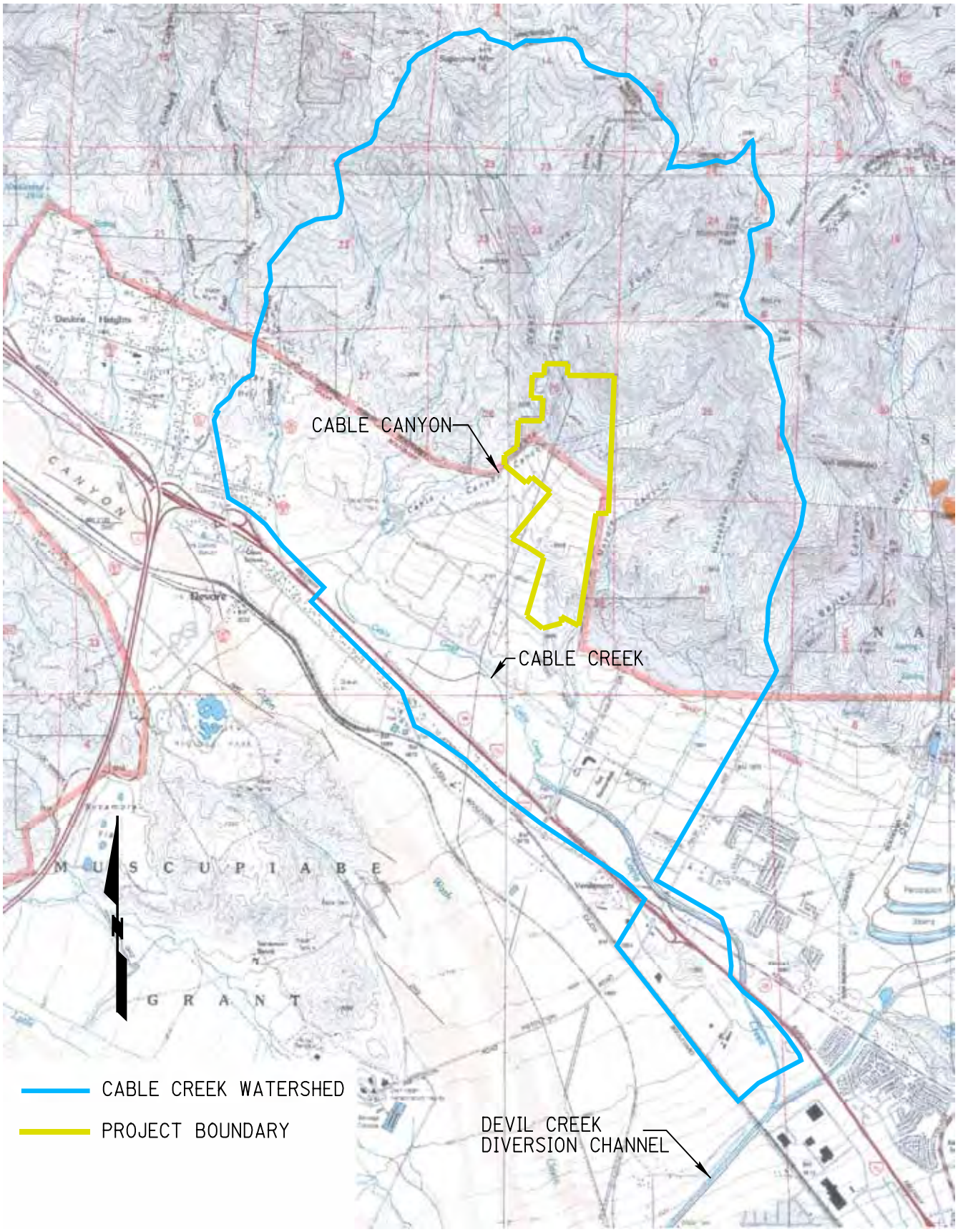
PLOT DATE: 12-MAR-2009 JN 13565C

3.0 WATERSHED DESCRIPTION

The Spring Trails site resides within the Upper Santa Ana watershed. The Spring Trails project is Tributary to the Cable Creek as shown in Figure 2.0

The flow of the Santa Ana River begins in the San Bernardino Mountains and discharges into the ocean at Huntington Beach. The watershed of the Santa Ana River covers 2,800 square miles of mountains, foothills, and valleys. The Santa Ana watershed area contains portions of Los Angeles, Riverside, San Bernardino, and Orange Counties.

The Spring Trials project Hydrologic area is the Upper Santa Ana River. The Spring Trails site is located approximately 11.9 miles northwest of the confluence of Warm Creek and the Santa Ana River. The project site drains into Cable Canyon and Cable Creek. Cable Creek is a partially improved facility, located in the foothills of the San Bernardino Mountains in the northerly portion of the City of San Bernardino. It initiates as an unimproved watercourse at the mouth of Cable Canyon, east of Interstate 15 and route 215 Interchange, and flows south to Cable Creek spreading grounds; thence flows south-east for approximately three miles to the Devil Creek Diversion channel. Thence flows south east for approximately 1.4 miles to Lytle Creek Wash. Flows travel in Lytle Creek Wash approximately 2.9 miles south easterly into a Flood control Basin and continues into Lytle Creek Channel for 2.8 miles until it confluences with Warm Creek and drains south westerly for one (1) mile until joining with the Santa Ana River.



SOURCE:CABLE CREEK DRAINAGE STUDY (01-03-94)

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CABLE CREEK WATERSHED
FIGURE 2.0

SCALE: 1"=4000'

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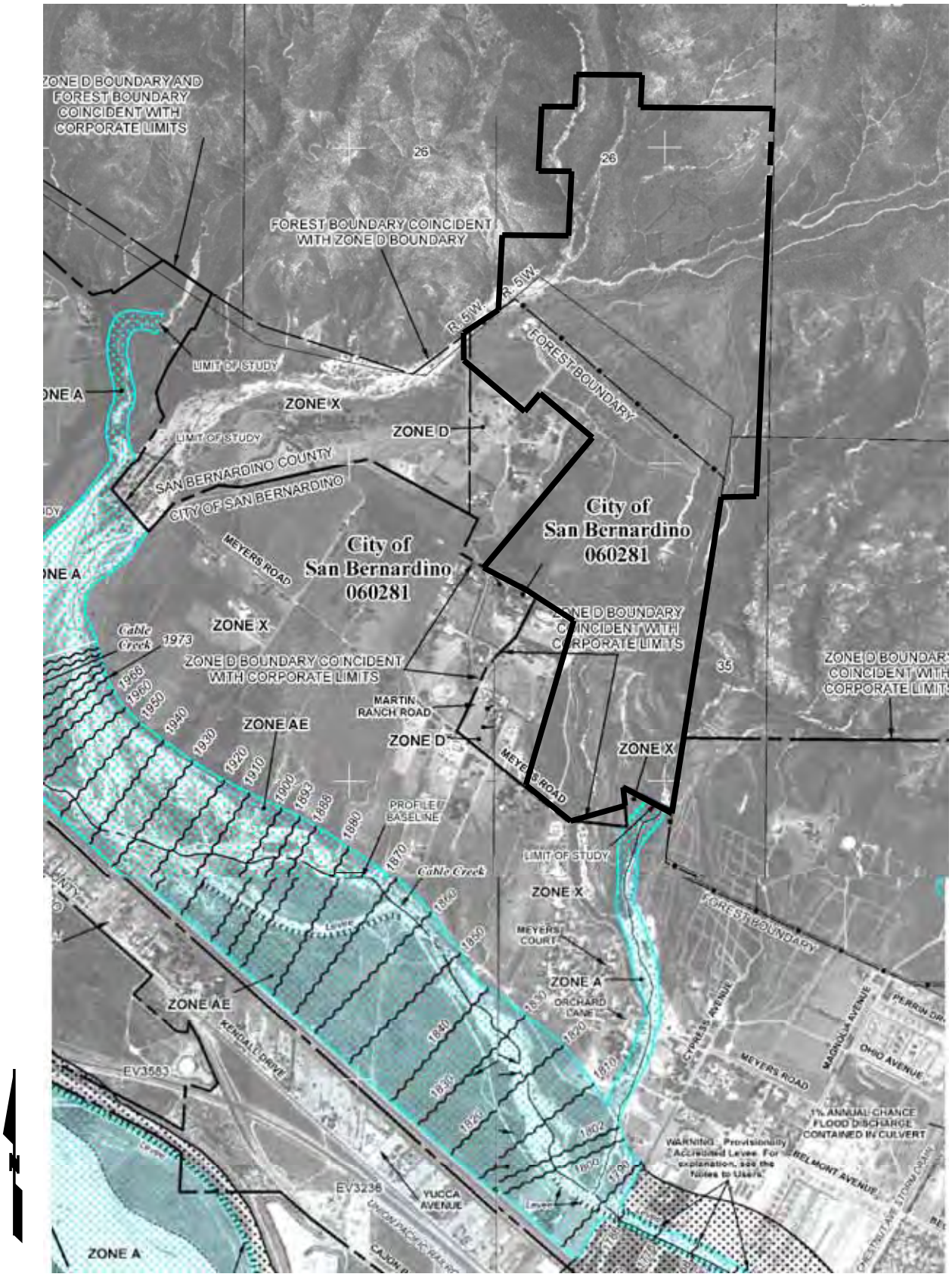
PLOT DATE: 07-JAN-2009 JN 13565C

4.0 FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD BOUNDARY AND NATIONAL FLOOD INSURANCE PROGRAM (NFIP) REQUIREMENTS

The Spring Trails Project site is not located in the 100-year floodplain as shown in the Flood Insurance Rate Map (Figure 3), so the project will not result in significant impacts to the 100-year flood hazard area. The map in Figure 4 shows two types of Zone X. One is shaded and the other is un-shaded. The shaded portion of Zone X is the area of the 500-year flood, and the un-shaded zone X is the area determined to be outside of the 500-year flood plain. The project site lies in the un-shaded Zone X and outside the limit of detailed study. The limit of detailed study is the limit up to which base flood elevations have been determined.



SOURCE:FEDERAL EMERGENCY MANAGMENT AGENCY (AUGUST 28, 2008)

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FLOOD INSURANCE RATE MAP
FIGURE 3.0

SCALE: NTS

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PLOT DATE: 07-JAN-2009 JN 13565C

5.0 PRE-PROJECT AND POST PROJECT CONDITIONS HYDROLOGY

5.1 Methodology

The Spring Trails project was modeled using the Unit Hydrograph methodology outlined in the San Bernardino County Hydrology Manual (1986). The Advanced Engineering Software (AES) v.2003, FloodSCX program, was used to calculate runoff from the existing condition and proposed developed condition watersheds and to generate corresponding 100-year, 24-hour hydrographs at each of the three major watersheds: Cable Canyon (Basin 100), the central basin (Basin 200), and Meyers Canyon (Basin 300 & 900). FloodSCX has the capability to model watershed runoff, as well as flow-through detention routing as directed in the San Bernardino County Hydrology Manual. Copies of the precipitation and loss rate backup, as well as other miscellaneous hydrologic backup data is included in Attachment C of this report.

5.1.1 Hydrologic Analysis – Rational Method

According to the San Bernardino County *Hydrology Manual* dated 1986 the Rational Method analysis can be performed for drainage areas less then one square mile. Hydrology for the project was performed using a computerized version of the Rational Method with rainfall intensities and runoff coefficients as outlined in the San Bernardino County *Hydrology Manual* dated 1986. The software is provided to Rick Engineering Company by Advanced Engineering Software (AES), copyright 2003, version 8.0

The analysis represents the watershed, including the on-site and off-site areas, as a link-node model. The Pre-project and Post-Project condition drainage basin map with drainage basin boundaries and nodes are included in Attachment D & E. The analysis can perform up to 15 hydrologic processes. These processes are assigned code numbers, which appear in the printed results. The code numbers and their meanings are as shown below.

Hydrologic Process Code	Sub-area Hydrologic Processes
1.	CONFLUENCE analysis at node
2.	INITIAL subarea analysis
3.	PIPEFLOW travel time (COMPUTER-Estimated size)
4.	PIPEFLOW travel time (USER-Specified pipe size)
5.	TRAPEZOIDAL channel travel time
6.	STREET-FLOW analysis
7.	USER-SPECIFIED information at node
8.	ADDITION of sub-area
9.	V-GUTTER flow through sub-area
10.	COPY Mainstream data onto a memory bank
11.	CONFLUENCE a memory BANK with the Main-Stream memory
12.	CLEAR a memory BANK
13.	CLEAR the Mainstream memory
14.	COPY a memory BANK onto the Main-Stream Memory
15.	HYDROLOGIC data BANK storage functions

5.1.2 Detention Modeling

The hydrologic impact of three proposed detention basins within the Spring Trails project was included in the FLOODSCX modeling. The detention basins are sized to incorporate the impact of the water quality storage volume, the basin infiltration losses. The modeling is based on determining the preliminary volume needed to reduce the 100-year post project discharge to be less than the pre project discharge.

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5.2 Applicable Agencies and Regulations

The City of San Bernardino is charged with the regulation of drainage and development in the city, where the Spring Trails site is located. The City of San Bernardino will be responsible for reviewing hydrologic and hydraulic studies and design features for conformance to the criteria given in the San Bernardino County Hydrology Manual, dated August 1986 and the City of San Bernardino Standard Drawings. The City of San Bernardino may provide specific Conditions of Approval for every map or permit for which discretionary approval is sought.

5.3 Pre Project Condition Drainage Patterns

The Spring Trails site boundary covers approximately 350 acres within the unincorporated community of Verdemont within the city of San Bernardino's sphere of influence, which currently exists as vacant a land and one (1) residential dwelling unit. The Spring Trails project would provide approximately 266 acres of residential use with approximately 309 dwelling units and 84.6 acres of open space, parks, hiking trails and drainage facilities. The conversion of vacant land into residential land use will result in new impervious surfaces.

In the pre-project condition, existing land uses at the site include vacant land with a residential dwelling unit located on the west side of the site, south of Cable Canyon. Vegetation on the site includes several eucalyptus trees on the west-central portion of the site, phreatophyte shrubs and trees within the creek areas and along the San Andreas Fault zone, and native oaks, shrubs, and grasses on the remaining portions of the project. The site is covered predominantly by chaparral-type vegetation, consisting of thick brush, weeds, annual grasses and scattered trees.

The site relief is variable. In the central and southwest portion of the site, the site slopes relatively uniformly in a southwest direction at 10 to 15 percent. The remaining portion of the site consists of relatively steeply sloping terrain (15 to 70 percent) with steeply increased drainage areas. Elevations of the site vary from 2,010 feet above mean sea

level (MSL) in the southeast portion of the project to 3,540 feet MSL in the northeast portion of the site.

The pre-project condition is the drainage condition of all the off-site areas and on-site areas as they currently exist. The drainage area for the Spring Trails site consists of four (4) drainage areas, for purposes of this report we will refer to them as drainage areas A, B, C and D. See Figure 4.0.

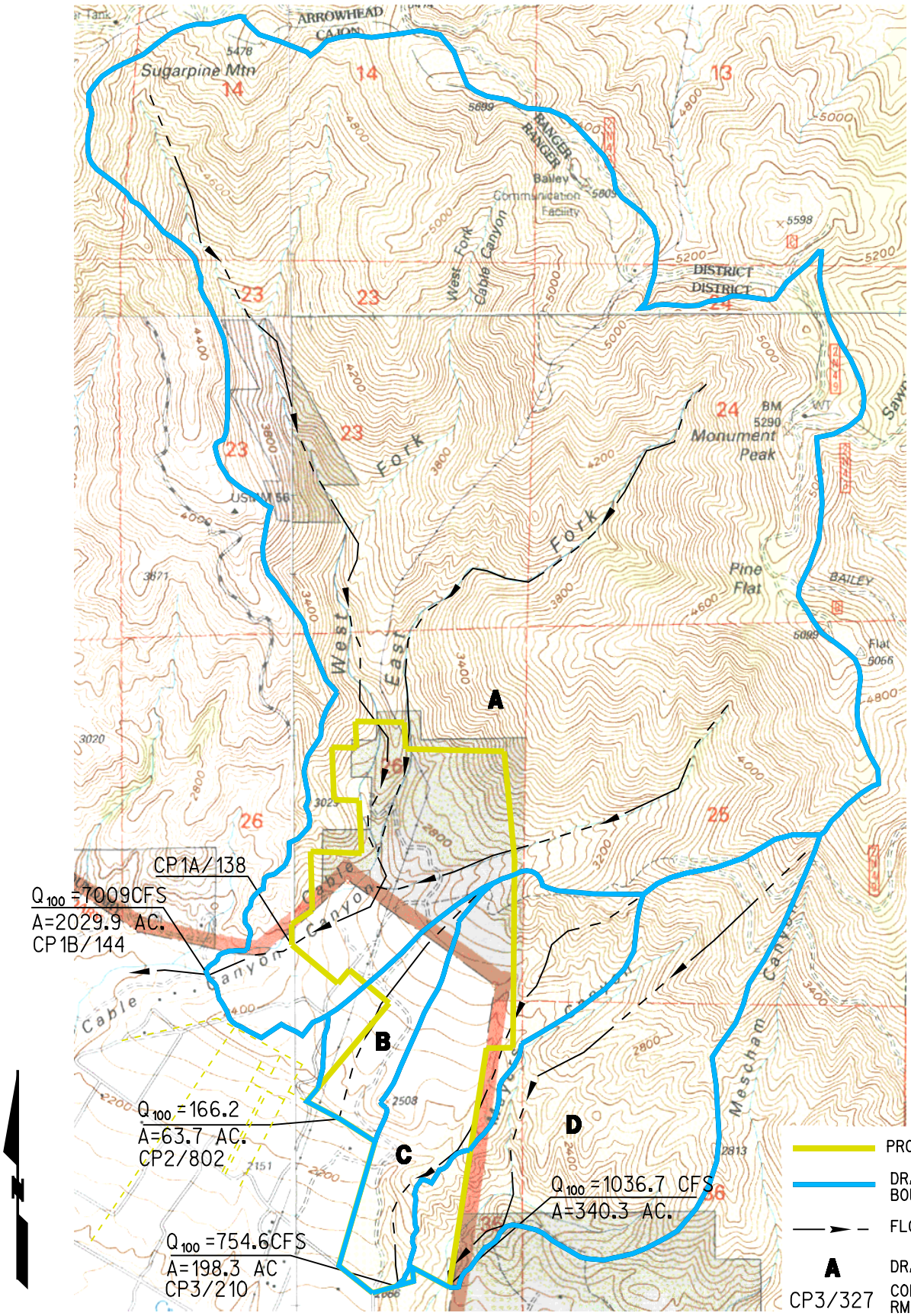
Drainage area "A" consists of 148.8 acres of onsite drainage and 1,881 acres of offsite drainage area. The offsite drainage area is made up of the west and east forks of Cable Canyon, and a unnamed blue-line stream that drains into the project from the east in a southwesterly direction. The 100-yr 1-hour peak flow rate produced from Cable Canyon and its tributary areas as it exits the project site is 6,472 cfs.

Drainage Area "B" consists of 51.6 acres of onsite drainage area and 12.1 acres of offsite drainage. The 100 1-hr peak flow rate generated by watershed "B" is 107.1 cfs.

Drainage Area "C" consists of 128.4 acres of onsite drainage and 69.8 acres of offsite drainage area. The 100 yr. 1-hr peak flow rate produced by watershed "C" is 398 cfs.
Drainage Area "D" consists of 21.8 acres of onsite drainage area and 324 acres of offsite drainage that includes drainage area from Meyers Canyon. Drainage Area "D" produces a 100-yr 1-hr peak flow rate of 708 cfs as it exits the Spring Trails project as shown on Figure 5.1 and Table 2 Pre-Project Drainage Patterns.

Table 2. Pre-Project Drainage Patterns

Drainage Area	*Onsite (Ac)*	*Offsite (Ac)*	*Total (Ac)*	*100-yr 1-hr Q(cfs)*
A	148.9	1881	2029.9	7,009
B	51.6	12.1	63.7	166.2
C	128.3	70.0	198.3	754.6
D	21.8	318.5	340.3	1036.7



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PRE-PROJECT WATERSHED BOUNDARY FIGURE 4.0

SCALE: 1"=2000'

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PLOT DATE: 13-JUN-2011 JN 13565C

5.4 Post-Project condition Drainage Patterns

In the post-project condition, the Spring Trails Site will propose 309 residential lots with accompanying paved streets and graded lots for parks, water reservoirs, and extended detention basins.

Offsite drainage enters the project form the north and east. Two of the drainage courses that make up Drainage Area "A" which flow into the project from the north, are Cable Canyon West and East Forks. Both these drainage courses remain undisturbed as they confluence on site and exit the site undisturbed on the western portion of the project. Four (4) drainage courses enter the project site from the east. The first two drainage courses entering the project are tributaries to Cable Canyon and converge onsite. Prior to converging the two drainage courses cross through a proposed culvert at Street "A", after crossing Street "A", the drainage courses confluence and cross through a proposed culvert at Street "DD" approximately 480 feet downstream of Street "A". The drainage course then flows in a southwesterly direction and confluences with the drainage flows from the West and East Forks of Cable Canyon. This drainage flows in a westerly direction and exits the site. These flows also make up Drainage area "A". The third offsite-drainage course entering the site is approximately 13 acres. This is part of Drainage Area "C". The offsite drainage is collected in a proposed brow-ditch, located north of Street "O" and west of Street "W" it is then conveyed around the water reservoir tank and discharged to an existing flow-line. The fourth drainage course Area Drainage "D" enters the project on the most southeastern part of the site. Area Drainage "D" is made up of Meyers Canyon and tributary areas. A culvert crossing is proposed to convey the drainage as it crosses the proposed Primary Access Road Street "A". See Figure 5.0.

The onsite developed drainage flows are conveyed in a series of storm drain systems that will route the water into Extended Detention Basins for treatment and detention and media filtration vaults for some of the areas described below.

Drainage area A is made up of Cable Canyon, the west and east forks of Cable Canyon and tributary areas. Breakdown of these sub areas can be seen on exhibit 5A. Areas for these sub areas are shown on Table 3. (Post Project Drainage Patterns) The discharge point for drainage

area “A” was analyzed approximately 1,200 feet downstream of where the flows exit the site. This was done obtain a common point of analysis in the pre and post project conditions.

In drainage area “A” 40 acres including basin facility drain into the extended detention basin “A” the Q_{100} generated by the area draining to the Extended Detention Basin is 127.4 cfs. Please see figure 5A for illustration of drainage area “A” breakdown.

For the proposed residential lots north of Cable Canyon there are two (2) areas (labeled in Figure 5A as Sub-area A-3) that are ***not*** routed into an extended detention basin. Instead, rain gardens will be proposed within each individual lot for the residential lot treatment. The rain gardens will serve to infiltrate runoff from each developed lot, and mimic the natural hydrologic processes within the watershed by promoting natural retention, infiltration and evapotranspiration. Media filtration vaults will be proposed to treat the street runoff. The first drainage area is 17.3 acres. The 17.3 acres will be routed to a storm drain and routed into a media filtration vault(s) where the V_{BMP} will be treated for the streets run-off. The second drainage area is 22.0 acres. Approximately 15.1 acres of it is undeveloped drainage area. The undeveloped drainage flows will be collected in a storm drain pipe and discharged into cable canyon. The onsite flows will be collected in a storm drain and routed into a media filtration vault(s) to treat the V_{BMP} for the streets runoff and discharged into Cable Canyon. Basin “A” takes into account the hydrologic conditions of concern for these areas by over detaining to minimize the impact down stream of our project site.

Drainage Area “B” consists of 45.5 acres. It is broken up into two sub-areas sub are B-1 and B-2. Sub area B-1 is the developed onsite area of 23.4 acres (including basin facility) that is routed into an extended detention basin “B”. Sub-area B-2 is made up of 4.6 acres of open space downstream of the basin outlet. Sub area B-3, is 17.5 acres of onsite and offsite undeveloped area that cross under street “I” and then discharged into an existing flow line. Please see Figure 5B for illustration of drainage area “B” breakdown.

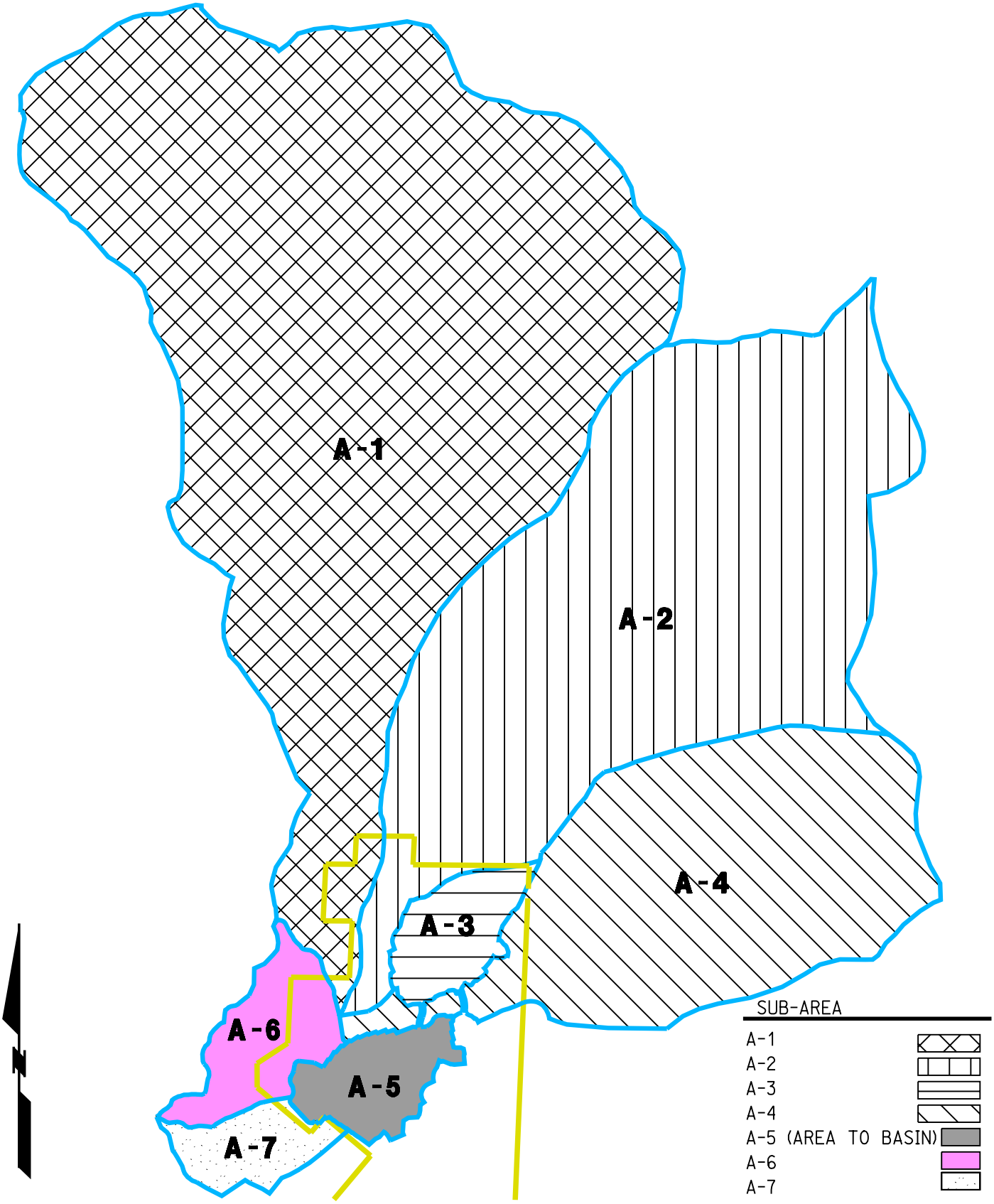
Drainage Area “C” consists of 207.7 acres. Drainage area “C” is broken into the developed area that drains into the extended detention basin and the offsite/onsite drainage that flows parallel to street “A” labeled Sub areas C1 and C2 on Figure 5C. The area draining to the extended detention basin including basin facility is 88.6 ac. The

remainder 119.1 acres of the onsite and offsite undeveloped drainage area flows along the easterly portion of the project and is then discharged in then discharged at the south end of the project. Approximately 1.8 acres account for setbacks along the west and south portion of drainage area "C" along the property line. The Q_{100} produced by the 89.0 acres is 287 cfs as it outlets the extended detention basin. Please see figure 5C for illustration of drainage area C breakdown.

Drainage Area "D" consists of 343.3 acres, 324 is offsite acres and 19.3 is onsite area. For purposes of this report we are only analyzing this Drainage area for culvert crossing sizing. Please see figure 5D for illustration of drainage area D.

Table 3. Post-Project Drainage Patterns

Drainage Area A	**Onsite**	**Offsite**	**Sub-Area**	**Total**
West Fork	13.9	967.2	A-1	981.1
East Fork	24.2	551.5	A-2	575.7
Developed area north of Cable Canyon *	38.9	0.4	A-3	39.3
Cable Canyon (East)	22.1	295.7	A-4	317.8
Developed Area South of Cable Canyon to basin	40	0	A-5	40
Cable Canyon downstream of West and East Forks	17.8	34.9	A-6	52.7
Downstream of Basin A	1.3	30.4	A-7	31.7
*Developed areas 17.3 and 22 Acres.				**2038.3**
Drainage Area B				
Area to basin	23.4	0	B-1	23.4
Downstream of basin	4.6	0	B-2	4.6
Offsite drainage	4.9	12.6	B-3	17.5
				45.5
Drainage Area C**				
Area to Basin	88.6	0	C-1	88.6
Offsite drainage parallel to St. "A"	49.8	69.7	C-2	119.5
**1.8 Acres setbacks along PL				**208.1**
Drainage Area D				
culvert x-ing (East Branch)	19.3	324	D-1	**343.3**



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POST-PROJECT DRAINAGE AREA "A"
FIGURE 5A

SCALE: 1"=1600'

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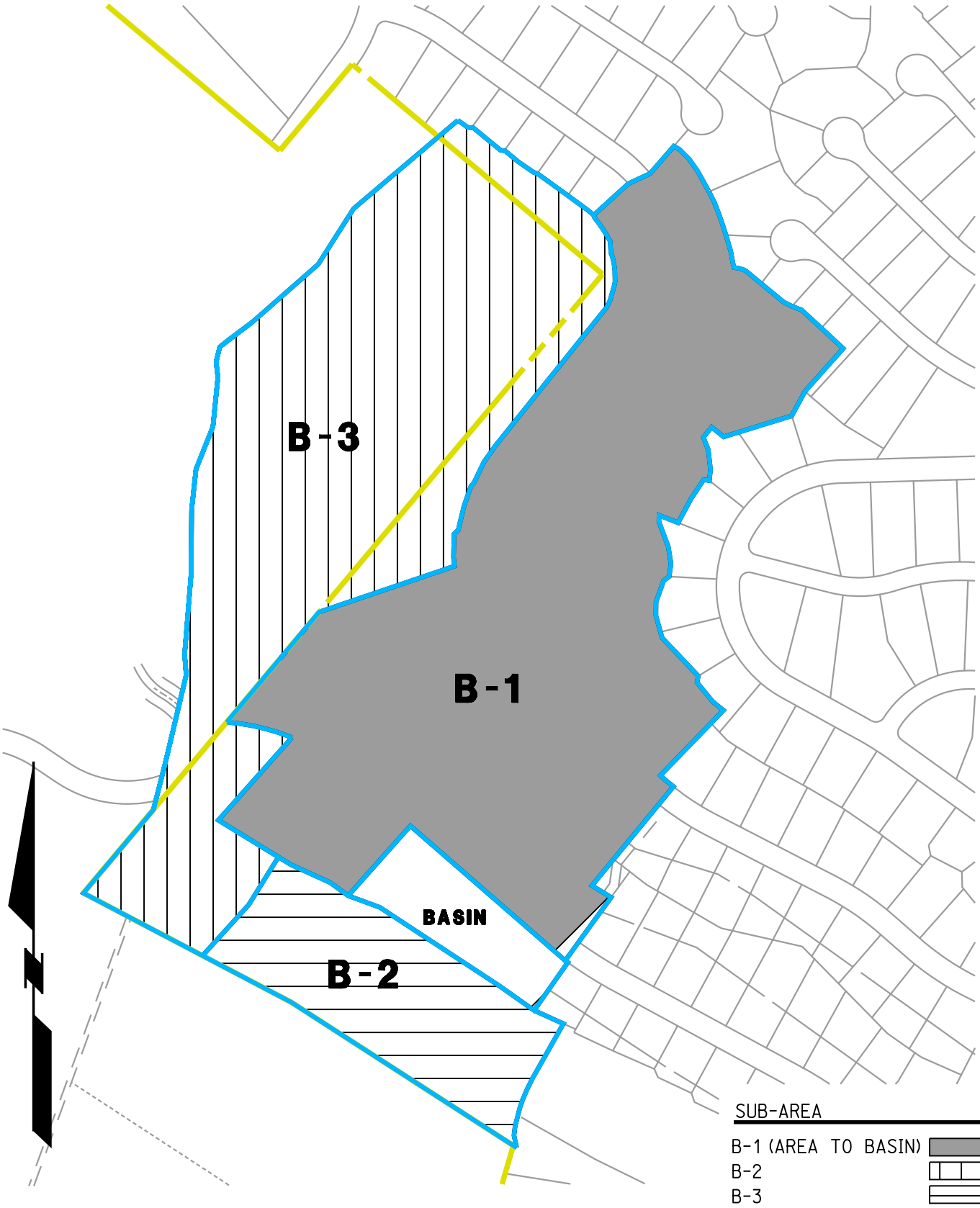
PLOT DATE: 30-JUL-2009 JN 13565C



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POST-PROJECT DRAINAGE AREA "B"
FIGURE 5B

SCALE: 1"=300'

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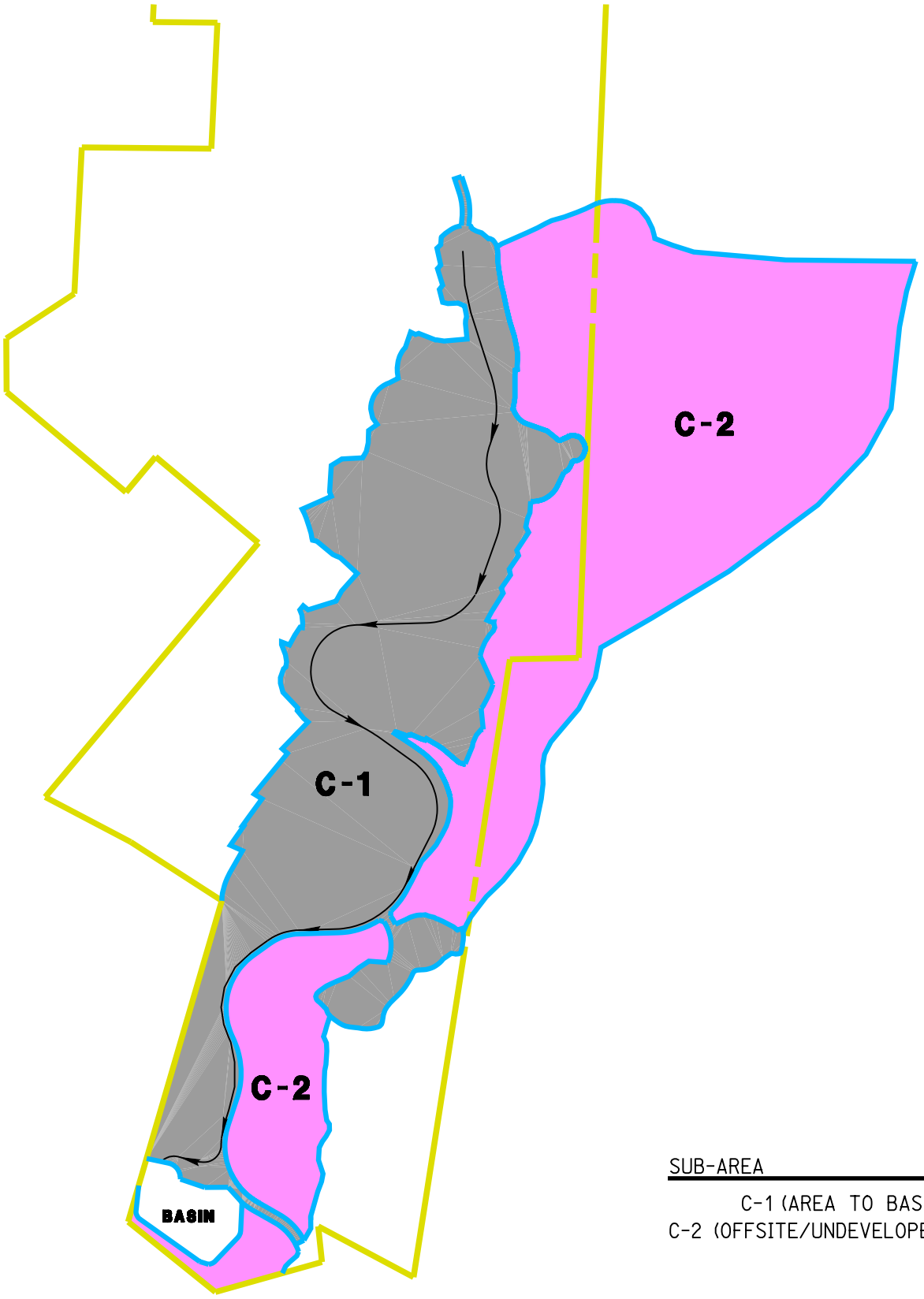
PLOT DATE: 07-JAN-2010 JN 13565C



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POST-PROJECT DRAINAGE AREA "C" FIGURE 5C

SCALE: 1"=800'

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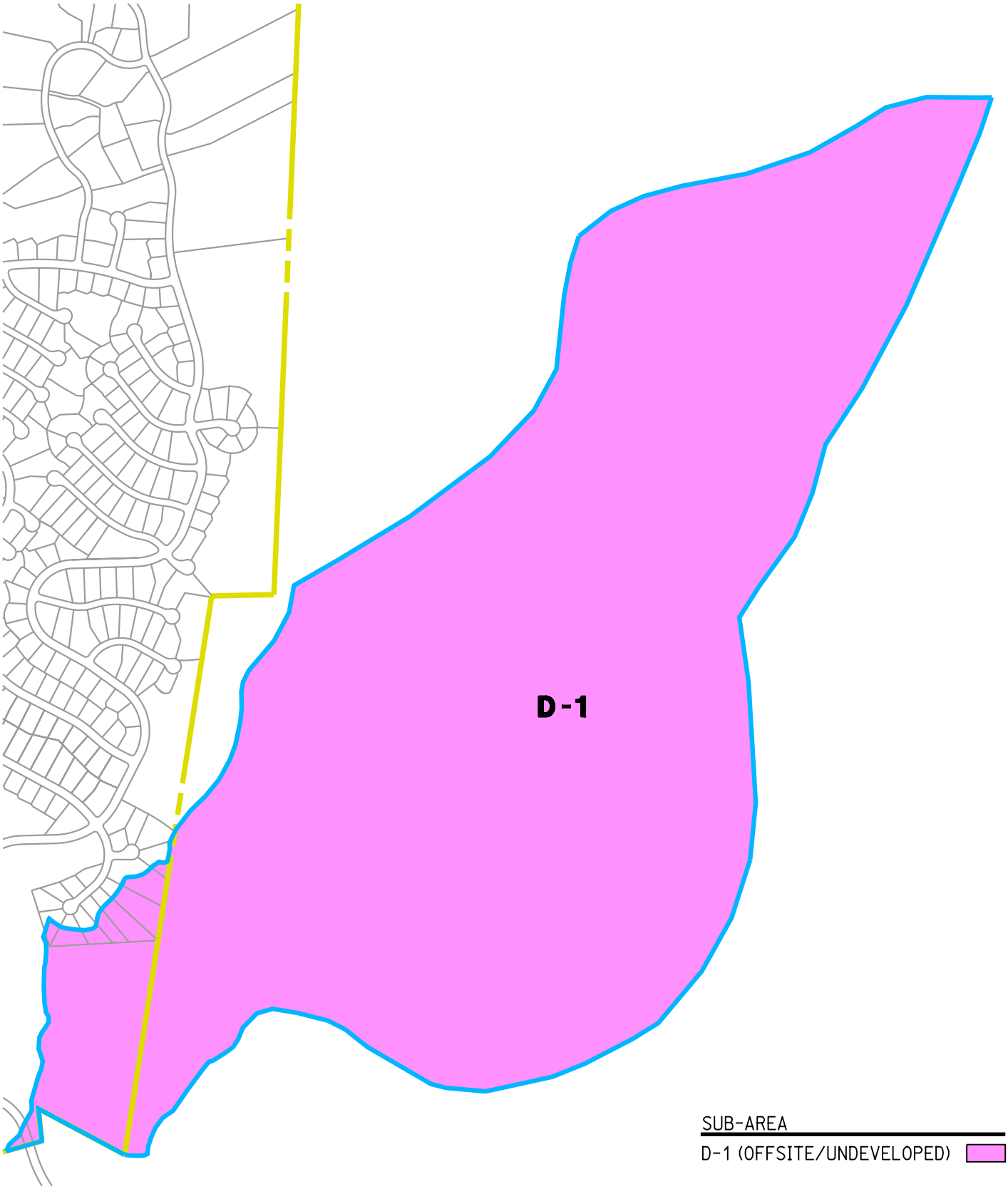
PLOT DATE: 05-AUG-2009 JN 13565C



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POST-PROJECT DRAINAGE AREA "D" FIGURE 5D

SCALE: 1"=800'

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PLOT DATE: 30-JUL-2009 JN 13565C

5.4A Post-Project Condition –Secondary Access Road Hydrology

Street B is the secondary access road for the Spring Trails project. The secondary access road originates at frontage road West of Little League Drive and East of Cable Canyon Road. The proposed secondary access road alignment follows the existing dirt alignment of Frontage Road as it branches out of the portion of Frontage road paralleling the 215-Freeway. The secondary access road alignment continues northerly crossing Cable Creek thence connecting to the proposed onsite alignment of the "onsite" Street "B" alignment.

The offsite portion of Street "B" will propose 24 feet of pavement with 13 foot graded shoulders on both sides. Within the 13 feet graded shoulder, a 5-foot V-ditch will be constructed to convey any runoff flows from the street. The runoff will be conveyed in a storm drain system underneath the proposed secondary access road. Run-off will be colleted in storm drain inlets in combination with graded and or concrete ditches. The storm drain will convey the runoff and discharge it into Cable Creek, at the location where the secondary access road crosses Cable Creek.

Rational method hydrology and map for the secondary access road is presented in Appendix E.

Per a letter dated March 2, 2009 by the County of San Bernardino Public Works department the district reviewed the secondary access road alignment and offered the following comments.

Environmental permitting associated with the secondary access road. According to the County of San Bernardino the portion of Cable Creek impacted by the secondary access road is a natural channel, and has historical records of supporting sensitive species. With in this reach of Cable Creek, there is a known historical presence of federally endangered and state sensitive San Bernardino kangaroo rat and potential for both federally and state endangered Santa Ana woolly star and slender-honored spine-flower. Additionally, this reach of Cable Creek is within habitat designated as "critical" by the U.S. Fish and

Wildlife service. The City recommends that we contact the U.S. Army Corps of Engineers, California Department of Fish and Game and the Santa Ana Regional Water Quality Board to obtain any required environmental permits or letters stating that permits are not needed. The District will withhold issuance of the secondary access road permit until the Permittee has provided appropriate documents from the regulatory agencies.

Further review of the project will continue upon submittal of the hydraulic analysis. Prior to issuance of a permit the City requests to refer this development to the District's Water Resources Division for a complete Flood Hazard Review. A copy of this letter is included in Appendix E for reference.

Water Quality-Secondary Access Road

Inlet filters will be proposed to treat the runoff from the secondary access road. No water quantity treatment is proposed for the undeveloped areas.

5.5 Detention Modeling

The three proposed detention basins will be local detention facilities, maintained by the owner/homeowners association. As outlined in the procedural memorandum "San Bernardino County Detention Basin Design Criteria," dated September 1987, the pre-project analysis for the watershed was based on 25-year precipitation values and AMC II. The post-project analysis for the developed portions of the watershed being routed through the detention basin was based on 100-year precipitation values and AMC III. A portion of the northern developed area (located Basin 100), proposes large custom lots. Each of the proposed custom lots will include a "rain garden" to collect runoff from the developed portion of the lot to mimic pre-project hydrologic characteristics of the watershed such as retention, infiltration, and evapotranspiration.

Due to the large portions of preserve this portion of the project was analyzed with the 25-year precipitation values and AMC II, as it will maintain a majority of the natural watershed characteristics. d open spaces, and the proposed utilization of "rain gardens" It would be unreasonable to analyze this portion of the developed watershed using 100-year

precipitation values and AMC III, however All other modified hydrologic characteristics of this watershed were taken into account through the adjusted loss rate and area low loss fraction. The detention basins volumes are designed based on a 100-year 24-hour storm event FloodSCX modeling, and are summarized in Table 4.

Water Quality Volume

The Spring Trails project is subject to the requirements of the San Bernardino County Stormwater Program. Therefore, the project is required incorporate treatment control BMPs into the design of the project. The project proposes the use of water quality basins in conjunction with the three detention basins. The water quality volumes were calculated using the criteria outlined in the San Bernardino County Stormwater Program's *Model Water Quality Management Plan Guidance* document (June 2005), and are included in the detention basin summary table. Copies of the Water Quality Volume Calculations are included in Attachment B of this report.

Results

Three detention basins are proposed for the Spring Trails project the following tables summarize the results of the calculations for each basin and at concentration points of interest. Copies of the 100-year FloodSCX calculations are included in Attachment C of this report.

Table 4: Detention Basin Summary

Basin ID	*Watershed Area (Ac)*	*$Q_{100\text{-}24}$ in (cfs)*	*$Q_{100\text{-}24}$ out (cfs)*	*WQ Volume (ac-ft)*	*Volume (Detention +WQ Vol.) (ac-ft)*	*Available Storage Volume (Ac-ft)*
DB "A"	40	99.4	28.0	3.01	9.42	11.4
DB "B"	23.4	57.6	48.0	1.87	2.42	3.5
DB "C"	88.6	208.1	168.0	7.07	9.66	15.5

"DB" indicates "Detention Basin"
The flowrates in this table are based on 24-hour FloodSCX modeling

Table 5: Watershed Summary

Basin ID	Existing Condition			Proposed Condition		
	RM Node	*Area (Ac)*	*$Q_{100\text{-}24}$ (cfs)*	*RM Node*	*Area (Ac)*	*$Q_{100\text{-}24}$ detained (cfs)*
CP 1A	138	1966.1	3088.2	108	1947.2	3090.9
CP 1B	144	2029.9	3154.9	133	2038.3	3154.8
CP 2	802	63.7	69.0	223	45.5	68.4
CP 3	210	198.3	332.0	327	208.1	331.1

"RM" indicates "Rational Method"
"CP" indicates "Concentration Point"
The flowrates in this table are based on 24-hour FloodSCX modeling

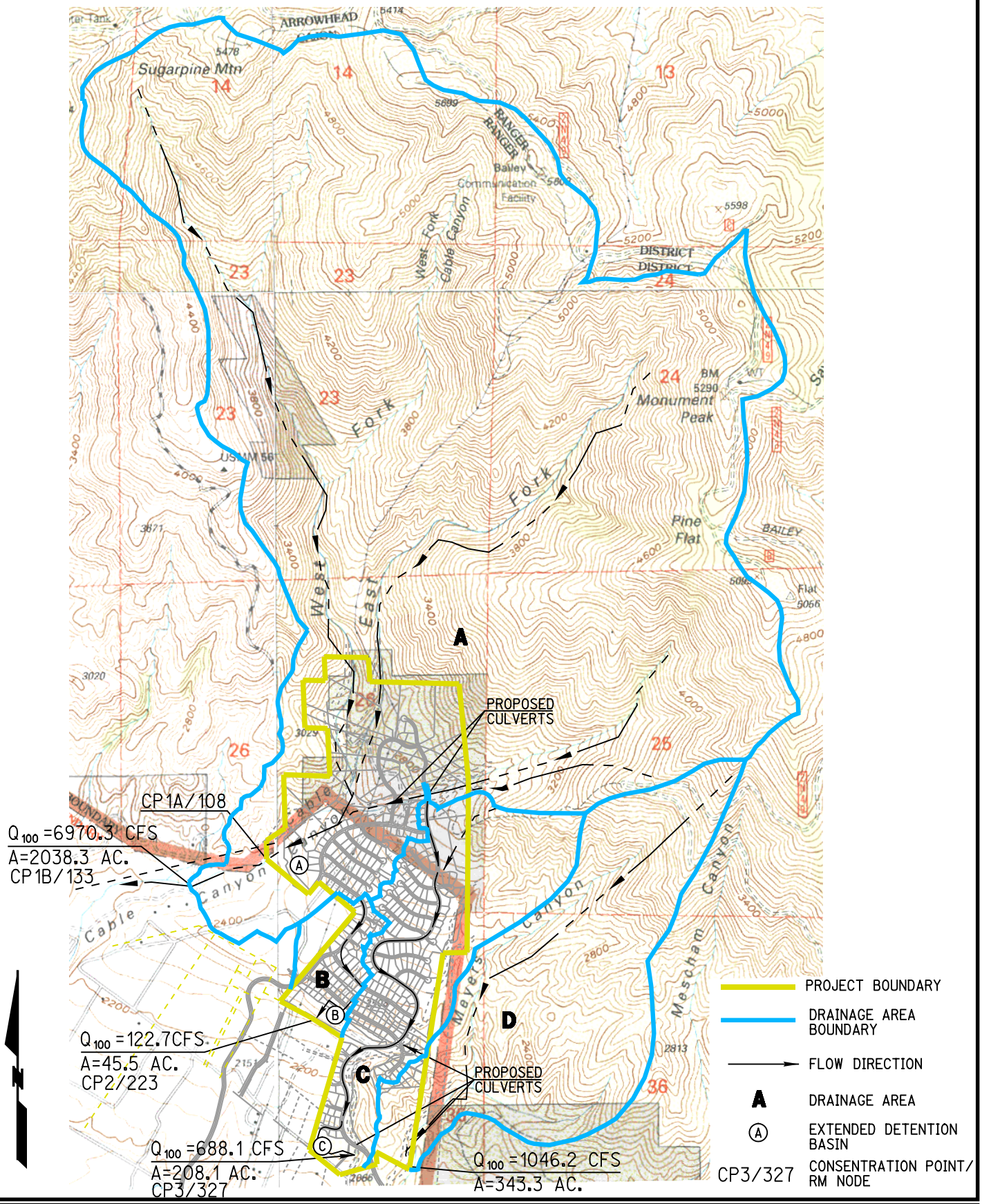
Emergency Spillway Design

In accordance with the procedural memorandum "San Bernardino County Detention Basin Design Criteria," dated September 1987, the Emergency spillway for each basin will be designed to convey the 1000-year peak flow rate for the tributary watershed. The 1000-year flow rate was calculated as 1.35 times the 100-year undetained flow. The emergency spillway design for each detention basin is based on the 100-year, 1-hour Rational Method (RM)_ peak flow rates, and is based on the highest anticipated peak flow rate tributary to the basin. The following summarizes the anticipated Emergency Spillway Discharges and Dimensions. Emergency Spillway calculations are located in Attachment C of this report.

Table 6: Emergency Spillway Design

Basin ID	*Q_{100} RM (inflow) (cfs)*	*Q_{1000} (1.35 x Q_{100}) (cfs)*	*Spillway Length (ft)*	*Depth of Flow (ft)*
DB "A"	124.7	168.4	56.1	1
DB "B"	65.4	88.3	29.4	1
DB "C"	287.3	387.9	129.3	1

The 100-year Rational Method (RM) flowrates in this table are based on a 100-year, 1-hour peak flow rate.



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POST-PROJECT WATERSHED BOUNDARY FIGURE 5.0

SCALE: 1"=2000'

G:\d_13565\565xbt27_EIR_PostprojectWatershed.dgn

PLOT DATE: 13-JUN-2011 JN 13565C

5.6 Hydrologic Conditions of Concern

Detention Basin Infiltration Losses:

Infiltration rates for the project site were determined by Leighton Group, to determine the loss rates associated with infiltration within the detention basins. An infiltration rate of 1.6 cm/hour (0.63 inches/hour) was identified. Based on the footprint of the detention basin invert for each of the three proposed basins, a basin specific loss rate was calculated, and incorporated into the detention basin modeling of the post project FloodSCX models. Supporting materials for the Infiltration Loss Rate calculations are included in Attachment B of this report. Location and depth specific infiltration rates should be determined upon final design of the project.

Table 7: Detention Basin Infiltration Rates

Basin ID	Basin Footprint	Infiltration Loss Rate
DB 1	1.02 acres	0.62 cfs
DB 2	0.48 acres	0.29 cfs
DB 3	1.82 acres	1.10 cfs

FloodSCX calculations were prepared for the 1-year, 2-year, and 5-year hydrologic conditions, With AMC I, and incorporating the impact of infiltration within each of the proposed detention basins for the Spring Trails project. The following tables summarize the peak discharge results of the FloodSCX calculations at the 4 concentration points associated with the project.

Table 8: Hydrologic Conditions of Concern (HCOC) Summary

Concentration point	Existing Condition				Proposed Condition			
	RM Node	*Q_1 (cfs)*	*Q_2 (cfs)*	*Q_5 (cfs)*	*RM Node*	*Q_1 (cfs)*	*Q_2 (cfs)*	*Q_5 (cfs)*
CP 1A	138	1244.1	1506.2	1934.8	108	1239.3	1500.8	1842.0
CP 1B	144	1263.8	1530.5	1964.0	133	1260.1	1526.4	1875.0
CP 2	802	14.4	27.7	35.5	223	11.0	21.3	29.6
CP 3	210	132.7	151.9	188.1	327	85.6	118.1	160.7

The table above summarizes the impact of the proposed Spring Trails project on the peak discharges within the creeks and channels downstream of the project, for storms ranging from the 1-year to the 5-year storm. The results of the modeling indicate that storm events less than a 5-year storm will yield lower runoff peak flow rates in the post project condition than in the pre-project condition. Therefore, the Spring Trails project has been designed to meet the City of San Bernardino criteria to address hydrologic conditions of concern. Outlet structures for the extended detention basins will be designed during final engineering for the project. The input and output summary files are included in Attachment C.

5.7 Impacts and Mitigation Measures

5.7.1 Potentially Significant Impacts

The project would result in significant impacts to hydrology, erosion, and siltation, if the project would:

- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site;
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;
- Create or contribute runoff water, which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.

The conversion of existing vacant land uses into residential uses will result in new impervious surfaces, engineered slopes, and engineered conveyance systems for storm water runoff. These factors will result in an overall increase in storm water runoff in terms of peak discharge rates and volumes. In general, increases in volume and velocity of storm water runoff have the potential to cause downstream erosion or siltation, and

environmental degradation of downstream natural habitats. Design features and mitigation measures to address these potential impacts are discussed below.

5.7.2 Design Features and Mitigation Measures

The Spring Trails Project will incorporate design features to convey storm water runoff safely from the project area without increasing flood, erosion, or capacity hazards within the project site or downstream. In general, the creation of new impervious surfaces will result in an overall increase in storm water runoff in terms of peak discharge rates and volumes. However, the storm water runoff will be delivered to on-site extended detention basins prior to being discharged. The runoff will be discharged from the on-site extended detention basins at a controlled outflow rate. The on-site detention basins will be designed to the requirements of the City of San Bernardino that state "the basin capacity and outlet size shall be such that the post-development peak flow rate generated by the site shall be less than or equal to 90% of the pre-development peak flow rate from the site for all frequency storms (2, 10, 25 and 100 year) events.

In general, the Spring Trails Project is not expected to increase silt discharge to the Cable Canyon and Cable Creek. The conversion of open space to residential and park uses can be expected to reduce silt generation from the project site due to landscaping and impervious coverage. Any silt generated on-site can be expected to be trapped in on-site water quality features and the on-site extended detention basins. Therefore The Spring Trails Project can be expected to result in a reduction of silt delivered to Cable Canyon and Cable Creek. Potential erosion that could result off-site from the discharge of concentrated runoff from the on-site detention basins must be evaluated for every actual discharge point. Erosion protection will be designed at each discharge point to the satisfaction of City of San Bernardino and/or San Bernardino County.

6.0 PRE-PROJECT AND POST PROJECT CONDITIONS WATER QUALITY

6.1 Applicable Agencies and Regulations

The City of San Bernardino is subject to National Pollutant Discharge Elimination System (NPDES) permit requirements. The NPDES program stems from the Federal Environmental Protection Agency's (EPA) Clean Water Act Section 402 (p). The purpose of this permit is to help protect the beneficial uses of receiving waters (in this case the Santa Ana River and all its tributaries) from urban runoff pollution and hydrological flow degradation.

The EPA has delegated The State Water Resource Control Board to monitor permittee compliance with all NPDES permit requirements. The State Water Resource Control Board has in turn, allocated these responsibilities to the California Regional Water Quality Control Board. The City of San Bernardino is under the jurisdiction of the Santa Ana Regional Water Quality Control Board. This Board has stipulated that the City implement and monitor all permit requirements.

The City of San Bernardino is under the jurisdiction of the Santa Ana Regional Water Quality control Board. This Board has stipulated that the City implement and monitor all permit requirements. Therefore, beginning June 1, 2004 the City of San Bernardino will require all proposed projects proponents to review section 1.2 and Table 1-1 of the Water Quality Management Plan (WQMP) guidance manual to determine whether the proponent's project will require the development of a WQMP. The WQMP will be included in the conditions of approval for all projects meeting WQMP submittal guidelines and will be reviewed and approved by the city prior to any permit issuance.

The Spring Trails project must comply with surface water regulations promulgated by a multitude of public agencies – federal, state, and local – to control polluted storm water runoff. They include (1) the United States Environmental Protection Agency (US EPA), (2) the California State Water Resources Control Board (SWRCB), (3) The California

Regional Water Quality Control Board, Santa Ana Region (SARWQCB), (4) the City of San Bernardino, and (5) the San Bernardino County Flood Control District. The US EPA establishes national water quality standards. Pursuant to Section 402 of the Clean Water Act, the EPA has also established regulations under the National Pollutant Discharge Elimination System (NPDES) program to control direct storm water discharges. In California, the SWRCB administers the NPDES permitting programs and is responsible for developing waste discharge requirements. The SARWQCB is also responsible for developing waste discharge requirements specific to its jurisdiction.

General waste discharge requirements that will directly apply to The Spring Trails Project will include:

- SWRCB Order No. 2009-0009-DWQ National Pollutant Discharge Elimination System (NPDES) General Permit No. CAS000002 Waste Discharge Requirements (WDRs) for Discharges of Storm Water Runoff Associated With Construction Activity (General Construction Permit) adopted August 19, 1999.
- SARWQCB Order No. R8-2010-0036 NPDES No. CAS618036 Waste Discharge Requirements for the the County of San Bernardino and the Incorporated Cities of San Bernardino County within the Santa Ana Region, Area wide Urban Runoff (MS4 Permit), adopted January 29, 2010. The Spring Trails Project will be subject to the requirements of the MS4 Permit as it is applied by the co-permittee. The co-permittee is the City of San Bernardino.

In addition to the general waste discharge requirements, other agencies such as the SARWQCB, the United States Army Corps of Engineers, or the California Department of Fish and Game may issue waste discharge requirements or other water quality requirements specific to the Spring Trails Project through their respective environmental permitting processes. These requirements would be determined for any specific license or permit requested from the agency. For example, the SARWQCB would issue specific requirements through the Clean Water Act Section 401 Water Quality Certification process upon the project owner's request for a 401 Water Quality Certification.

6.2 Potential Pollutant Sources

There are several potential sources of pollutants from the project depending on the activity and status at the site, including: pollutants already existing at the site (historic pollutant sources); construction activities, which are a temporary source of pollutants; and long term land uses at the site upon final build out and site occupancy.

6.2.1 Historic Pollutant Sources

Potential sources of pollutants from historic land uses at the site include materials or contaminated soils remaining on the site. The site had been used for agriculture until approximately 1980, producing barley and grapes. Since 1980 to 1989, sheep grazing activities occurred on-site. There are no agricultural uses in adjacent areas. Therefore, there is potential for pollutants associated with agricultural activities and the grazing of sheep such as pesticides, to be present a the site. An additional potential source of pollutants at the existing site is illegal dumping.

6.2.2 Construction Activities

Potential sources of pollutants from construction activities on the site include exposed soil, construction materials, and construction equipment. Clearing, grading, excavation and construction activities associated with the Spring Trails Project may impact water quality due to sheet erosion of exposed soils and subsequent deposition of particles and pollutants in drainage ways. Grading activities in particular lead to exposed areas of loose soil, as well as sediment stockpiles, that are susceptible to uncontrolled sheet flow. The use of materials such as fuels, solvents, and paints also present a risk to surface water quality due to an increased potential for these materials and associated non-visible pollutants to contaminate storm water runoff. Additionally, storage, refueling, and maintenance of construction equipment on-site, results in the potential for fuels and other substances to contaminate storm water runoff.

6.2.3 Proposed Land Uses

Proposed land uses at the site include residential, parks and open space. Table 2-1 of the *San Bernardino County Storm Water Program (Model Water Quality Management Plan Guidance)* dated June 05, 2005 provides anticipated and potential pollutants by land use type. The following are anticipated pollutants from one or more land uses proposed within the project: sediment/turbidity, nutrients, trash and debris, oxygen demanding substances, bacteria and viruses, oil and grease, and pesticides.

6.3 Sensitivity of Receiving Waters

6.3.1 Receiving Waters

According to the *Water Quality Control Plan Santa Ana River Basin* (1995 and amendments), the project is located in the following hydrologic basin planning area:

Hydrologic Unit – San Ana River (801)

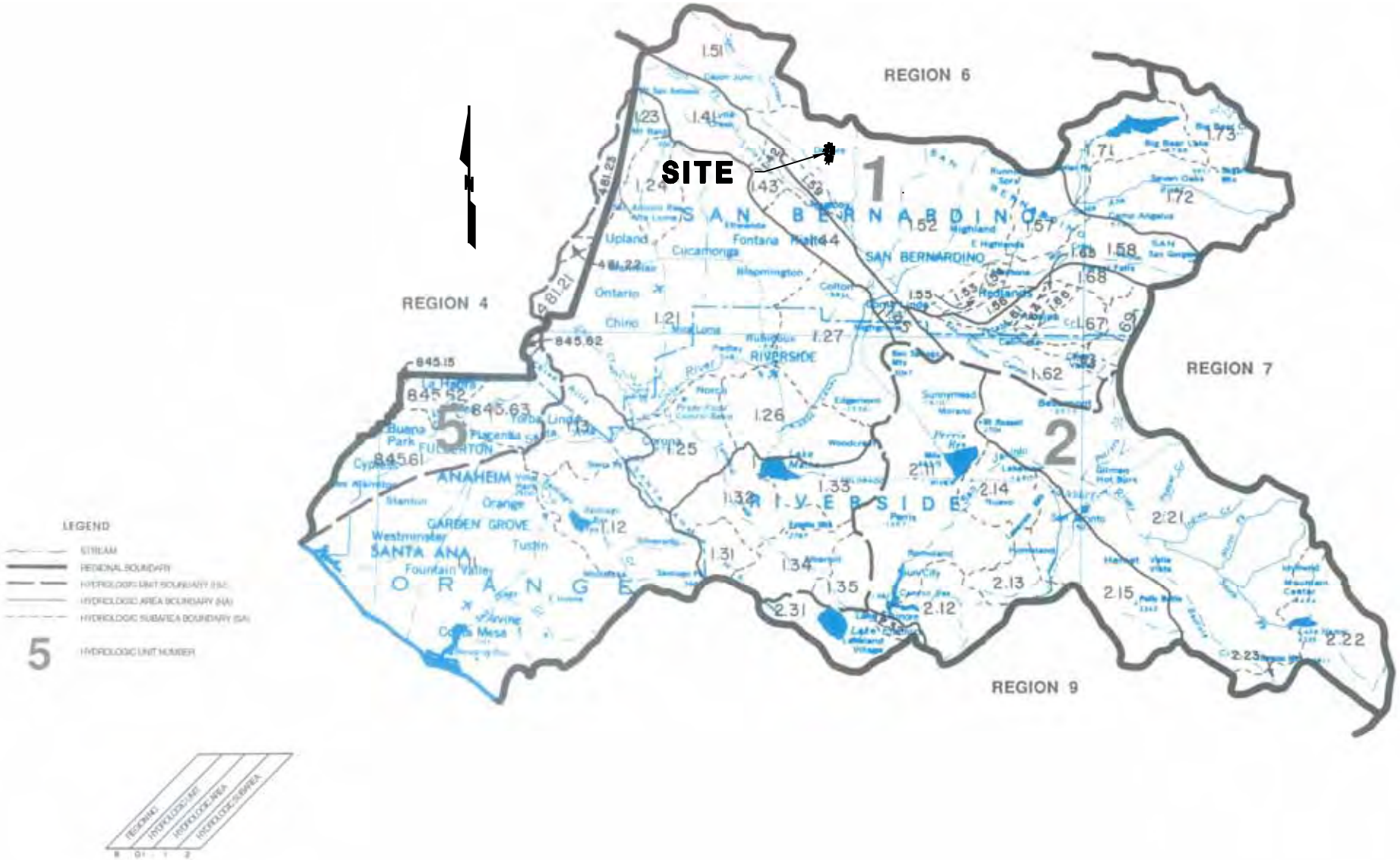
Hydrologic Area – Upper Santa Ana (.5)

Hydrologic Subarea – Bunker Hill (.52)

The corresponding numeric designation is 801.52 (Region '8', Hydrologic Unit '01', Hydrologic Area '5', Hydrologic Subarea '2'). Figure 6.0 shows the location of the project site in the hydrologic basin. The specific receiving water for the Spring Trails site are Cable Canyon and Cable Creek. The project has four (4) discharge points.

Discharge point "A": After detaining and treating the on-site runoff, the project will discharge into Cable Canyon (Project area north of Cable Canyon).

Discharge point "B": After detaining and treating the on-site runoff, the project area south of Cable Canyon, discharges into an existing flow line south west of the project site, thence flows into Cable Creek approximately 3600 feet south of the site.



SOURCE:STATE WATER RESOURCE CONTROL BOARD REVISED AUGUST 1986.

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LOCATION OF PROJECT SITE IN HYDLROLIC UNIT 801.52
SANTA ANA REGION (8)
FIGURE 6.0

SCALE: NTS

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PLOT DATE: 10-DEC-2008 JN 13565C

Discharge Point "C": After detaining and treating the on-site runoff, the remaining portion of the project drains into an existing flow line that runs through the southern portion of the project and drains to Cable Creek.

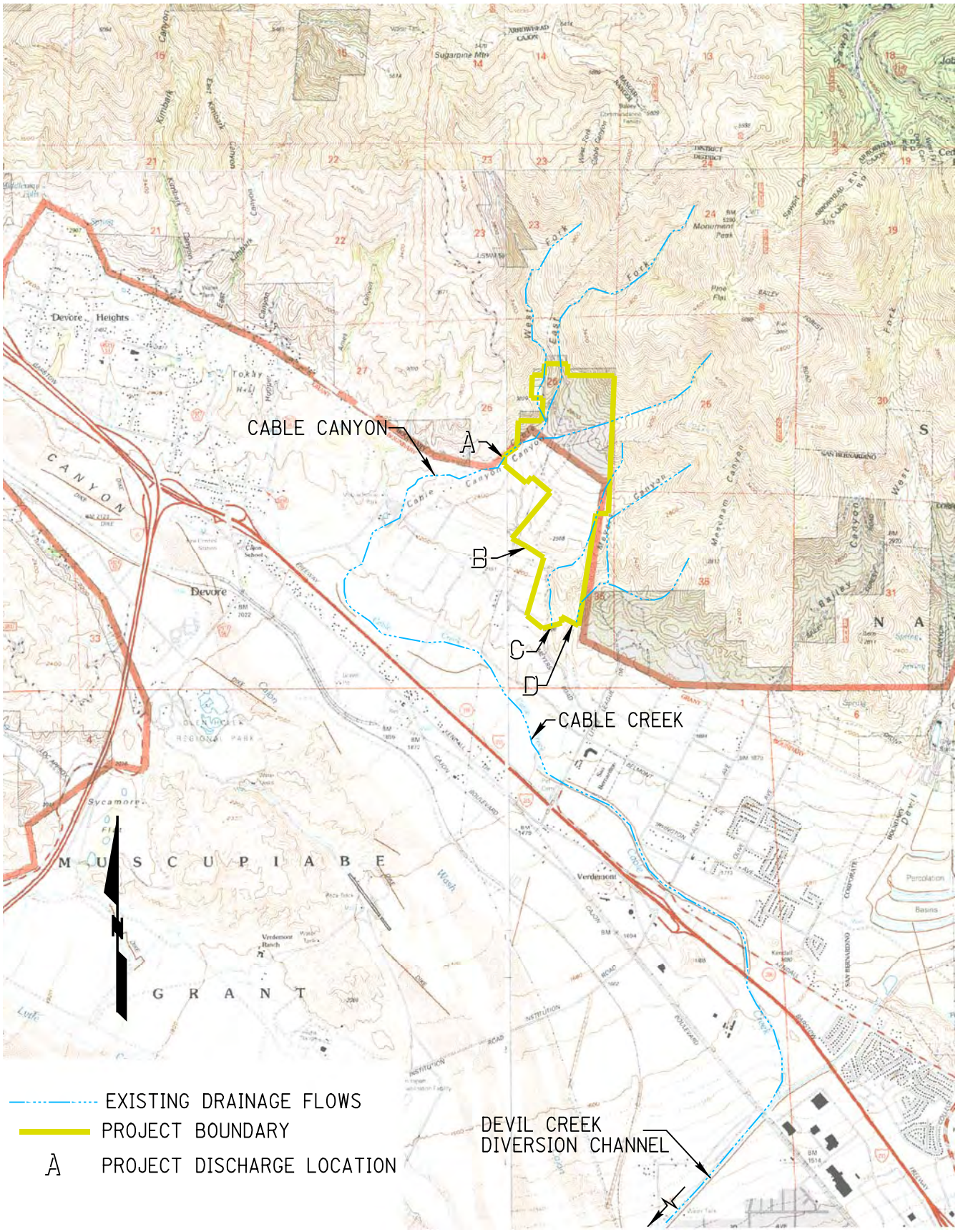
Discharge Point "D": Discharge point "D" is only used for culvert sizing as the drainage crosses Street "A" (primary access road).

After detaining and treating runoff for discharge points A, B and C, the drainage from the project site drains into Cable Creek. Downstream of the project, Cable Creek continues in a southeastern direction until it confluences with Devils creek Diversion Channel. Thence to Cajon Wash, Lytle Creek Wash, Lytle Creek Channel, Warm Creek and ultimately to the Santa Ana River. Santa Ana River flows westerly across Prado Dam and then flows southerly and eventually discharges in to the Pacific Ocean at Huntington Beach. See figure 6A for location of discharge points.

6.3.2 Beneficial Uses and Water Quality Objectives

Beneficial uses are the uses of water necessary for the survival or well being of humans, plants and wildlife. These uses of water serve to promote the tangible and intangible economic, social, and environmental goals of humankind. Water quality objectives and beneficial uses can be found in the *Water Quality Control Plan Santa Ana River Basin*.

Beneficial uses of water bodies describe the appropriate uses of a particular water body based on current and historical use, such as contact recreation or drinking water uses.
Water quality standards are based on a water body's designated beneficial use, along with its water quality criteria based upon these uses. Its associated water quality criteria are expressed either as numeric concentrations, levels of constituents, or as narrative summaries which represent the quality of water that support the designated beneficial use.



SOURCE:CABLE CREEK DRAINAGE STUDY (01-03-94)

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POST-PROJECT DISCHARGE LOCATIONS
FIGURE 6A

SCALE: 1"=4000'

G:\d_13565\565xbt53_EIR_DischargeLocations.dgn

PLOT DATE: 30-JUL-2009 JN 13565C

Based on the *Water Quality Control Plan Santa Ana River Basin*, the following beneficial uses are designated for the reach of the Santa Ana River that will receive runoff from the project site (hydrologic subarea 801.52). These are designated as intermittent beneficial uses for these reaches of the Santa Ana River.

- **GWR** – Groundwater Recharge – GWR waters are used for natural or artificial recharge of groundwater for purposes that may include, but are not limited to, future extraction, maintaining water quality, or halting saltwater intrusion into freshwater aquifers.

REC1 – Water Contact Recreation – REC1 waters are used for recreational activities involving body contact with water where ingestion of water is reasonably possible. These uses may include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, whitewater activities, fishing, and use of natural hot springs.

Figure 6. Location of Project Site in Hydrologic Unit 801.52

- **REC2** – Non-contact Water Recreation – REC2 waters are used for recreational activities involving proximity to water, but not normally involving body contact with water where ingestion of water would be reasonably possible. These uses may include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing, and aesthetic enjoyment in conjunction with the above activities.
- **WILD** – Wildlife Habitat – WILD waters support wildlife habitats that may include, but are not limited to, the preservation and enhancement of vegetation and prey species used by waterfowl and other wildlife.
- **COLD**- Cold freshwater Habitat – Waters support cold water ecosystems that may include but are not limited to, preservations and enhancement of aquatic habitats, vegetation, fish and wild life, including invertebrates.

The REC1 and REC2 designations are intended to indicate that the uses exist or that the water quality of the waterbody could support recreational uses, but should not be construed as encouraging recreational activities. For more information about the beneficial use designations, refer to the *Water Quality Control Plan Santa Ana River Basin*, Section 3.

All of the beneficial uses listed above as intermittent beneficial uses are designated as present or potential beneficial uses for Cable Creek. Additionally, MUN is a present or potential beneficial use for Cable Creek.

Specific water quality objectives established for Cable Creek of the Upper Santa Ana River Basin are as follows:

- Total dissolved solids (TDS) – 200 mg/l
- Hardness – 100 mg/l
- Soudium (Na)-30mg/l
- Chloride (Cl) – 10 mg/l
- Total inorganic nitrogen (TIN) – 1mg/l
- Chemical Oxygen Demand (COD) – 5 mg/l

6.3.3 303(d) List

Under Section 303(d) of the 1972 Clean Water Act, states, territories and authorized tribes are required to develop a list of water quality limited segments. These waters on the list do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. The law requires that the above-mentioned jurisdictions establish priority rankings for water on the lists and develop action plans, called Total Maximum Daily Loads (TMDLs), to improve water quality.

Based on the "2006 Clean Water Act Section 303(d) List of Water Quality Limited Segments Requiring TMDLS" approved by the United States Environmental Protection Agency (USEPA) June 28, 2007, Lytle Creek is impaired by the following pollutant/stressor: pathogens. Cable Creek is not listed as impaired.

6.4 Impacts and Mitigation Measures

6.4.1 Potentially Significant Impacts

The project would result in significant impacts to water quality if the project would:

- Violate any water quality standards or waste discharge requirements;
- Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;
- Otherwise substantially degrade water quality.

Various mitigation measures will be implemented during construction and post-construction to address potential pollutants at the site (discussed above) depending on the activity and status at the site, including: pollutants already existing at the site (historic pollutant sources); construction activities, which are a temporary source of pollutants; and long term land uses at the site upon final buildout and site occupancy.

The potential impact due to historic pollutant source is the contamination of downstream receiving water by pesticides and illegal dumping. The impacts due to construction activities on the site is sheet erosion of exposed soil, subsequent deposition of particles in drainage ways, contamination of storm water runoff due to storage, refueling, and maintenance of construction activities. The impacts due to proposed land use are the generation of anticipated pollutants such as sediment/turbidity, nutrients, organic compounds, trash and debris, oxygen demanding substances, bacteria and viruses, oil and grease, pesticides, and metals.

6.4.2 Mitigation Measures for Historic Pollutant Sources

Mitigation measures for historic pollutant sources will include removal and proper disposal of the pollutant source in accordance with applicable local, state, and federal regulations. This will occur during construction of the project. The construction contractor(s) at the site will be responsible to use best management practices (BMPs) for hazardous waste management and contaminated soil management for any hazardous materials or contaminated soils to be removed.

Regarding the presence of residual pesticides due to historic agricultural land use, soil sampling has been recommended for persistent pesticides. Based on the results of soil sampling, the portion of contaminated soils may need to be removed at the time of construction for the proposed project.

Because the Spring Trails Project will change the land use at the site, it is *not* anticipated that historic pollutant sources will persist in built out areas after the mitigation.

6.4.3 Mitigation Measures for Construction Activities

Mitigation measures for potential pollutants from construction activities will include obtaining coverage under the General Construction Permit for discharges of storm water runoff from the construction site, use of temporary construction BMPs, and implementation of a Storm Water Sampling and Analysis Strategy for monitoring of construction site runoff. The General Construction Permit is the coverage issued by the SWRCB that allows the discharges of storm water to waters of the United States from the construction project. In order to get coverage under the General Construction Permit, the discharge should be in compliance with National Pollutant Elimination System (NPDES). As authorized by the Clean Water Act, the NPDES permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. Specific activities will include submitting a Notice of Intent (NOI) to the SWRCB to file for permit coverage, and implementing a Storm Water Pollution Prevention Plan (SWPPP) on site. NOIs and SWPPPs are site-specific to each actual grading plan or improvement plan to be constructed. The project owner of the specific ground-disturbing

activity is responsible to file the NOI and ensure that a SWPPP is implemented. The NOI must be filed and the SWPPP must be prepared prior to commencement of soil disturbing activities at the project site. The SWPPP must contain a site map(s) showing the construction site perimeter, existing and proposed buildings, lots, roadways, storm water collection and discharge points, general topography before and after construction, and drainage patterns across the project. The SWPPP must list BMPs that will be used to protect storm water runoff, and describe the placement of those BMPs. Additionally, the SWPPP must contain a visual monitoring program; a chemical monitoring program for "non-visible" pollutants to be implemented if there is a failure of the BMPs; and a sediment monitoring plan if the site discharges directly to a water body listed on the 303(d) list for sediment. Section A of the General Construction Permit describes the elements that must be included in the SWPPP. The receiving waters for the Spring Trails Project are not currently listed on the 303(d) list for sediment, therefore the Spring Trails Project will not be subject to the sediment-monitoring program.

Typical temporary BMPs that will be used during construction include good housekeeping practices and erosion and sediment control measures. Good housekeeping practices include practices such as street sweeping, waste disposal, vehicle and equipment maintenance, concrete washout area, materials storage, minimization of hazardous materials, and proper handling and storage of hazardous materials. Typical erosion and sediment control measures include silt fences, fiber rolls, gravel bags, temporary desilting basins, velocity check dams, temporary ditches or swales, storm water inlet protection, soil stabilization measures such as erosion control mats, tackifier, or hydroseed, and other measures. Design standards for the BMPs are set forth by the County of Riverside and the California Storm Water Management Handbooks. Construction BMPs for this project will be selected, constructed, and maintained so as to comply with all applicable ordinances and guidance documents.

The implementation of construction BMPs and SWPPP will mitigate the potential impacts of project construction on stormwater runoff. The potential for the discharge of

stormwater to cause significant impact on the receiving water bodies will also be mitigated through the implementation of construction BMPs as mentioned above.

6.4.4 Mitigation Measures for Proposed Land Uses

Mitigation measures for potential pollutants from proposed land uses will include site design, source control, and treatment control BMPs as dictated by the *San Bernardino County Stormwater Program Model Water Quality Management Plan Guidance*. Specific activities applicable to the Spring Trails Project will include preparing and submitting a project-specific Water Quality Management Plan (WQMP) Report as required by the City of San Bernardino, for approval of plans and permits. The project-specific WQMP will address management of urban runoff from the project site, specifically addressing site design, source control, and treatment control BMPs to be applied on a project-specific and/or sub-regional or regional basis to minimize the impact of urban runoff from the project. The project-specific WQMP will address site design BMPs such as minimizing impervious areas, maximizing permeability, minimizing directly connected impervious areas, creating reduced or "zero discharge" areas, and conserving natural areas; incorporate the applicable source control BMPs as described in the Santa Ana River Region WQMP and provide a detailed description of their implementation; incorporate treatment control BMPs as described in the Santa Ana River Region WQMP and provide information regarding design considerations; describe long-term operation and maintenance requirements for the treatment control BMPs; and describe the mechanism for funding the long-term operation and maintenance of the treatment control BMPs. Additional specific activities include recording a "Covenant and Agreement" or other instrument acceptable to the City of San Bernardino to inform future property owners of the requirement to implement the approved project-specific WQMP; incorporating or attaching the project-specific WQMP to the project's SWPPP as the Post-Construction Management Plan; and prior to building or grading permit close-out or the issuance of a certificate of occupancy or certificate of use, the applicant shall: demonstrate that all structural BMPs described in the project-specific WQMP have been constructed and installed in conformance with approved plans and specifications, demonstrate that the applicant is prepared to implement all non-structural BMPs

described in the approved project-specific WQMP, and demonstrate that an adequate number of copies of the approved project-specific WQMP are available for the future owners/occupants.

The combination of site design BMPs, source control BMPs, and treatment control BMPs incorporated into the project plans must address the potential pollutants identified for the project. The following are anticipated pollutants from one or more land uses proposed within the project: sediment/turbidity, nutrients, trash and debris, oxygen demanding substances, bacteria and viruses, oil and greases and pesticides. For each map or permit for which discretionary approval is sought from the City of San Bernardino, the applicant will provide an evaluation of the specific pollutants anticipated from the specific land use covered by the map or permit. Further, the selection of a treatment control BMP (or BMPs) for the project will specifically consider the effectiveness of the treatment control BMP for pollutants identified as causing impairment of receiving waters to which the project will discharge urban runoff. The receiving waters are currently impaired by pathogens. Treatment BMP technology is a rapidly evolving field with many newly developed or emerging stormwater treatment technologies. Currently, the *San Bernardino County Stormwater Program Model Water Quality Management Plan Guidance,* lists Extended Detention Basins as having medium removal efficiency for Sediment/Turbidity, nutrients, Trash and debris Oxygen Demanding Substances, and Oil and Greases. These BMPs will be appropriate to treat anticipated pollutants due to the proposed land uses within the Spring Trails Project.

A constraint that the proposed development site has is its steep terrain. Due to this we are unable to implement BMPs such as infiltration trenches (TC-10) and infiltration basins (TC_11) which are not suitable on steep slopes. Groundwater, which is a factor in the design of some BMPs, is expected to be greater than 50 feet below existing grade, based on a Preliminary Geotechnical Investigation Proposed Residential Development 353 acres, Martin Ranch, Tentative Tract 15576, Devore Area San Bernardino County, California, Project No. 56-2013-01. Dated July 28, 2000, prepared by Kleinfelder. Water

quality will be addressed on the Water Quality Management Plan (WQMP) for Spring Trails Tr. 15576 prepared for Montecito Equities Ltd. Dated 12-15-08.

The Spring Trails project is proposing to develop residential land uses with parks, extended detention basins, water towers and hiking trails. Site design BMPs reduce the volume, the rate of runoff, and the amount of storm water that must be treated. Site design BMPs will be different for different land uses. Some of the site design BMPs that may be incorporated are:

- Residential sites will be designed to infiltrate roof runoff into vegetated areas.
- Catch Basin insert filters where street flows do not get treated by an Extended Detention Basin.
- Hydrodynamic Separation & Pollutant Screening

Source Control BMPs reduce the potential for urban runoff and pollutants from coming into contact with one another. Source Control BMPs that may be incorporated into the project are:

- Education/Training for property owners, operators, tenants, occupants, or employees.
- Efficient irrigation systems and landscape maintenance.
- Common area litter control.
- Sweeping of public streets, Private Street, and parking lots.
- Drainage facility inspection and maintenance.
- Municipal Separate Storm Sewer System (MS4) stenciling and signage.
- Protection of slopes and channels such as riprap, vegetation in landscaped areas, etc.

Treatment control BMPs such as extended detention basin and hydrodynamic separation devices and pollutants screening systems, treat the adverse impacts of urban runoff pollution. These BMPs will reduce the pollutants of concern by filtration, media absorption, or other physical, biological, or chemical processes.

Implementation of site design, source control, and treatment control BMPs will provide adequate mitigation measures and the water quality impacts will be less-than-significant for the long-term operations of the project.

7.0 SEDIMENT YIELD ANALYSIS

The Spring Trails project is located in the foothill area of the San Bernardino Mountains. The offsite watersheds may be subject to large debris flows, with increased potential in the years following a fire. Per City of San Bernardino and County of San Bernardino criteria, the offsite watersheds have been analyzed using the U.S. Army Corps of Engineers criteria outlined in the document titled "Debris Method, Los Angeles District Method for Prediction of Debris Yield", dated August 1992.

Debris yield calculations were prepared for the 100-year (AMC III) condition 4-years following a fire, and the 10-year (AMC II) condition 1-year following a fire, for the offsite watersheds tributary to the project. The Debris volume and Runoff volume for each scenario was calculated and the ratio was used to develop a Bulking Factor for both the 10-year and 100-year storms for each watershed. The maximum bulked flow for each watershed was calculated to determine the design flow rate for each road crossing and culvert impacted by offsite watersheds. In all locations the 10-year bulked flow governed. The following table summarizes the bulking factors and the corresponding design flows for each culvert:

Table 9: Bulking Factors and Design Flows

Node	Description	Tributary Area (acres)	Q_{10} (cfs)	Sediment Yield (cu-yds)	Bulking Factor	Q_{10} – Bulked (cfs)
106	St. "A" & "DD" Crossing Cable Canyon (East Branch)	357.1	611.3	378,246	6.93	4,235
101.2	Hillside Area Tributary to Street "A"	13.6	23.1	14,343	6.17	143
310	Hillside Area trib to Meyers Canyon (West Branch)	14.7	18.3	400	11.62	213
323	St. "G" Crossing Meyers Canyon (West Branch)	96.2	144.4	70,713	11.96	1,727
325	St. "A" Crossing Meyers Canyon (West Branch)	116.5	171.2	78,794	11.74	2,010
917	St. "A" Crossing Meyers Canyon (East Branch)	343.3	469.6	278,892	9.99	4,691

Note: all Nodes identified above correspond to the Proposed Condition hydrologic models.

Attachment F of this report includes copies of the Synthetic Unit Hydrograph calculations and corresponding Sediment Yield calculations. The following Table summarizes the Recommended Culvert Sizes for each of the bulked flow conveyance Systems.

Table 10: Recommended Culvert Size

Node	Description	Q_{10} – Bulked (cfs)	Recommended Culvert Size
106	St. "A" & "DD" Crossing Cable Canyon (East Branch)	4,235	(5) – 8' x 16' RCBs
101.2	Hillside Area Tributary to Street "A"	143	72" RCP
310	Hillside Area trib to Meyers Canyon (West Branch)	213	84" RCP
323	St. "G" Crossing Meyers Canyon (West Branch)	1,727	(2) – 8' x 16' RCBs
325	St. "A" Crossing Meyers Canyon (West Branch)	2,010	(3) – 8' x 12.5' RCB
917	St. "A" Crossing Meyers Canyon (East Branch)	4,691	(6) – 8' x 16' RCBs

Preliminary culvert sizes have been calculated to convey the bulked flows for each of the major road crossings shown on the Tentative Map. These calculations have been performed assuming inlet control for all structures, and assuming that 1-foot of freeboard is maintained at the entrance to each culvert, and sized to pass the 10-year bulked flows calculated above. As the hydraulics of the stream approaching each culvert can have an impact on the losses at each culvert, additional hydraulic modeling to determine the ultimate culvert configuration, dimensions, and hydraulic characteristics should be performed during final design of this project. Also, all piers associated with multiple cell box culverts should be equipped with a debris nose to aid in minimizing the potential for debris accumulation at the upstream side of each structure. Alternately arch culverts could be utilized for the crossings as well. However the spans should be designed to minimize the number of piers, and a pier debris factor included in the hydraulic calculations. Coordination with the environmental consultant is also recommended during final design to ensure that for crossings that will serve as animal corridors, the needed height of the culverts are provided. Therefore, the culvert sizes listed above are

recommended minimum sizes, and may be increased during coordination with the environmental consultant. However, the ultimate proposed culvert sizes should be analyzed during final design to ensure proper sizing.

8.0 INUNDATION HAZARDS

The project would result in significant impacts of inundation hazards if the project would:

- Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of failure of a levee or dam; or
- Inundation by seiche, tsunami, or mudflow.

The Spring Trails site does not lie in a Floodplain identified by the Federal Emergency Management Agency as seen previously in Figure 4, so there is no significant risk of loss, injury or death involving flooding. The Spring Trails site is not at a risk of flooding.

The Pacific Ocean is a considerable distance (60 miles) from the project site leaving the possibility of seiche and tsunami non-existent.

9.0 GROUND WATER

The groundwater underneath the project site lies in the Bunker Hill-A groundwater basin as shown in Figure 7.0. Based on the geotechnical investigation performed by Kleinfelder, Inc. on July 28, 2000, groundwater depth in the project site is greater than 50 ft below the existing ground surface.

Based on the *Water Quality Control Plan Santa Ana River Basin*, the following intermittent beneficial uses are designated for the Mountain Reaches tributary to the Santa Ana River groundwater basin:

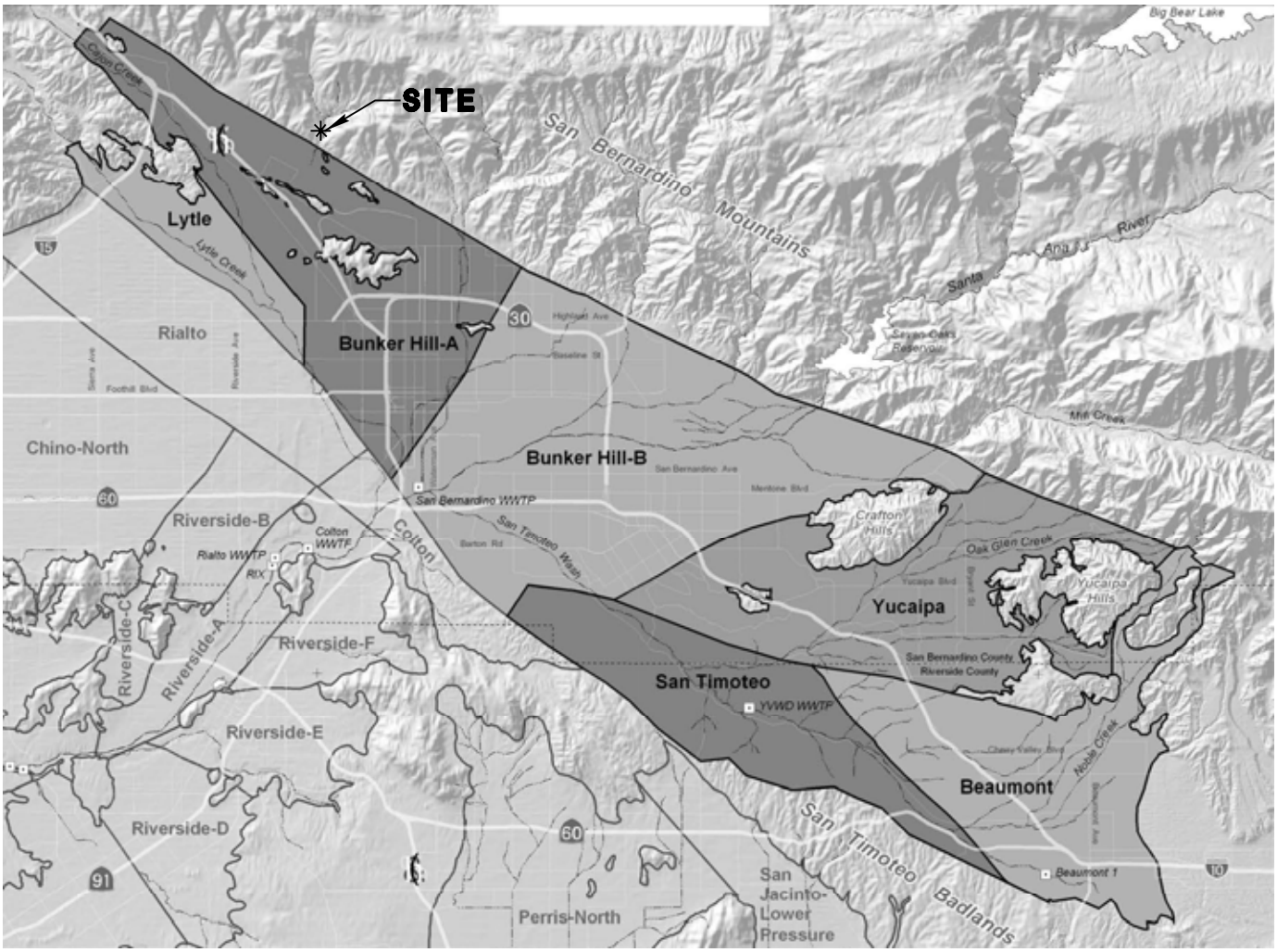
- **MUN** (Municipal and Domestic Supply)
- **GWR** (Groundwater Recharge)
- **REC1** (Water contact Recreation)
- **REC2** (Non-contact Water Recreation)
- **COLD** (Cold Freshwater Habitat)
- **WILD** (Wild Life Habitat)

According to the *Water Quality Control Plan Santa Ana River Basin*, Water Quality Objectives for the Mountain Reaches tributary to the Santa Ana River groundwater basin are as follows:

- Total dissolved solids (TDS) – 200 mg/l
- Hardness – 100 mg/l
- Sodium (Na) – 30 mg/l
- Chloride (Cl) – 10 mg/l
- Nitrate (NO_3-N) – 1 mg/l
- Sulfate (SO_4) – 20mg/l
- Chemical Oxygen Demand – 5mg/l

However, according to the Basin Plan Amendment Required Monitoring And Analyses, Recomputation of Ambient Water Quality for the Period 1984 to 2003 *Draft Technical Memorandum*, Prepared by Wildmuth Environmental, Inc. dated August 2005 the current ambient water quality computation revels a change. TDS data sampling period of 20 years from 1984 to 2003 were 320mg/L. Similarly the average (No_3–N) sampling from 1984 to 2003 were 4.3mg/L. Based on model projections the Bunker Hill-A subbasin in the Santa Ana watershed has no assimilative capacity for nitrate.

Based on the proposed site plan, the project does not include significant infiltration zones, except for the extended detention basin that would affect the natural ground water table. The extended detention basin may improve the volume of the groundwater recharge. Since the project maintains the natural drainage path and stays well above groundwater levels, and since the groundwater level is greater than 50 ft below the existing ground, the project is not expected to impact groundwater.



SOURCE:WILDERMUTH ENVIRONMENTAL INC.

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951.782.0707
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San Diego Orange Sacramento Phoenix Tucson

GROUNDWATER BASIN
FIGURE 7.0

SCALE: 1"=2000'

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PLOT DATE: 07-JAN-2009 JN 13565C

11.0 LIST OF REFERENCES

- *San Bernardino Storm Water Program-Model Water Quality Management Plan Guidance. Revised June 09, 2005*
- *San Bernardino County Hydrology Manual. August 1986.*
- *Detention Basin Design Criteria for San Bernardino County;* http://www.sbcounty.gov/dpw/transportation/pdf/DETENTION BASIN DESIGN CRITERIA.pdf
- *Water Quality Control Plan Santa Ana River Basin*, California Water Quality Control Board Santa Ana Region, January 24, 1995, Revised February 2008.
- *Section 303(d) of the 1972 Clean Water Act*, State Water Resources Control Board, 2006.
- *Stormwater Best Management Practice Handbooks*, California Stormwater Quality Association, January 2003.
- *Draft Environmental Impact Report "Martin Ranch" Volume 1,2,3.* Prepared for City of San Bernardino, Department of Planning and Building. December 2002.
- *Draft Initial Study "The Martin Ranch*" Prepared for City of San Bernardino, Department of Planning and Building. March 1996.
- Basin Plan Amendment Required Monitoring And Analyses, Recomputation of Ambient Water Quality for the Period 1984 to 2003 *Draft Technical Memorandum*, Prepared by Wildmuth Environmental, Inc. dated August 2005.
- *Preliminary Geotechnical Investigation, Proposed Residential Development 353 Acres, Martin Ranch, Tentative Tract 15576, Devore Area, San Bernardino County, California Project No. 56-2013-01. Dated July 28, 2000.*
- *Cable Creek Drainage Study. Prepared for San Bernardino Food Control District, by BSI consultants, Inc. January 01 1994.*
- *Guidelines for Implementation of the California Environmental Quality Act (CEQA)*
- *Flood Insurance Rate Map Community Panel Number 06071C7930H* FEMA Map Service Center, http://www.msc.fema.gov

ATTACHMENTS

A. Backup for Hydrologic Calculations

A-1 Hydrologic Soils Group Map

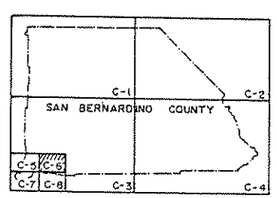
A-2 Rainfall Isotheral Maps

- 100-year 1-hour Precipitation
- 10-year 1-hour Precipitation

A-3 Runoff Index Number for Pervious Area

A-4 Infiltration Rate for Pervious Areas Versus Runoff Index Numbers

A-5 Impervious Cover for Developed Areas



INDEX MAP

LEGEND

SOIL GROUP BOUNDARY

A SOIL GROUP DESIGNATION

BOUNDARY OF INDICATED SOURCE

SCALE 1:48,000

SCALE REDUCED BY 1/2

A-1

SAN BERNARDINO COUNTY

HYDROLOGY MANUAL

HYDROLOGIC SOILS GROUP MAP
FOR
SOUTHWEST-B AREA

FIGURE C-14

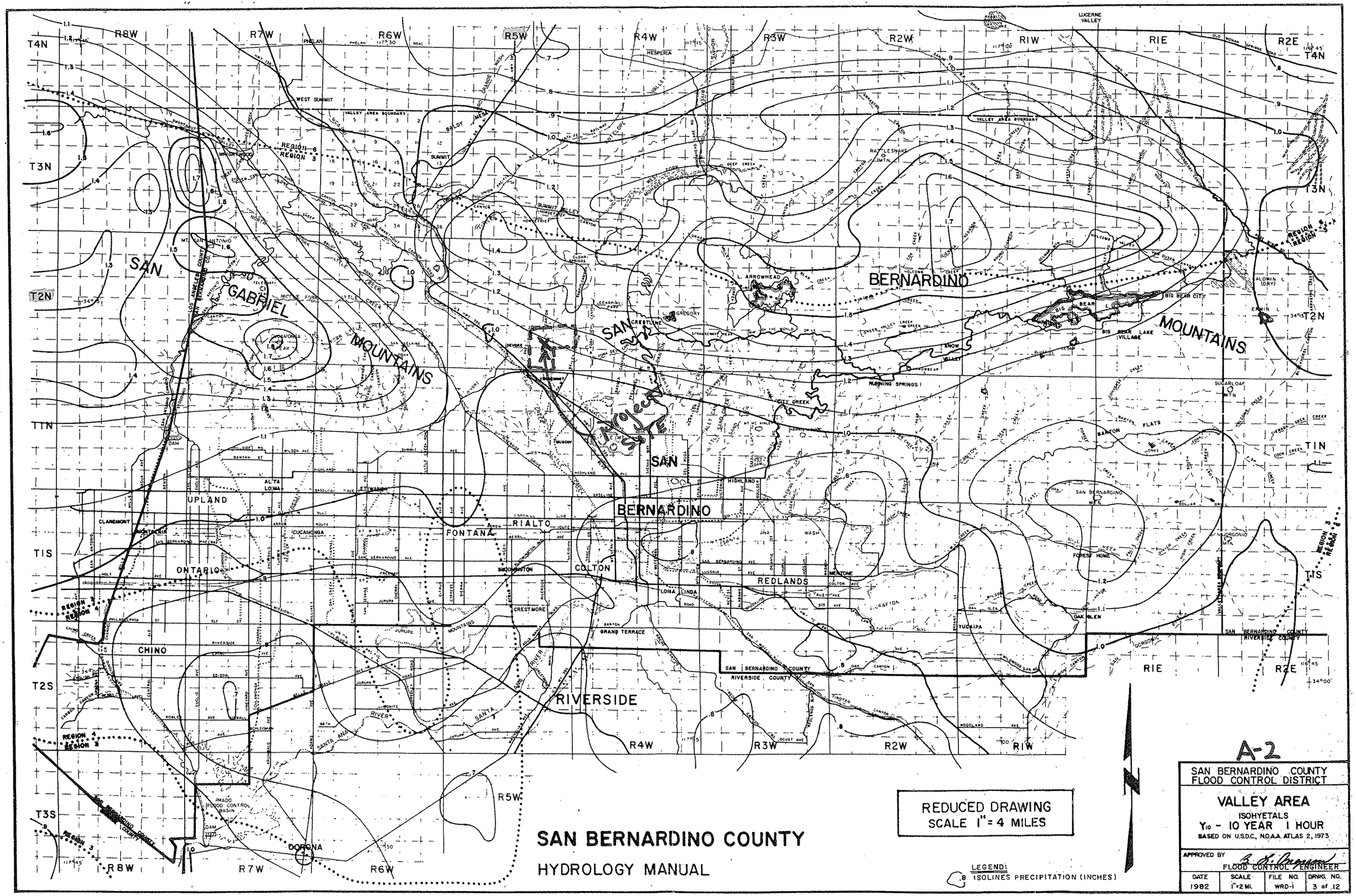

SAN BERNARDINO COUNTY
HYDROLOGY MANUAL
REDUCED DRAWING
SCALE 1" = 4 MILES
LEGEND:
.8 ISOLINES PRECIPITATION (INCHES)
A-2
SAN BERNARDINO COUNTY
FLOOD CONTROL DISTRICT
VALLEY AREA
ISOHYETALS
Y10 - 10 YEAR 1 HOUR
BASED ON U.S.D.C., N.O.A.A. ATLAS 2, 1973
APPROVED BY
FLOOD CONTROL ENGINEER
DATE 1982
SCALE 1"=2 Mi.
FILE NO. WRD-1
DRWG. NO. 3 of 12
SAN GABRIEL MOUNTAINS
SAN BERNARDINO MOUNTAINS
SAN BERNARDINO
RIVERSIDE
UPLAND
ONTARIO
CHINO
FONTANA
RIALTO
COLTON
REDLANDS
YUCAIPA
CORONA
CLAREMONT
CRESTLINE
L. ARROWHEAD
BIG BEAR LAKE
BIG BEAR CITY
RUNNING SPRINGS
SAN BERNARDINO COUNTY
RIVERSIDE COUNTY
T4N
T3N
T2N
T1N
T1S
T2S
T3S
R8W
R7W
R6W
R5W
R4W
R3W
R2W
R1W
R1E
R2E

FIGURE B-3

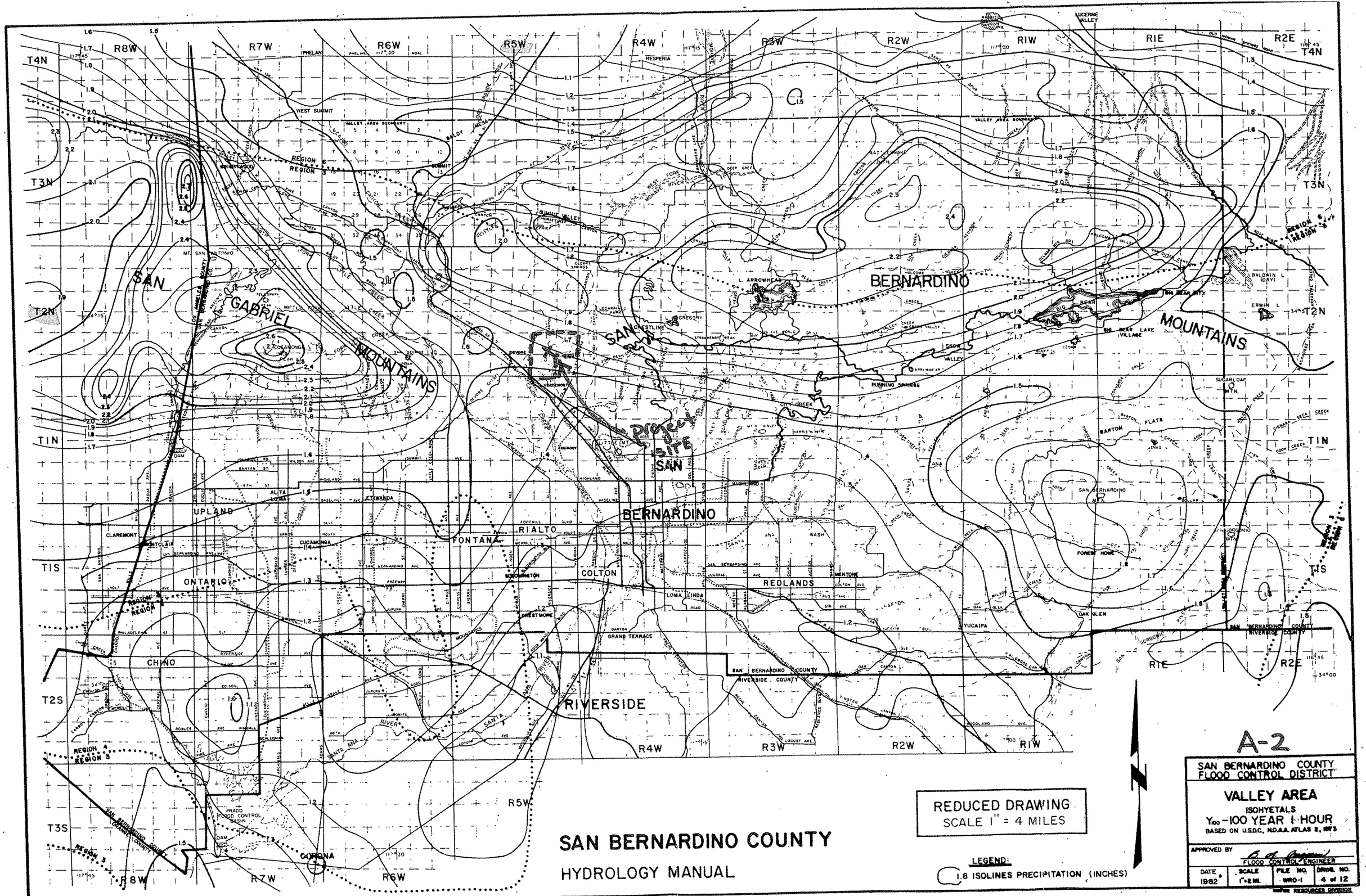

SAN BERNARDINO COUNTY
HYDROLOGY MANUAL
REDUCED DRAWING
SCALE 1" = 4 MILES
LEGEND:
1.8 ISOLINES PRECIPITATION (INCHES)
A-2
SAN BERNARDINO COUNTY
FLOOD CONTROL DISTRICT
VALLEY AREA
ISOHYETALS
Y100 - 100 YEAR 1 HOUR
BASED ON U.S.D.C., N.O.A.A. ATLAS 2, 1973
APPROVED BY
FLOOD CONTROL ENGINEER
DATE 1982
SCALE 1"=2 MI.
FILE NO. WRD-1
DRWG. NO. 4 of 12
WATER RESOURCES DIVISION
SAN GABRIEL MOUNTAINS
SAN BERNARDINO MOUNTAINS
Project Site
UPLAND
ONTARIO
CHINO
CLAREMONT
MONTCLAIR
RANCHO CUCAMONGA
FONTANA
RIALTO
COLTON
BERNARDINO
REDLANDS
LOMA LINDA
GRAND TERRACE
RIVERSIDE
CORONA
YUCAIPA
OAK GLEN
FOREST HOME
SAN BERNARDINO COUNTY
RIVERSIDE COUNTY
PRADO FLOOD CONTROL BASIN
DAM
SANTA ANA RIVER
SAN GABRIEL RIVER
L. ARROWHEAD
L. GREGORY
BIG BEAR LAKE
BIG BEAR CITY
SNOW VALLEY
RUNNING SPRINGS
BARTON FLATS
SUGARLOAF MTN.
SAN BERNARDINO MTN.
MT. SAN ANTONIO
COCAMONGA PEAK
WEST SUMMIT
WRIGHTWOOD
SUMMIT VALLEY
CRESTLINE
HESPERIA
LUCERNE VALLEY
BALDWIN LAKE (DRY)
ERWIN L.
REGION 6
REGION 5
REGION 4
REGION 3
VALLEY AREA BOUNDARY
T4N
T3N
T2N
T1N
T1S
T2S
T3S
R8W
R7W
R6W
R5W
R4W
R3W
R2W
R1W
R1E
R2E

FIGURE B-4

Curve (1) Numbers of Hydrologic Soil-Cover Complexes For Pervious Areas-AMC II

Cover Type (3)	Quality of Cover (2)	Soil Group A	Soil Group B	Soil Group C	Soil Group D
NATURAL COVERS -					
Barren (Rockland, eroded and graded land)		78	86	91	93
Chaparral, Broadleaf (Manzonita, ceanothus and scrub oak)	Poor	53	70	80	85
	Fair	40	63	75	81
	Good	31	57	71	78
Chaparral, 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	71	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	25	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)		77	86	91	94

A-3

SAN BERNARDINO COUNTY

HYDROLOGY MANUAL

CURVE NUMBERS FOR PERVIOUS AREAS

Figure C-3 (1 of 2)

Curve (1) 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 (Continued)					
Legumes, Close Seeded (Alfalfa, sweetclover, timothy, etc.)	Poor	66	77	85	89
	Good	58	72	81	85
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	68	79	86	89
	Fair	49	69	79	84
	Good	39	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

Notes:

1. All curve numbers are for Antecedent Moisture Condition (AMC) II.
2. Quality of cover definitions:

   Poor-Heavily grazed, regularly burned areas, or areas of high burn potential. 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 Figure C-2 for definition of cover types.

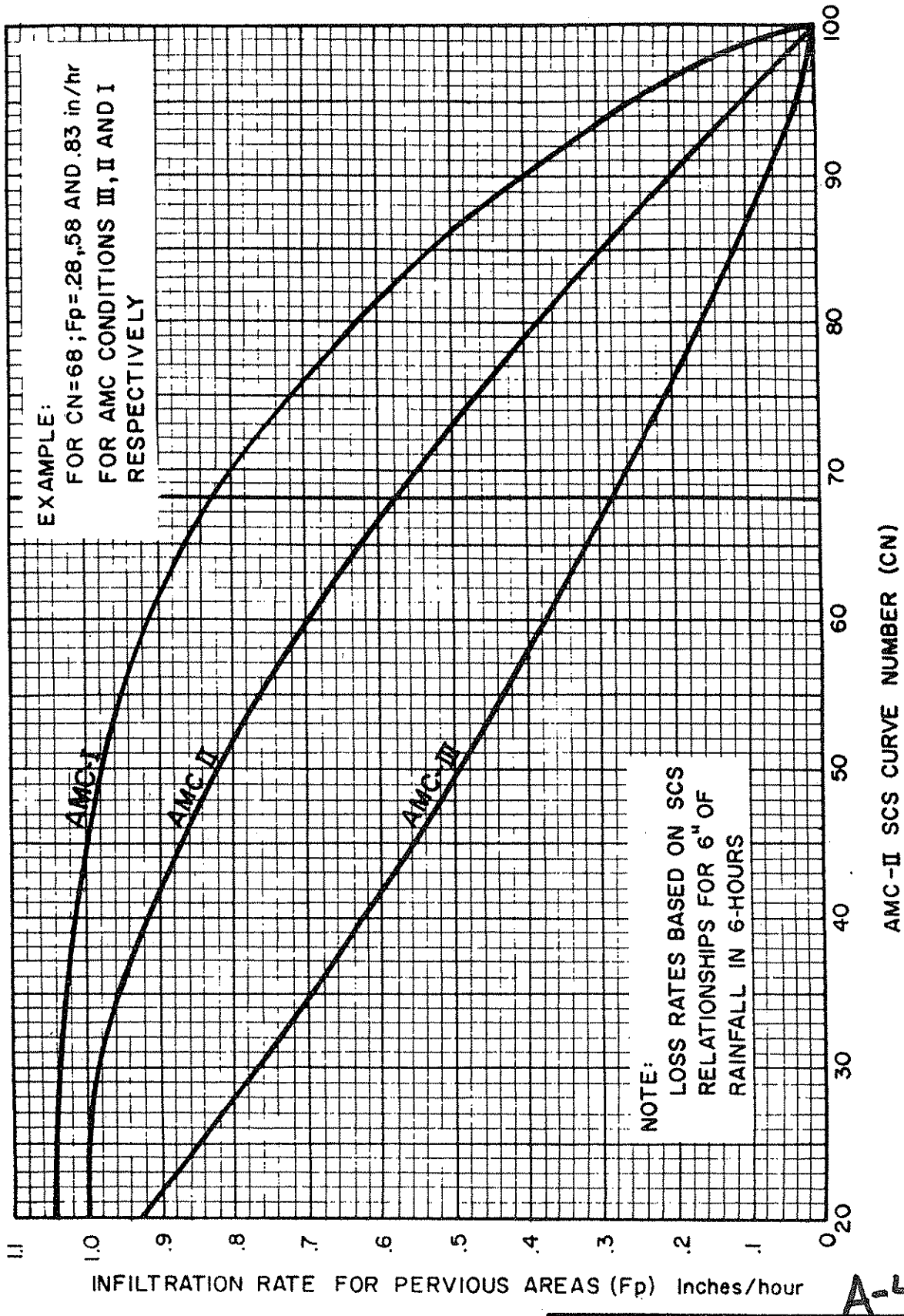
A-3

SAN BERNARDINO COUNTY

HYDROLOGY MANUAL

CURVE NUMBERS FOR PERVIOUS AREAS

Figure C-3 (2 of 2)



A-4

SAN BERNARDINO COUNTY
HYDROLOGY MANUAL

INFILTRATION RATE FOR PERVIOUS AREAS VERSUS SCS CURVE NUMBERS

Figure C-6

ACTUAL IMPERVIOUS COVER

Land Use (1)	Range-Percent	Recommended Value For Average Conditions-Percent (2)
Natural or Agriculture	0 - 0	0
Public Park	10 - 25	15
School	30 - 50	40
Single Family Residential: (3)		
2.5 acre lots	5 - 15	10
1 acre lots	10 - 25	20
2 dwellings/acre	20 - 40	30
3-4 dwellings/acre	30 - 50	40
5-7 dwellings/acre	35 - 55	50
8-10 dwellings/acre	50 - 70	60
More than 10 dwellings/acre	65 - 90	80
Multiple Family Residential:		
Condominiums	45 - 70	65
Apartments	65 - 90	80
Mobile Home Park	60 - 85	75
Commercial, Downtown Business or Industrial	80 - 100	90

Notes:

1. Land use should be based on ultimate development of the watershed. Long range master plans for the County and incorporated cities should be reviewed to insure reasonable land use assumptions.

2. Recommended values are based on average conditions which may not apply to a particular study area. The percentage impervious may vary greatly even on comparable sized lots due to differences in dwelling size, improvements, etc. Landscape practices should also be considered as it is common in some areas to use ornamental gravels underlain by impervious plastic materials in place of lawns and shrubs. A field investigation of a study area shall always be made, and a review of aerial photos, where available, may assist in estimating the percentage of impervious cover in developed areas.

3. For typical equestrian subdivisions increase impervious area 5 percent over the values recommended in the table above.

A-5

SAN BERNARDINO COUNTY

HYDROLOGY MANUAL

ACTUAL IMPERVIOUS COVER FOR DEVELOPED AREAS

Figure C-4

B. WATER QUALITY BACK UP DATA

B-1 Water Quality Exhibit

B-2 FLOOD-SCX Program Result Summary (HCOC**) Basin A (1)**

- 1-yr, 2-yr, 5-yr Pre-Project (AMC I)
- 1-yr, 2-yr, 5-yr Post-Project (AMC I)

B-3 FLOOD-SCX Program Result Summary (HCOC) **Basin B (2)**

- 1-yr, 2-yr, 5-yr Pre-Project (AMC I)
- 1-yr, 2-yr, 5-yr Post-Project (AMC I)

B-4 FLOOD-SCX Program Result Summary (HCOC) **Basin C (3)**

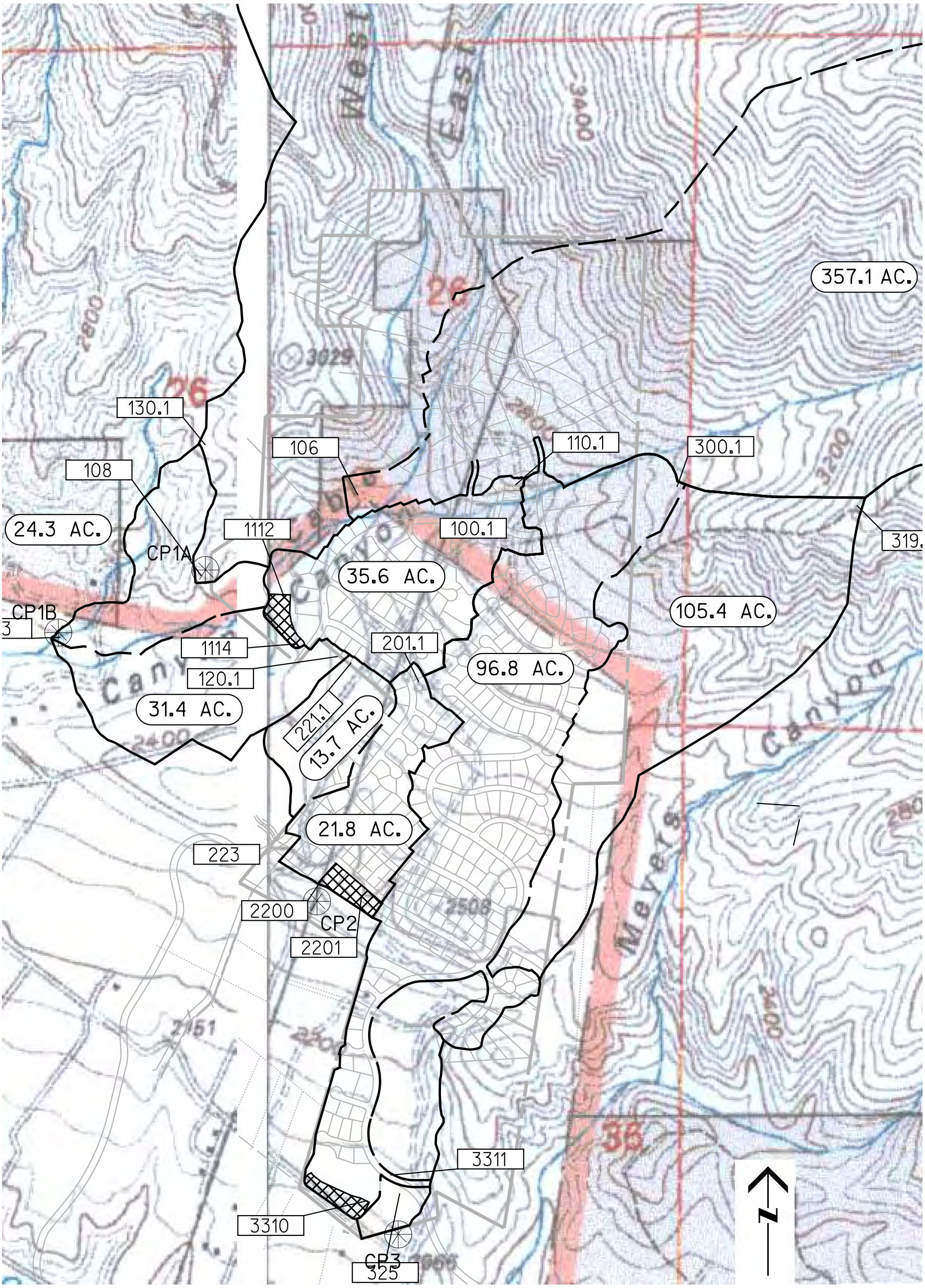
- 1-yr, 2-yr, 5-yr Pre-Project (AMC I)
- 1-yr, 2-yr, 5-yr Post-Project (AMC I)

B-5 Water Quality Treatment Calculations

- Basin A (Treatment location 100)
- Basin B (Treatment location 200)
- Basin C (Treatment location 300)

B-6 Infiltration Testing Results (Leighton and Associates Inc.)

WATER QUALITY EXHIBIT



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

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                          Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* SPRING TRAILS               JUNE, 2011                    J - 13565-C    *
* BASIN 1 - PRE PROJECT           2-YR PRECIPITATION WITH AMC-I            *
* FOR HCOC INFILTRAION BASIN MODELING                                      *
 ***************************************************************************

  FILE NAME: ST1_2_E.DAT
  TIME/DATE OF STUDY: 13:57 06/07/2011


                          ** INPUT SUMMARY **


****************************************************************************
  FLOW PROCESS FROM NODE    117.10 TO NODE    113.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #1<<<<<
============================================================================
  WATERSHED AREA =     359.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.115 HOURS
  FOOTHILL S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.630; LOW LOSS FRACTION = 0.990
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.19; 30-MINUTE =  0.55;  1-HOUR =  0.78
    3-HOUR =  1.50;    6-HOUR =  2.30; 24-HOUR =  4.75
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.984; 30-MINUTE = 0.984;  1-HOUR = 0.984
    3-HOUR = 0.998;    6-HOUR = 0.999; 24-HOUR = 0.999


****************************************************************************
  FLOW PROCESS FROM NODE    101.10 TO NODE    113.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERSHED AREA =    1558.900 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.207 HOURS
  MOUNTAIN S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.390; LOW LOSS FRACTION = 0.990
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.19; 30-MINUTE =  0.55;  1-HOUR =  0.78
    3-HOUR =  1.50;    6-HOUR =  2.30; 24-HOUR =  4.75
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.930; 30-MINUTE = 0.930;  1-HOUR = 0.930
    3-HOUR = 0.990;    6-HOUR = 0.995; 24-HOUR = 0.997


****************************************************************************
  FLOW PROCESS FROM NODE    113.00 TO NODE    113.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    113.00 TO NODE    113.00 IS CODE =  11
```

```
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    135.10 TO NODE    138.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #3<<<<<
============================================================================
  WATERSHED AREA =      30.700 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.174 HOURS
  FOOTHILL S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.955; LOW LOSS FRACTION = 0.990
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.19; 30-MINUTE =  0.55;  1-HOUR =  0.78
    3-HOUR =  1.50;    6-HOUR =  2.30; 24-HOUR =  4.75
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.999; 30-MINUTE = 0.999;  1-HOUR = 0.999
    3-HOUR = 1.000;    6-HOUR = 1.000; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE    138.00 TO NODE    138.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    403.10 TO NODE    138.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #4<<<<<
============================================================================
  WATERSHED AREA =      17.500 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.184 HOURS
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.995; LOW LOSS FRACTION = 0.990
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.19; 30-MINUTE =  0.55;  1-HOUR =  0.78
    3-HOUR =  1.50;    6-HOUR =  2.30; 24-HOUR =  4.75
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.999; 30-MINUTE = 0.999;  1-HOUR = 0.999
    3-HOUR = 1.000;    6-HOUR = 1.000; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE    138.00 TO NODE    138.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 4 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    140.10 TO NODE    144.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #5<<<<<
============================================================================
  WATERSHED AREA =      19.400 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.138 HOURS
  FOOTHILL S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.980; LOW LOSS FRACTION = 0.990
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.19; 30-MINUTE =  0.55;  1-HOUR =  0.78
    3-HOUR =  1.50;    6-HOUR =  2.30; 24-HOUR =  4.75
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.999; 30-MINUTE = 0.999;  1-HOUR = 0.999
    3-HOUR = 1.000;    6-HOUR = 1.000; 24-HOUR = 1.000


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

```
  FLOW PROCESS FROM NODE    144.00 TO NODE    144.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 5 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE    144.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 4 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    401.10 TO NODE    144.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #4<<<<<
============================================================================
  WATERSHED AREA =      44.400 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.210 HOURS
  FOOTHILL S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.985; LOW LOSS FRACTION = 0.990
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.19; 30-MINUTE =  0.55;  1-HOUR =  0.78
    3-HOUR =  1.50;    6-HOUR =  2.30; 24-HOUR =  4.75
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.998; 30-MINUTE = 0.998;  1-HOUR = 0.998
    3-HOUR = 1.000;    6-HOUR = 1.000; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE    144.00 TO NODE    144.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 4 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    144.00 TO NODE    144.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================
============================================================================
```

```
+-----------------------------------------------------------------------------------------------------------------------+
|                                    * AES FLOODSCx PROGRAM RESULTS SUMMARY *                                           |
|INPUT FILENAME: [ST1_2_E.DAT    ]                                                                   Page:   1 of    |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|UPSTREAM  DOWNSTREAM|                               | UPSTREAM   DOWNSTREAM| TIME(2) TO | MAX. STORAGE|           |
| NODE #     NODE #  | HYDROLOGIC/HYDRAULIC PROCESS  |PEAK (CFS)  PEAK (CFS)| PEAK (HR)  | MODELED (AF)| FOOTNOTES |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|   117.10     113.00| Subarea (UH) Added to Stream #1|       0.0       362.1|     16.100 |             |           |
|   101.10     113.00| Subarea (UH) Added to Stream #2|       0.0      1126.6|     16.117 |             |           |
|   113.00     113.00| Stream #2 Added to:   Stream #1|     362.1      1484.7|     16.117 |             |           |
|   113.00     113.00| View:                 Stream #1|                1484.7|     16.117 |        59.68|     3     |
|   135.10     138.00| Subarea (UH) Added to Stream #3|       0.0        18.3|     16.150 |             |           |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|   138.00     138.00| Stream #3 Added to:   Stream #1|    1484.7      1498.7|     16.117 |             |           |
|   403.10     138.00| Subarea (UH) Added to Stream #4|       0.0         7.9|     16.150 |             |           |
|   138.00     138.00| Stream #4 Added to:   Stream #1|    1498.7      1506.2|     16.117 |             |           |
|   140.10     144.00| Subarea (UH) Added to Stream #5|       0.0        12.8|     16.117 |             |           |
|   144.00     144.00| Stream #5 Added to:   Stream #1|    1506.2      1518.9|     16.117 |             |           |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|     0.00     144.00| Zero Out:             Stream #4|       7.9         0.0|            |             |           |
|   401.10     144.00| Subarea (UH) Added to Stream #4|       0.0        23.0|     16.183 |             |           |
|   144.00     144.00| Stream #4 Added to:   Stream #1|    1518.9      1530.5|     16.117 |             |           |
|   144.00     144.00| View:                 Stream #1|                1530.5|     16.117 |        61.25|     3     |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|Notes: 1 = BASIN MODEL VOLUME EXCEEDED; 2 = TIME IS AT END OF 1-MINUTE UNIT INTERVAL                                   |
|       3 = RUNOFF ESTIMATES DO NOT EXTEND PAST 2 DAYS AFTER THE PEAK DAY OF THE DESIGN STORM                            |
+-----------------------------------------------------------------------------------------------------------------------+

  END OF FLOODSCx ROUTING ANALYSIS
```

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

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                          Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* SPRING TRAILS              JUNE, 2011                    J - 13565-C    *
* BASIN 1 - PRE PROJECT           1-YR PRECIPITATION WITH AMC-I            *
* FOR HCOC INFILTRAION BASIN MODELING                                      *
 ***************************************************************************

  FILE NAME: ST1_1_E.DAT
  TIME/DATE OF STUDY: 13:52 06/07/2011


                          ** INPUT SUMMARY **


****************************************************************************
  FLOW PROCESS FROM NODE    117.10 TO NODE    113.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #1<<<<<
============================================================================
  WATERSHED AREA =     359.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.115 HOURS
  FOOTHILL S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.630; LOW LOSS FRACTION = 0.990
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.18; 30-MINUTE =  0.45;  1-HOUR =  0.65
    3-HOUR =  1.12;    6-HOUR =  1.70; 24-HOUR =  3.20
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.984; 30-MINUTE = 0.984;  1-HOUR = 0.984
    3-HOUR = 0.998;    6-HOUR = 0.999; 24-HOUR = 0.999


****************************************************************************
  FLOW PROCESS FROM NODE    101.10 TO NODE    113.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERSHED AREA =    1558.900 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.207 HOURS
  MOUNTAIN S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.390; LOW LOSS FRACTION = 0.990
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.18; 30-MINUTE =  0.45;  1-HOUR =  0.65
    3-HOUR =  1.12;    6-HOUR =  1.70; 24-HOUR =  3.20
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.930; 30-MINUTE = 0.930;  1-HOUR = 0.930
    3-HOUR = 0.990;    6-HOUR = 0.995; 24-HOUR = 0.997


****************************************************************************
  FLOW PROCESS FROM NODE    113.00 TO NODE    113.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    113.00 TO NODE    113.00 IS CODE =  11
```

```
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    135.10 TO NODE    138.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #3<<<<<
============================================================================
  WATERSHED AREA =      30.700 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.174 HOURS
  FOOTHILL S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.955; LOW LOSS FRACTION = 0.990
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.18; 30-MINUTE =  0.45;  1-HOUR =  0.65
    3-HOUR =  1.12;    6-HOUR =  1.70; 24-HOUR =  3.20
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.999; 30-MINUTE = 0.999;  1-HOUR = 0.999
    3-HOUR = 1.000;    6-HOUR = 1.000; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE    138.00 TO NODE    138.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    403.10 TO NODE    138.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #4<<<<<
============================================================================
  WATERSHED AREA =      17.500 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.184 HOURS
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.995; LOW LOSS FRACTION = 0.990
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.18; 30-MINUTE =  0.45;  1-HOUR =  0.65
    3-HOUR =  1.12;    6-HOUR =  1.70; 24-HOUR =  3.20
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.999; 30-MINUTE = 0.999;  1-HOUR = 0.999
    3-HOUR = 1.000;    6-HOUR = 1.000; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE    138.00 TO NODE    138.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 4 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    140.10 TO NODE    144.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #5<<<<<
============================================================================
  WATERSHED AREA =      19.400 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.138 HOURS
  FOOTHILL S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.980; LOW LOSS FRACTION = 0.990
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.18; 30-MINUTE =  0.45;  1-HOUR =  0.65
    3-HOUR =  1.12;    6-HOUR =  1.70; 24-HOUR =  3.20
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.999; 30-MINUTE = 0.999;  1-HOUR = 0.999
    3-HOUR = 1.000;    6-HOUR = 1.000; 24-HOUR = 1.000


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

```
  FLOW PROCESS FROM NODE    144.00 TO NODE    144.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 5 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE    144.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 4 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    401.10 TO NODE    144.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #4<<<<<
============================================================================
  WATERSHED AREA =      44.400 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.210 HOURS
  FOOTHILL S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.985; LOW LOSS FRACTION = 0.990
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.18; 30-MINUTE =  0.45;  1-HOUR =  0.65
    3-HOUR =  1.12;    6-HOUR =  1.70; 24-HOUR =  3.20
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.998; 30-MINUTE = 0.998;  1-HOUR = 0.998
    3-HOUR = 1.000;    6-HOUR = 1.000; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE    144.00 TO NODE    144.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 4 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    144.00 TO NODE    144.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================
============================================================================
```

```
+-----------------------------------------------------------------------------------------------------------------------+
|                                    * AES FLOODSCx PROGRAM RESULTS SUMMARY *                                           |
|INPUT FILENAME: [ST1_1_E.DAT    ]                                                                   Page:   1 of    |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|UPSTREAM  DOWNSTREAM|                               | UPSTREAM   DOWNSTREAM| TIME(2) TO | MAX. STORAGE|           |
| NODE #     NODE #  | HYDROLOGIC/HYDRAULIC PROCESS  |PEAK (CFS)  PEAK (CFS)| PEAK (HR)  | MODELED (AF)| FOOTNOTES |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|   117.10     113.00| Subarea (UH) Added to Stream #1|       0.0       307.5|     16.100 |             |           |
|   101.10     113.00| Subarea (UH) Added to Stream #2|       0.0       924.4|     16.117 |             |           |
|   113.00     113.00| Stream #2 Added to:   Stream #1|     307.5      1226.9|     16.117 |             |           |
|   113.00     113.00| View:                 Stream #1|                1226.9|     16.117 |        38.23|     3     |
|   135.10     138.00| Subarea (UH) Added to Stream #3|       0.0        15.7|     16.167 |             |           |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|   138.00     138.00| Stream #3 Added to:   Stream #1|    1226.9      1238.0|     16.117 |             |           |
|   403.10     138.00| Subarea (UH) Added to Stream #4|       0.0         6.7|     16.150 |             |           |
|   138.00     138.00| Stream #4 Added to:   Stream #1|    1238.0      1244.1|     16.117 |             |           |
|   140.10     144.00| Subarea (UH) Added to Stream #5|       0.0        11.0|     16.117 |             |           |
|   144.00     144.00| Stream #5 Added to:   Stream #1|    1244.1      1255.1|     16.117 |             |           |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|     0.00     144.00| Zero Out:             Stream #4|       6.7         0.0|            |             |           |
|   401.10     144.00| Subarea (UH) Added to Stream #4|       0.0        19.7|     16.183 |             |           |
|   144.00     144.00| Stream #4 Added to:   Stream #1|    1255.1      1263.8|     16.117 |             |           |
|   144.00     144.00| View:                 Stream #1|                1263.8|     16.117 |        39.44|     3     |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|Notes: 1 = BASIN MODEL VOLUME EXCEEDED; 2 = TIME IS AT END OF 1-MINUTE UNIT INTERVAL                                   |
|       3 = RUNOFF ESTIMATES DO NOT EXTEND PAST 2 DAYS AFTER THE PEAK DAY OF THE DESIGN STORM                            |
+-----------------------------------------------------------------------------------------------------------------------+

  END OF FLOODSCx ROUTING ANALYSIS
```

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

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                          Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* SPRING TRAILS              JUNE, 2011                    J - 13565-C     *
* BASIN 1 - PRE PROJECT           5-YR PRECIPITATION WITH AMC-I            *
* FOR HCOC INFILTRAION BASIN MODELING                                      *
 ***************************************************************************

  FILE NAME: ST1_5_E.DAT
  TIME/DATE OF STUDY: 16:11 06/03/2011


                          ** INPUT SUMMARY **


****************************************************************************
  FLOW PROCESS FROM NODE    117.10 TO NODE    113.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #1<<<<<
============================================================================
  WATERSHED AREA =     359.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.170 HOURS
  FOOTHILL S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.630; LOW LOSS FRACTION = 0.990
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.21; 30-MINUTE =  0.63;  1-HOUR =  0.98
    3-HOUR =  1.90;    6-HOUR =  2.92; 24-HOUR =  6.92
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.984; 30-MINUTE = 0.984;  1-HOUR = 0.984
    3-HOUR = 0.998;    6-HOUR = 0.999; 24-HOUR = 0.999


****************************************************************************
  FLOW PROCESS FROM NODE    101.10 TO NODE    113.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERSHED AREA =    1558.900 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.137 HOURS
  MOUNTAIN S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.390; LOW LOSS FRACTION = 0.990
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.21; 30-MINUTE =  0.63;  1-HOUR =  0.98
    3-HOUR =  1.90;    6-HOUR =  2.92; 24-HOUR =  6.92
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.930; 30-MINUTE = 0.930;  1-HOUR = 0.930
    3-HOUR = 0.990;    6-HOUR = 0.995; 24-HOUR = 0.997


****************************************************************************
  FLOW PROCESS FROM NODE    113.00 TO NODE    113.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    113.00 TO NODE    113.00 IS CODE =  11
```

```
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    135.10 TO NODE    138.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #3<<<<<
============================================================================
  WATERSHED AREA =      30.700 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.174 HOURS
  FOOTHILL S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.955; LOW LOSS FRACTION = 0.990
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.21; 30-MINUTE =  0.63;  1-HOUR =  0.98
    3-HOUR =  1.90;    6-HOUR =  2.92; 24-HOUR =  6.92
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.999; 30-MINUTE = 0.999;  1-HOUR = 0.999
    3-HOUR = 1.000;    6-HOUR = 1.000; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE    138.00 TO NODE    138.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    403.10 TO NODE    138.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #4<<<<<
============================================================================
  WATERSHED AREA =      17.500 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.184 HOURS
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.995; LOW LOSS FRACTION = 0.990
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.21; 30-MINUTE =  0.63;  1-HOUR =  0.98
    3-HOUR =  1.90;    6-HOUR =  2.92; 24-HOUR =  6.92
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.999; 30-MINUTE = 0.999;  1-HOUR = 0.999
    3-HOUR = 1.000;    6-HOUR = 1.000; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE    138.00 TO NODE    138.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 4 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    140.10 TO NODE    144.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #5<<<<<
============================================================================
  WATERSHED AREA =      19.400 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.138 HOURS
  FOOTHILL S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.980; LOW LOSS FRACTION = 0.990
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.21; 30-MINUTE =  0.63;  1-HOUR =  0.98
    3-HOUR =  1.90;    6-HOUR =  2.92; 24-HOUR =  6.92
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.999; 30-MINUTE = 0.999;  1-HOUR = 0.999
    3-HOUR = 1.000;    6-HOUR = 1.000; 24-HOUR = 1.000


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

```
  FLOW PROCESS FROM NODE    144.00 TO NODE    144.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 5 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE    144.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 4 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    401.10 TO NODE    144.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #4<<<<<
============================================================================
  WATERSHED AREA =      44.400 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.210 HOURS
  FOOTHILL S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.985; LOW LOSS FRACTION = 0.990
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.21; 30-MINUTE =  0.63;  1-HOUR =  0.98
    3-HOUR =  1.90;    6-HOUR =  2.92; 24-HOUR =  6.92
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.998; 30-MINUTE = 0.998;  1-HOUR = 0.998
    3-HOUR = 1.000;    6-HOUR = 1.000; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE    144.00 TO NODE    144.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 4 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    144.00 TO NODE    144.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================
============================================================================
```

```
+-----------------------------------------------------------------------------------------------------------------------------+
|                                        * AES FLOODSCx PROGRAM RESULTS SUMMARY *                                             |
|INPUT FILENAME: [ST1_5_E.DAT    ]                                                                        Page:   1 of    |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|UPSTREAM  DOWNSTREAM|                               | UPSTREAM   DOWNSTREAM| TIME(2) TO | MAX. STORAGE|           |
| NODE #     NODE #  | HYDROLOGIC/HYDRAULIC PROCESS  |PEAK (CFS)  PEAK (CFS)| PEAK (HR)  | MODELED (AF)| FOOTNOTES |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|   117.10     113.00| Subarea (UH) Added to Stream #1|       0.0       367.8|     16.150 |             |           |
|   101.10     113.00| Subarea (UH) Added to Stream #2|       0.0      1662.0|     16.083 |             |           |
|   113.00     113.00| Stream #2 Added to:   Stream #1|     367.8      1911.0|     16.100 |             |           |
|   113.00     113.00| View:                 Stream #1|                1911.0|     16.100 |       110.52|     3     |
|   135.10     138.00| Subarea (UH) Added to Stream #3|       0.0        22.9|     16.150 |             |           |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|   138.00     138.00| Stream #3 Added to:   Stream #1|    1911.0      1926.0|     16.100 |             |           |
|   403.10     138.00| Subarea (UH) Added to Stream #4|       0.0        10.1|     16.150 |             |           |
|   138.00     138.00| Stream #4 Added to:   Stream #1|    1926.0      1934.8|     16.100 |             |           |
|   140.10     144.00| Subarea (UH) Added to Stream #5|       0.0        15.9|     16.117 |             |           |
|   144.00     144.00| Stream #5 Added to:   Stream #1|    1934.8      1949.9|     16.100 |             |           |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|     0.00     144.00| Zero Out:             Stream #4|      10.1         0.0|            |             |           |
|   401.10     144.00| Subarea (UH) Added to Stream #4|       0.0        28.9|     16.183 |             |           |
|   144.00     144.00| Stream #4 Added to:   Stream #1|    1949.9      1964.0|     16.100 |             |           |
|   144.00     144.00| View:                 Stream #1|                1964.0|     16.100 |       112.69|     3     |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|Notes: 1 = BASIN MODEL VOLUME EXCEEDED; 2 = TIME IS AT END OF 1-MINUTE UNIT INTERVAL                                          |
|       3 = RUNOFF ESTIMATES DO NOT EXTEND PAST 2 DAYS AFTER THE PEAK DAY OF THE DESIGN STORM                                   |
+-----------------------------------------------------------------------------------------------------------------------------+

  END OF FLOODSCx ROUTING ANALYSIS
```

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

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                          Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* SPRING TRAILS              APRIL 27, 2009                 J-13565-C      *
* BASIN 1 - POST PROJECT           2-YR PRECIPITATION WITH AMC-I           *
* FOR HCOC INFILTRAION BASIN MODELING                                      *
 ***************************************************************************

  FILE NAME: ST1_2_P.DAT
  TIME/DATE OF STUDY: 18:36 06/07/2011


                          ** INPUT SUMMARY **


****************************************************************************
  FLOW PROCESS FROM NODE    100.10 TO NODE    106.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #1<<<<<
============================================================================
  WATERSHED AREA =     357.100 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.118 HOURS
  FOOTHILL S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.620; LOW LOSS FRACTION = 0.970
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.19; 30-MINUTE =  0.55;  1-HOUR =  0.78
    3-HOUR =  1.50;    6-HOUR =  2.30; 24-HOUR =  4.75
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.984; 30-MINUTE = 0.984;  1-HOUR = 0.984
    3-HOUR = 0.998;    6-HOUR = 0.999; 24-HOUR = 0.999


****************************************************************************
  FLOW PROCESS FROM NODE    106.11 TO NODE    106.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERSHED AREA =    1556.600 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.207 HOURS
  MOUNTAIN S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.390; LOW LOSS FRACTION = 0.990
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.19; 30-MINUTE =  0.55;  1-HOUR =  0.78
    3-HOUR =  1.50;    6-HOUR =  2.30; 24-HOUR =  4.75
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.931; 30-MINUTE = 0.931;  1-HOUR = 0.931
    3-HOUR = 0.990;    6-HOUR = 0.995; 24-HOUR = 0.997


****************************************************************************
  FLOW PROCESS FROM NODE    106.00 TO NODE    106.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    107.11 TO NODE    108.00 IS CODE =   1
```

```
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #3<<<<<
============================================================================
  WATERSHED AREA =      33.500 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.174 HOURS
  FOOTHILL S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.925; LOW LOSS FRACTION = 0.990
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.19; 30-MINUTE =  0.55;  1-HOUR =  0.78
    3-HOUR =  1.50;    6-HOUR =  2.30; 24-HOUR =  4.75
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.999; 30-MINUTE = 0.999;  1-HOUR = 0.999
    3-HOUR = 1.000;    6-HOUR = 1.000; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE    108.00 TO NODE    108.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    110.10 TO NODE   1116.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #4<<<<<
============================================================================
  WATERSHED AREA =      40.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.168 HOURS
  VALLEY(DEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.770; LOW LOSS FRACTION = 0.540
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.19; 30-MINUTE =  0.55;  1-HOUR =  0.78
    3-HOUR =  1.50;    6-HOUR =  2.30; 24-HOUR =  4.75
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.998; 30-MINUTE = 0.998;  1-HOUR = 0.998
    3-HOUR = 1.000;    6-HOUR = 1.000; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE   1116.00 TO NODE   1117.00 IS CODE = 3.2
----------------------------------------------------------------------------
  >>>>>FLOW-THROUGH DETENTION BASIN ROUTING MODEL APPLIED TO STREAM #4<<<<<
============================================================================
  ROUTE RUNOFF HYDROGRAPH FROM STREAM NUMBER 4
  THROUGH A FLOW-THROUGH DETENTION BASIN.
  SPECIFIED BASIN CONDITIONS ARE AS FOLLOWS:
  DEAD STORAGE(AF) =      0.000
  SPECIFIED DEAD STORAGE(AF) FILLED =      0.000
  SPECIFIED EFFECTIVE VOLUME(AF) FILLED ABOVE OUTLET =      0.000
  DETENTION BASIN CONSTANT LOSS RATE(CFS) =    0.62

  BASIN DEPTH VERSUS OUTFLOW AND STORAGE INFORMATION:

          INTERVAL    DEPTH      OUTFLOW     STORAGE
           NUMBER      (FT)       (CFS)        (AF)
               1        0.00        0.00       0.000
               2        1.00        1.52       3.010
               3        2.00       28.00       9.420
               4        3.00      100.00      20.000
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE   1117.00 TO NODE    108.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 4 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


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

```
  FLOW PROCESS FROM NODE    130.10 TO NODE    133.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #5<<<<<
============================================================================
  WATERSHED AREA =      19.400 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.138 HOURS
  FOOTHILL S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.955; LOW LOSS FRACTION = 0.990
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.19; 30-MINUTE =  0.55;  1-HOUR =  0.78
    3-HOUR =  1.50;    6-HOUR =  2.30; 24-HOUR =  4.75
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.999; 30-MINUTE = 0.999;  1-HOUR = 0.999
    3-HOUR = 1.000;    6-HOUR = 1.000; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE    133.00 TO NODE    133.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 5 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      1.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    140.10 TO NODE    133.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERSHED AREA =      31.700 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.181 HOURS
  FOOTHILL S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.975; LOW LOSS FRACTION = 0.990
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.19; 30-MINUTE =  0.55;  1-HOUR =  0.78
    3-HOUR =  1.50;    6-HOUR =  2.30; 24-HOUR =  4.75
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.999; 30-MINUTE = 0.999;  1-HOUR = 0.999
    3-HOUR = 1.000;    6-HOUR = 1.000; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE    133.00 TO NODE    133.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    133.00 TO NODE    133.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================
============================================================================
```

* AES FLOODSCx PROGRAM RESULTS SUMMARY *

INPUT FILENAME: [ST1_2_P.DAT]

UPSTREAM NODE #	DOWNSTREAM NODE #	HYDROLOGIC/HYDRAULIC PROCESS	UPSTREAM PEAK (CFS)	DOWNSTREAM PEAK (CFS)	TIME(2) TO PEAK (HR)	MAX. STORAGE MODELED (AF)	FOOTNOTES
100.10	106.00	Subarea (UH) Added to Stream #1	0.0	358.7	16.100		
106.11	106.00	Subarea (UH) Added to Stream #2	0.0	1125.1	16.117		
106.00	106.00	Stream #2 Added to: Stream #1	358.7	1482.6	16.117		
107.11	108.00	Subarea (UH) Added to Stream #3	0.0	20.6	16.150		
108.00	108.00	Stream #3 Added to: Stream #1	1482.6	1498.6	16.117		
110.10	1116.00	Subarea (UH) Added to Stream #4	0.0	35.5	16.167		
1116.00	1117.00	Flow-Through Basin: Stream #4	35.5	4.7	17.367	3.79	
1117.00	108.00	Stream #4 Added to: Stream #1	1498.6	1500.8	16.117		
130.10	133.00	Subarea (UH) Added to Stream #5	0.0	13.1	16.117		
133.00	133.00	Stream #5 Added to: Stream #1	1500.8	1513.9	16.117		
0.00	1.00	Zero Out: Stream #2	1125.1	0.0			
140.10	133.00	Subarea (UH) Added to Stream #2	0.0	18.1	16.167		
133.00	133.00	Stream #2 Added to: Stream #1	1513.9	1526.4	16.117		
133.00	133.00	View: Stream #1		1526.4	16.117	68.06	3

Notes: 1 = BASIN MODEL VOLUME EXCEEDED; 2 = TIME IS AT END OF 1-MINUTE UNIT INTERVAL
3 = RUNOFF ESTIMATES DO NOT EXTEND PAST 2 DAYS AFTER THE PEAK DAY OF THE DESIGN STORM

END OF FLOODSCx ROUTING ANALYSIS

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

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             Ver. 8.0  Release Date: 01/01/2003  License ID 1261

                          Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* SPRING TRAILS               JUNE, 2011                    J - 13565-C    *
* BASIN 1 - POST PROJECT           1-YR PRECIPITATION WITH AMC-I           *
* FOR HCOC INFILTRAION BASIN MODELING                                      *
 ***************************************************************************

  FILE NAME: ST1_1_P.DAT
  TIME/DATE OF STUDY: 18:35 06/07/2011


                         ** INPUT SUMMARY **


****************************************************************************
  FLOW PROCESS FROM NODE    100.10 TO NODE    106.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #1<<<<<
============================================================================
  WATERSHED AREA =     357.100 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.118 HOURS
  FOOTHILL S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.620; LOW LOSS FRACTION = 0.970
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.18; 30-MINUTE =  0.45;  1-HOUR =  0.65
    3-HOUR =  1.12;    6-HOUR =  1.70; 24-HOUR =  3.20
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.984; 30-MINUTE = 0.984;  1-HOUR = 0.984
    3-HOUR = 0.998;    6-HOUR = 0.999; 24-HOUR = 0.999


****************************************************************************
  FLOW PROCESS FROM NODE    106.11 TO NODE    106.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERSHED AREA =    1556.600 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.207 HOURS
  MOUNTAIN S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.390; LOW LOSS FRACTION = 0.990
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.18; 30-MINUTE =  0.45;  1-HOUR =  0.65
    3-HOUR =  1.12;    6-HOUR =  1.70; 24-HOUR =  3.20
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.931; 30-MINUTE = 0.931;  1-HOUR = 0.931
    3-HOUR = 0.990;    6-HOUR = 0.995; 24-HOUR = 0.997


****************************************************************************
  FLOW PROCESS FROM NODE    106.00 TO NODE    106.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    107.11 TO NODE    108.00 IS CODE =   1
```

```
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #3<<<<<
============================================================================
  WATERSHED AREA =      33.500 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.174 HOURS
  FOOTHILL S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.925; LOW LOSS FRACTION = 0.990
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.18; 30-MINUTE =  0.45;  1-HOUR =  0.65
    3-HOUR =  1.12;    6-HOUR =  1.70; 24-HOUR =  3.20
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.999; 30-MINUTE = 0.999;  1-HOUR = 0.999
    3-HOUR = 1.000;    6-HOUR = 1.000; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE    108.00 TO NODE    108.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    110.10 TO NODE   1116.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #4<<<<<
============================================================================
  WATERSHED AREA =      40.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.168 HOURS
  VALLEY(DEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.770; LOW LOSS FRACTION = 0.540
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.18; 30-MINUTE =  0.45;  1-HOUR =  0.65
    3-HOUR =  1.12;    6-HOUR =  1.70; 24-HOUR =  3.20
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.998; 30-MINUTE = 0.998;  1-HOUR = 0.998
    3-HOUR = 1.000;    6-HOUR = 1.000; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE   1116.00 TO NODE   1117.00 IS CODE = 3.2
----------------------------------------------------------------------------
  >>>>>FLOW-THROUGH DETENTION BASIN ROUTING MODEL APPLIED TO STREAM #4<<<<<
============================================================================
  ROUTE RUNOFF HYDROGRAPH FROM STREAM NUMBER 4
  THROUGH A FLOW-THROUGH DETENTION BASIN.
  SPECIFIED BASIN CONDITIONS ARE AS FOLLOWS:
  DEAD STORAGE(AF) =      0.000
  SPECIFIED DEAD STORAGE(AF) FILLED =      0.000
  SPECIFIED EFFECTIVE VOLUME(AF) FILLED ABOVE OUTLET =      0.000
  DETENTION BASIN CONSTANT LOSS RATE(CFS) =    0.62

  BASIN DEPTH VERSUS OUTFLOW AND STORAGE INFORMATION:

          INTERVAL    DEPTH      OUTFLOW     STORAGE
           NUMBER      (FT)       (CFS)        (AF)
               1        0.00        0.00       0.000
               2        1.00        1.52       3.010
               3        2.00       28.00       9.420
               4        3.00      100.00      20.000
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE   1117.00 TO NODE    108.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 4 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


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

```
  FLOW PROCESS FROM NODE    130.10 TO NODE    133.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #5<<<<<
============================================================================
  WATERSHED AREA =      19.400 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.138 HOURS
  FOOTHILL S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.955; LOW LOSS FRACTION = 0.990
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.18; 30-MINUTE =  0.45;  1-HOUR =  0.65
    3-HOUR =  1.12;    6-HOUR =  1.70; 24-HOUR =  3.20
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.999; 30-MINUTE = 0.999;  1-HOUR = 0.999
    3-HOUR = 1.000;    6-HOUR = 1.000; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE    133.00 TO NODE    133.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 5 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      1.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    140.10 TO NODE    133.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERSHED AREA =      31.700 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.181 HOURS
  FOOTHILL S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.975; LOW LOSS FRACTION = 0.990
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.18; 30-MINUTE =  0.45;  1-HOUR =  0.65
    3-HOUR =  1.12;    6-HOUR =  1.70; 24-HOUR =  3.20
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.999; 30-MINUTE = 0.999;  1-HOUR = 0.999
    3-HOUR = 1.000;    6-HOUR = 1.000; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE    133.00 TO NODE    133.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    133.00 TO NODE    133.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================
============================================================================
```

```
+-----------------------------------------------------------------------------------------------------------------------------+
|                                        * AES FLOODSCx PROGRAM RESULTS SUMMARY *                                             |
|INPUT FILENAME: [ST1_1_P.DAT    ]                                                                          Page:   1 of    |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|UPSTREAM  DOWNSTREAM|                               | UPSTREAM   DOWNSTREAM| TIME(2) TO | MAX. STORAGE|           |
| NODE #     NODE #  | HYDROLOGIC/HYDRAULIC PROCESS  |PEAK (CFS)  PEAK (CFS)| PEAK (HR)  | MODELED (AF)| FOOTNOTES |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|   100.10     106.00| Subarea (UH) Added to Stream #1|       0.0       304.5|     16.100 |             |           |
|   106.11     106.00| Subarea (UH) Added to Stream #2|       0.0       923.2|     16.117 |             |           |
|   106.00     106.00| Stream #2 Added to:   Stream #1|     304.5      1225.7|     16.117 |             |           |
|   107.11     108.00| Subarea (UH) Added to Stream #3|       0.0        17.6|     16.167 |             |           |
|   108.00     108.00| Stream #3 Added to:   Stream #1|    1225.7      1238.3|     16.117 |             |           |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|   110.10    1116.00| Subarea (UH) Added to Stream #4|       0.0        31.1|     16.167 |             |           |
|  1116.00    1117.00| Flow-Through Basin:   Stream #4|      31.1         1.4|     18.950 |         2.76|           |
|  1117.00     108.00| Stream #4 Added to:   Stream #1|    1238.3      1239.3|     16.117 |             |           |
|   130.10     133.00| Subarea (UH) Added to Stream #5|       0.0        11.3|     16.117 |             |           |
|   133.00     133.00| Stream #5 Added to:   Stream #1|    1239.3      1250.5|     16.117 |             |           |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|     0.00       1.00| Zero Out:             Stream #2|     923.2         0.0|            |             |           |
|   140.10     133.00| Subarea (UH) Added to Stream #2|       0.0        15.6|     16.167 |             |           |
|   133.00     133.00| Stream #2 Added to:   Stream #1|    1250.5      1260.1|     16.117 |             |           |
|   133.00     133.00| View:                 Stream #1|                1260.1|     16.117 |        43.29|     3     |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|Notes: 1 = BASIN MODEL VOLUME EXCEEDED; 2 = TIME IS AT END OF 1-MINUTE UNIT INTERVAL                                          |
|       3 = RUNOFF ESTIMATES DO NOT EXTEND PAST 2 DAYS AFTER THE PEAK DAY OF THE DESIGN STORM                                   |
+-----------------------------------------------------------------------------------------------------------------------------+

  END OF FLOODSCx ROUTING ANALYSIS
```

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

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                          Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* SPRING TRAILS               JUNE, 2011                    J - 13565-C    *
* BASIN 1 - POST PROJECT           5-YR PRECIPITATION WITH AMC-I           *
* FOR HCOC INFILTRAION BASIN MODELING                                      *
 ***************************************************************************

  FILE NAME: ST1_5_P.DAT
  TIME/DATE OF STUDY: 18:38 06/07/2011


                         ** INPUT SUMMARY **


****************************************************************************
  FLOW PROCESS FROM NODE    100.10 TO NODE    106.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #1<<<<<
============================================================================
  WATERSHED AREA =     357.100 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.118 HOURS
  FOOTHILL S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.620; LOW LOSS FRACTION = 0.970
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.21; 30-MINUTE =  0.63;  1-HOUR =  0.98
    3-HOUR =  1.90;    6-HOUR =  2.92; 24-HOUR =  6.92
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.984; 30-MINUTE = 0.984;  1-HOUR = 0.984
    3-HOUR = 0.998;    6-HOUR = 0.999; 24-HOUR = 0.999


****************************************************************************
  FLOW PROCESS FROM NODE    106.11 TO NODE    106.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERSHED AREA =    1556.600 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.207 HOURS
  MOUNTAIN S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.390; LOW LOSS FRACTION = 0.990
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.21; 30-MINUTE =  0.63;  1-HOUR =  0.98
    3-HOUR =  1.90;    6-HOUR =  2.92; 24-HOUR =  6.92
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.931; 30-MINUTE = 0.931;  1-HOUR = 0.931
    3-HOUR = 0.990;    6-HOUR = 0.995; 24-HOUR = 0.997


****************************************************************************
  FLOW PROCESS FROM NODE    106.00 TO NODE    106.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    107.11 TO NODE    108.00 IS CODE =   1
```

```
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #3<<<<<
============================================================================
  WATERSHED AREA =      33.500 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.174 HOURS
  FOOTHILL S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.925; LOW LOSS FRACTION = 0.990
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.21; 30-MINUTE =  0.63;  1-HOUR =  0.98
    3-HOUR =  1.90;    6-HOUR =  2.92; 24-HOUR =  6.92
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.999; 30-MINUTE = 0.999;  1-HOUR = 0.999
    3-HOUR = 1.000;    6-HOUR = 1.000; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE    108.00 TO NODE    108.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    110.10 TO NODE   1116.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #4<<<<<
============================================================================
  WATERSHED AREA =      40.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.168 HOURS
  VALLEY(DEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.770; LOW LOSS FRACTION = 0.540
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.21; 30-MINUTE =  0.63;  1-HOUR =  0.98
    3-HOUR =  1.90;    6-HOUR =  2.92; 24-HOUR =  6.92
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.998; 30-MINUTE = 0.998;  1-HOUR = 0.998
    3-HOUR = 1.000;    6-HOUR = 1.000; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE   1116.00 TO NODE   1117.00 IS CODE = 3.2
----------------------------------------------------------------------------
  >>>>>FLOW-THROUGH DETENTION BASIN ROUTING MODEL APPLIED TO STREAM #4<<<<<
============================================================================
  ROUTE RUNOFF HYDROGRAPH FROM STREAM NUMBER 4
  THROUGH A FLOW-THROUGH DETENTION BASIN.
  SPECIFIED BASIN CONDITIONS ARE AS FOLLOWS:
  DEAD STORAGE(AF) =      0.000
  SPECIFIED DEAD STORAGE(AF) FILLED =      0.000
  SPECIFIED EFFECTIVE VOLUME(AF) FILLED ABOVE OUTLET =      0.000
  DETENTION BASIN CONSTANT LOSS RATE(CFS) =    0.62

  BASIN DEPTH VERSUS OUTFLOW AND STORAGE INFORMATION:

          INTERVAL    DEPTH      OUTFLOW     STORAGE
           NUMBER      (FT)       (CFS)        (AF)
               1        0.00        0.00       0.000
               2        1.00        1.52       3.010
               3        2.00       28.00       9.420
               4        3.00      100.00      20.000
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE   1117.00 TO NODE    108.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 4 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


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

```
  FLOW PROCESS FROM NODE    130.10 TO NODE    133.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #5<<<<<
============================================================================
  WATERSHED AREA =      19.400 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.138 HOURS
  FOOTHILL S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.955; LOW LOSS FRACTION = 0.990
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.21; 30-MINUTE =  0.63;  1-HOUR =  0.98
    3-HOUR =  1.90;    6-HOUR =  2.92; 24-HOUR =  6.92
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.999; 30-MINUTE = 0.999;  1-HOUR = 0.999
    3-HOUR = 1.000;    6-HOUR = 1.000; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE    133.00 TO NODE    133.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 5 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      1.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    140.10 TO NODE    133.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERSHED AREA =      31.700 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.181 HOURS
  FOOTHILL S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.975; LOW LOSS FRACTION = 0.990
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.21; 30-MINUTE =  0.63;  1-HOUR =  0.98
    3-HOUR =  1.90;    6-HOUR =  2.92; 24-HOUR =  6.92
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.999; 30-MINUTE = 0.999;  1-HOUR = 0.999
    3-HOUR = 1.000;    6-HOUR = 1.000; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE    133.00 TO NODE    133.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    133.00 TO NODE    133.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================
============================================================================
```

```
+-----------------------------------------------------------------------------------------------------------------------------+
|                                        * AES FLOODSCx PROGRAM RESULTS SUMMARY *                                             |
|INPUT FILENAME: [ST1_5_P.DAT    ]                                                                          Page:   1 of    |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|UPSTREAM  DOWNSTREAM|                               | UPSTREAM   DOWNSTREAM| TIME(2) TO | MAX. STORAGE|           |
| NODE #     NODE #  | HYDROLOGIC/HYDRAULIC PROCESS  |PEAK (CFS)  PEAK (CFS)| PEAK (HR)  | MODELED (AF)| FOOTNOTES |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|   100.10     106.00| Subarea (UH) Added to Stream #1|       0.0       428.5|     16.100 |             |           |
|   106.11     106.00| Subarea (UH) Added to Stream #2|       0.0      1386.9|     16.117 |             |           |
|   106.00     106.00| Stream #2 Added to:   Stream #1|     428.5      1814.1|     16.117 |             |           |
|   107.11     108.00| Subarea (UH) Added to Stream #3|       0.0        25.8|     16.150 |             |           |
|   108.00     108.00| Stream #3 Added to:   Stream #1|    1814.1      1834.9|     16.117 |             |           |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|   110.10    1116.00| Subarea (UH) Added to Stream #4|       0.0        41.3|     16.167 |             |           |
|  1116.00    1117.00| Flow-Through Basin:   Stream #4|      41.3         9.2|     16.650 |         4.88|           |
|  1117.00     108.00| Stream #4 Added to:   Stream #1|    1834.9      1842.0|     16.117 |             |           |
|   130.10     133.00| Subarea (UH) Added to Stream #5|       0.0        16.3|     16.117 |             |           |
|   133.00     133.00| Stream #5 Added to:   Stream #1|    1842.0      1858.4|     16.117 |             |           |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|     0.00       1.00| Zero Out:             Stream #2|    1386.9         0.0|            |             |           |
|   140.10     133.00| Subarea (UH) Added to Stream #2|       0.0        22.7|     16.167 |             |           |
|   133.00     133.00| Stream #2 Added to:   Stream #1|    1858.4      1875.0|     16.117 |             |           |
|   133.00     133.00| View:                 Stream #1|                1875.0|     16.117 |       122.89|     3     |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|Notes: 1 = BASIN MODEL VOLUME EXCEEDED; 2 = TIME IS AT END OF 1-MINUTE UNIT INTERVAL                                          |
|       3 = RUNOFF ESTIMATES DO NOT EXTEND PAST 2 DAYS AFTER THE PEAK DAY OF THE DESIGN STORM                                   |
+-----------------------------------------------------------------------------------------------------------------------------+

  END OF FLOODSCx ROUTING ANALYSIS
```

RICK ENGINEERING COMPANY

Water Quality Treatment Calculations

Job Name: Spring Hills - TTM15576
Job Number: 13565 C
Date: 6/1/2011

Impervious Area Calculation

Treatment Location: 100 - Northern Discharge Point (to Cable Canyon)

Total Watershed Area = 40 acres

			% Impervious	
Roadway Area =	7.4	acres	100%	
Lot Area =	16.4	0.78	60%	
OpenSpace Area =	16.2	acres	5%	Area Check = OK

Total Impervious Area = 18.1

Treatment Location: 100-A - Northern Area to Cable Canyon

Total Watershed Area = 25.7 acres

			% Impervious	
Roadway Area =	3.3	acres	100%	
Lot Area =	8.6	acres	50%	
OpenSpace Area =	13.8	acres	5%	Area Check = OK

Total Impervious Area = 8.3 acres

Treatment Location: 200 - Central Discharge Point

Total Watershed Area = 23.4 acres

			% Impervious	
Roadway Area =	4.3	acres	100%	
Lot Area =	11	acres	60%	
OpenSpace Area =	8.1	acres	5%	Area Check = OK

Total Impervious Area = 11.3 acres

Treatment Location: 300 - Southern Discharge Point (to Meyer Canyon)

Total Watershed Area = 88.6 acres

			% Impervious	
Roadway Area =	18.6	acres	100%	
Lot Area =	37.4	acres	60%	
OpenSpace Area =	32.6	acres	5%	Area Check = OK

Total Impervious Area = 42.7 acres

RICK ENGINEERING COMPANY

Water Quality Treatment Calculations

Job Name: Spring Hills - TTM15576
Job Number: 13565 C
Date: 6/1/2011

San Bernardino County Design Criteria

Project Site Location: North of Meyers Road

Treatment Location # : 100
Description : Northern Discharge Point (to Cable Canyon)

NOAA Atlas 14 Precipitation 0.78 inches/hour (2-year, 1-hour)
Region Mountain

Drainage Area = 40 acres
Impervious Area = 18.1 acres

i = Imperv Area/Drainage Area = 0.451

Flow Based BMP Sizing

$C_{BMP} = 0.858\ i^3 - 0.78\ i^2 + 0.774\ i + 0.04$

C_{BMP} = 0.31

I_{BMP} = 0.563784 in/hr
A (area) = 40 acres
C = 0.31

$Q_{BMP} = C_{BMP} \times i_{BMP} \times A$

Table D-1:

Quantity	Valley	Mountain	Desert
I	0.2787	0.3614	0.325
P_6	1.4807	1.909	1.2371

Regression Coefficient = 0.3614

Q_{BMP} = 6.97 cfs

Volume Based BMP Sizing

6-hour mean storm rainfall = 1.48902 inches
Desired Drawdown Time = 48 hours
a = drawdown coefficient = 1.963

P6 Coefficient = 1.909 *(from D-1)*

Drawdown Coefficient = 1.582 *(24-hours)*
1.963 *(48-hours)*

Maximized Detention Volume (Precipitation):

$P_0 = a \times C_{BMP} \times P_6$

P_0 = 0.90 inches

Target Capture Volume:

$V_0 = (P_0 \times A) / 12$

V_0 = 3.01 acre-feet

average drawdown flowrate

$Q_{DD\text{ - average}} = V_0 / \text{Time}$

$Q_{DD\text{ - ave}}$= 0.76 cfs

RICK ENGINEERING COMPANY

Water Quality Treatment Calculations

Job Name: Spring Hills - TTM15576
Job Number: 13565 C
Date: 6/1/2011

San Bernardino County Design Criteria

Project Site Location: North of Meyers Road

Treatment Location # : 200
Description : central Discharge Point (to Cable Canyon)

NOAA Atlas 14 Precipitation 0.78 inches/hour (2-year, 1-hour)
Region Mountain

Drainage Area = 23.4 acres
Impervious Area = 11.3 acres

i = Imperv Area/Drainage Area = 0.483

Flow Based BMP Sizing

$C_{BMP} = 0.858\ i^3 - 0.78\ i^2 + 0.774\ i + 0.04$

C_{BMP} = 0.33

I_{BMP} = 0.563784 in/hr
A (area) = 23.4 acres
C = 0.33

$Q_{BMP} = C_{BMP} \times i_{BMP} \times A$

Table D-1:

Quantity	Valley	Mountain	Desert
I	0.2787	0.3614	0.325
P_6	1.4807	1.909	1.2371

Regression Coefficient = 0.3614

Q_{BMP} = 4.34 cfs

Volume Based BMP Sizing

6-hour mean storm rainfall = 1.48902 inches
Desired Drawdown Time = 48 hours
a = drawdown coefficient = 1.963

P6 Coefficient = 1.909 *(from D-1)*

Drawdown Coefficient = 1.582 *(24-hours)*
1.963 *(48-hours)*

Maximized Detention Volume (Precipitation):

$P_0 = a \times C_{BMP} \times P_6$

P_0 = 0.96 inches

Target Capture Volume:

$V_0 = (P_0 \times A) / 12$

V_0 = 1.87 acre-feet

average drawdown flowrate

$Q_{DD\text{ - average}} = V_0 / \text{Time}$

$Q_{DD\text{ - ave}}$= 0.47 cfs

RICK ENGINEERING COMPANY

Water Quality Treatment Calculations

Job Name: Spring Hills - TTM15576
Job Number: 13565 C
Date: 6/1/2011

San Bernardino County Design Criteria

Project Site Location: North of Meyers Road

Treatment Location # : 300
Description : Southern Discharge Point (to Meyer Canyon)

NOAA Atlas 14 Precipitation 0.78 inches/hour (2-year, 1-hour)
Region Mountain

Drainage Area = 88.6 acres
Impervious Area = 42.7 acres

i = Imperv Area/Drainage Area = 0.482

Flow Based BMP Sizing

$C_{BMP} = 0.858\ i^3 - 0.78\ i^2 + 0.774\ i + 0.04$

C_{BMP} = 0.33

I_{BMP} = 0.563784 in/hr
A (area) = 88.6 acres
C = 0.33

$Q_{BMP} = C_{BMP} \times i_{BMP} \times A$

Table D-1:

Quantity	Valley	Mountain	Desert
I	0.2787	0.3614	0.325
P_6	1.4807	1.909	1.2371

Regression Coefficient = 0.3614

Q_{BMP} = 16.37 cfs

Volume Based BMP Sizing

6-hour mean storm rainfall = 1.48902 inches
Desired Drawdown Time = 48 hours
a = drawdown coefficient = 1.963

P6 Coefficient = 1.909 *(from D-1)*

Drawdown Coefficient = 1.582 *(24-hours)*
1.963 *(48-hours)*

Maximized Detention Volume (Precipitation):

$P_0 = a \times C_{BMP} \times P_6$

P_0 = 0.96 inches

Target Capture Volume:

$V_0 = (P_0 \times A) / 12$

V_0 = 7.07 acre-feet

average drawdown flowrate

$Q_{DD\text{ - average}} = V_0 / \text{Time}$

$Q_{DD\text{ - ave}}$= 1.78 cfs

RICK ENGINEERING COMPANY

Water Quality Treatment Calculations

Job Name: Spring Hills - TTM15576
Job Number: 13565 C
Date: 6/1/2011

San Bernardino County Design Criteria

Project Site Location: Northern Area Draining to Cable Canyon

Treatment Location # : 100-A
Description : Low Flows will be sent to Basin 100 - Water Quality Only

NOAA Atlas 14 Precipitation 0.78 inches/hour (2-year, 1-hour)
Region Mountain

Drainage Area = 25.7 acres
Impervious Area = 8.29 acres

i = Imperv Area/Drainage Area = 0.323

Flow Based BMP Sizing

$C_{BMP} = 0.858\ i^3 - 0.78\ i^2 + 0.774\ i + 0.04$

C_{BMP} = 0.24

I_{BMP} = 0.563784 in/hr
A (area) = 25.7 acres
C = 0.24

$Q_{BMP} = C_{BMP} \times i_{BMP} \times A$

Table D-1:

Quantity	Valley	Mountain	Desert
I	0.2787	0.3614	0.325
P_6	1.4807	1.909	1.2371

Regression Coefficient = 0.3614

Q_{BMP} = 3.44 cfs

Volume Based BMP Sizing

6-hour mean storm rainfall = 1.48902 inches
Desired Drawdown Time = 48 hours
a = drawdown coefficient = 1.963

P6 Coefficient = 1.909 *(from D-1)*

Drawdown Coefficient = 1.582 *(24-hours)*
1.963 *(48-hours)*

Maximized Detention Volume (Precipitation):

$P_0 = a \times C_{BMP} \times P_6$

P_0 = 0.69 inches

Target Capture Volume:

$V_0 = (P_0 \times A) / 12$

V_0 = 1.49 acre-feet

average drawdown flowrate

$Q_{DD\text{ - average}} = V_0 / \text{Time}$

$Q_{DD\text{ - ave}}$= 0.37 cfs

Leighton and Associates, Inc.
A LEIGHTON GROUP COMPANY

December 15, 2008

Project No. 022249-003

To: Montecito Equities, Ltd.
2054 Cambridge Avenue
Cardiff, California 92007

Attention: Mr. David DeMoranville

Subject: Results of Infiltration Testing at the Proposed Martin Ranch Development, Devore Area of Unincorporated San Bernardino County (City of San Bernardino Sphere of Influence), California

Introduction

In response to your request, Leighton and Associates has conducted infiltration testing at selected points within the proposed Martin Ranch development in the Devore area of unincorporated San Bernardino County, California. The project is within the City of San Bernardino's sphere of influence and is being processed through the City. The purpose of our study was to explore the subsurface soil conditions at the locations of the infiltration tests and to evaluate the infiltration rate of the soil at the test locations.

Scope of Work

Our study included:

- Review available, relevant geotechnical literature, reports and historic aerial photographs available from our in-house library.

- Located and marked the proposed infiltration test locations for coordination with Underground Service Alert (USA).

10532 Acacia Street ▪ Suite B-6 ▪ Rancho Cucamonga, CA 91730
909.484.2205 ▪ Fax 909.484.2170 ▪ www.leightongeo.com

- Excavated 4 backhoe test pits to a depth of 2 to 3 feet below the surface for infiltration testing, and 2 test pits 8 feet below the ground surface near the infiltration sites to look for fine grain layers in the subsurface. The backhoe test pits were excavated by a subcontracted backhoe operator and were logged by a member of our technical staff. Bulk soil samples were collected from the test pits and transported to our laboratory for testing.

- Conducted two infiltration tests with a double ring infiltrometer and 4 simple percolation tests. Two of the simple percolation tests were conducted near the infiltrometer to help standardize the results. The double ring infiltrometer tests were conducted in general conformance with ASTM D 3385. The simple percolation tests were conducted in general accordance with the On-Site Waste Water Disposal System Soil Percolation test report standards for San Bernardino County. The results of the field testing are provided at the rear of the text. The Test Locations are shown on Figure 1.

- Representative soil samples obtained from the test pits were tested in our laboratory for grain size distribution and sand equivalent.

- Engineering analysis and evaluation of the data collected.

- Preparation of this letter report presenting the results of our infiltration testing.

Findings

Based on our field and laboratory testing, the near surface soils at the test points appear to be relatively well graded, coarse grained soils consisting predominately of silty sand and gravelly sand with silt. The soils exposed in the tests pits were relatively uniform to the depth explored without significant fine grained layers observed. However, the soils in the vicinity of the San Andreas Fault Zone are expected to be somewhat finer grained, as a result of shearing along the fault.

The percolation rate of the onsite soils tested varies from a low of about 4 min/in to a high of about 2 min/in. The infiltration rate of the soils tested varies from a low of about 0.6 in/hr (1.6 cm/hr) to a high of about 2.2 in/hr (5.6 cm/hr). We suggest that the lower infiltration value (0.6 in/hr) be used in detention basin design, since ideal infiltration conditions may not always be present at the surface. These results are considered representative for the site. However, soils near the San Andres fault are expected to have lower infiltration rates than other onsite soils. Additional testing should be considered if additional test data is desired and/or once the exact locations and depths of the proposed basins are determined.

We hope this provides the information needed at this time. Please contact us if you have any questions regarding this letter.

Respectfully submitted,

LEIGHTON AND ASSOCIATES, INC.

REGISTERED PROFESSIONAL ENGINEER
JASON D. HERTZBERG
No. 2711
Exp. 6-30-09
GEOTECHNICAL
STATE OF CALIFORNIA

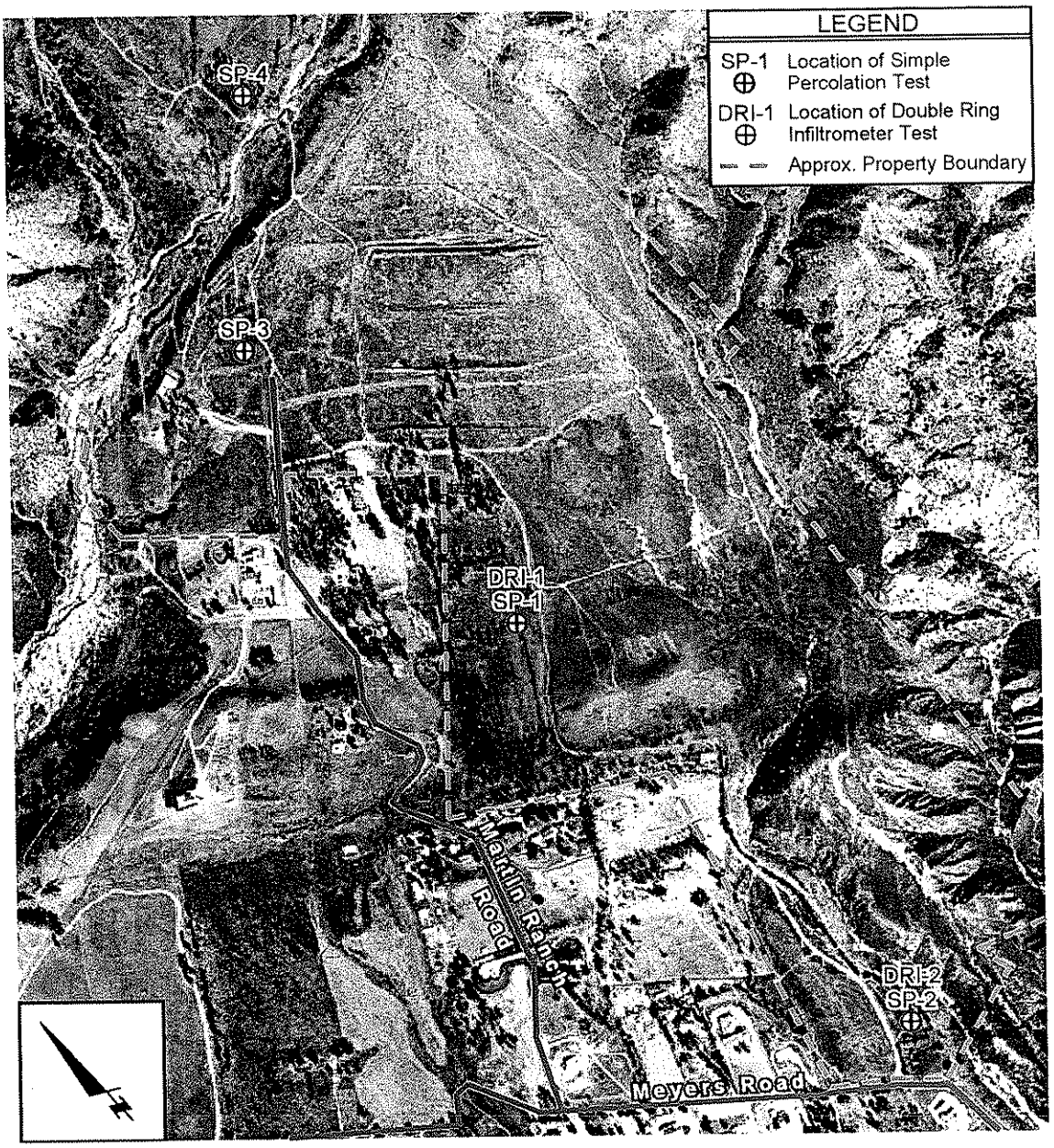
Jason D. Hertzberg, GE 2711
Associate Engineer

Philip A. Buchiarelli, CEG 1715
Principal Geologist

SFR/PB/JDH/rsh

Attachments: Figure 1 - Test Location Map
Infiltration and Percolation Rate Data
Laboratory Test Results

Distribution: (3) Addressee
(2) Rick Engineering
Attention: Mr. Luis Figueroa



Leighton & Associates, Inc.

MARTIN RANCH DEVELOPMENT Devore Area of Unincorporated San Bernardino County, California	**DOUBLE RING INFILTROMETER & PERCOLATION TEST LOCATIONS**	PROJECT NO. 022249-001 DATE December, 2008

Figure No. 1

Test Hole Number:	DRI-1	Inner Ring Penetration:	4"
Date Excavated:	11/19/2008	Outer Ring Penetration:	6"
Actual Percolation Tested by:	SFR	Liquid Used	Tap Water
Soil Description:	Silty Sand with Gravel	Diameter Inner Ring:	12" (729.7 cm^2)
USCS Soil Type:	(SM)g	Diameter Annular Ring:	24" (2,918.6 cm^2)
Surface Preparation:	Surface vegatation and upper 1 foot of topsoil removed prior to testing.		

TEST DATA

Time	Δt (min)	Inner Ring		Annular Space		Iner. Infil. Rate		Remarks
		Water Depth cm	Volume Infiltrated cm^3	Water Depth cm	Volume Infiltrated cm^3	Inner cm/h	Annular cm/h	
9:20:00	15.00	4.0	500	4.2	1800	2.74	2.47	Sunny, Warm
9:35:00		4.4		4.3				
9:35:00	15.00	4.2	500	4.3	1900	2.74	2.60	
9:50:00		4.4		4.4				
9:50:00	15.00	4.4	400	4.4	1900	2.19	2.60	
10:05:00		4.4		4.4				
10:05:00	15.00	4.4	450	4.4	1400	2.47	1.92	
10:20:00		4.4		4.4				
10:20:00	30.00	4.4	700	4.4	2500	1.92	1.71	
10:50:00		4.4		4.4				
10:50:00	30.00	4.4	600	4.4	2400	1.64	1.64	
11:20:00		4.5		4.5				
11:20:00	60.00	4.5	1150	4.5	4400	1.58	1.51	Warm, slight breezse
12:20:00		4.4		4.4				
12:20:00	60.00	4.4	1200	4.4	4600	1.64	1.58	
13:20:00		4.4		4.4				
13:20:00	60.00	4.4	1175	4.4	4700	1.61	1.61	
14:20:00		4.5		4.5				

Δt - Change in time; D_0 - Initial Water Level; D_1 - Final Water Level; ΔD - Change in depth

Double Ring Infiltrometer Test Data	Project Number	022249-003	
DRI - 1	Project Name	Martin Ranch	
Martin Ranch Development San Bernardino County	Date	11/19/2008	**Leighton**

Test Hole Number:	DRI-2	Inner Ring Penetration:	2.5" *
Date Excavated:	11/19/2008	Outer Ring Penetration:	4" *
Actual Percolation Tested by:	SFR	Liquid Used	Tap Water
Soil Description:	Silty Sand with Gravel	Diameter Inner Ring:	12" (729.7 cm^2)
USCS Soil Type:	(SM)g	Diameter Annular Ring:	24" (2,918.6 cm^2)
Surface Preparation:	Surface vegatation and upper 1 foot of topsoil removed prior to testing.		

TEST DATA

Time	Δt (min)	Inner Ring		Annular Space		Iner. Infil. Rate		Remarks
		Water Depth cm	Volume Infiltrated cm^3	Water Depth cm	Volume Infiltrated cm^3	Inner cm/h	Annular cm/h	
9:50:00	15.00	3.3	1125	3.3	3000	6.17	4.11	Clear Sky, Sunny, Warm
10:05:00		3.2		3.2				
10:05:00	15.00	3.2	1100	3.2	2900	6.03	3.97	
10:20:00		3.2		3.2				
10:20:00	15.00	3.2	1150	3.2	3000	6.30	4.11	
10:35:00		2.9		3.0				
10:35:00	15.00	3.5	1025	3.5	2900	5.62	3.97	
10:50:00		3.5		3.4				
10:50:00	30.00	3.5	2125	3.5	5800	5.82	3.97	Very Warm
11:20:00		3.2		3.2				
11:20:00	30.00	3.3	2300	3.1	5900	6.30	4.04	Warm, slight breezse
11:50:00		3.3		3.3				
11:50:00	60.00	3.2	4800	3.1	12500	6.58	4.28	Warm, slight breezse
12:50:00		3.2		3.1				
12:50:00	60.00	3.2	5450	3.2	13200	7.47	4.52	
13:50:00		3.1		3.0				
13:50:00	60.00	3.2	5700	3.2	13400	7.81	4.59	
14:50:00		3.2		3.2				
14:50:00	60.00	3.2	5800	3.2	14500	7.95	4.97	
15:50:00		3.2		3.2				

Δt - Change in time; D_0 - Initial Water Level; D_1 - Final Water Level; ΔD - Change in depth

*Tightly-packed soil conditions encountered. Apparatus was unable to be installed to recommended depth.

Double Ring Infiltrometer Test Data	Project Number	022249-003	
DRI - 2	Project Name	Martin Ranch	
Martin Ranch Development San Bernardino County	Date	11/19/2008	**Leighton**

Test Hole Number:	SP-1	Depth of Test Hole:	13"
Date Excavated:	11/18/2008	Earth Material:	Silty Sand with Gravel (SM)
Actual Percolation Tested by:	SFR	Test Hole Diameter:	9" (Due to sloughing)

PRESOAK PERIOD

	Date	Time	Time Interval (min)
Start	11/18/2008	12:00	35
Stop	11/18/2008	12:35	

TEST PERIOD

Time	ΔT (min)	D_0 (in)	D_1 (in)	ΔD (in)	Percolation Rate (min/in)
12:35:00 12:40:00	5.00	6	3.375	2.625	1.90
12:40:00 12:45:00	5.00	6	3.125	2.875	1.74
12:45:00 12:50:00	5.00	6	3	3	1.67
12:50:00 12:55:00	5.00	6	3.125	2.875	1.74
12:55:00 13:00:00	5.00	6	3	3	1.67
13:00:00 13:05:00	5.00	6	3.375	2.625	1.90

ΔT - Change in time; D_0 - Initial Water Level; D_1 - Final Water Level; ΔD - Change in depth

Percolation Test Data **SP-1** **Martin Ranch Development** **San Bernardino County**	Project Number	022249-003	Leighton & Associates
	Project Name	Martin Ranch	
	Date	11/18/2008	

Test Hole Number:	SP-2	Depth of Test Hole:	13"
Date Excavated:	11/19/2008	Earth Material:	Silty Sand with Gravel (SM)
Actual Percolation Tested by:	SFR	Test Hole Diameter:	9" (Due to sloughing)

PRESOAK PERIOD

	Date	Time	Time Interval (min)
Start	11/19/2008	10:05	49
Stop	11/19/2008	10:54	

TEST PERIOD

Time	ΔT (min)	D_0 (in)	D_1 (in)	ΔD (in)	Percolation Rate (min/in)
10:56:00 11:01:00	5.00	6	3.75	2.25	2.22
11:01:00 11:06:00	5.00	6	3.125	2.875	1.74
11:06:00 11:11:00	5.00	6	4.375	1.625	3.08
11:11:00 11:16:00	5.00	6	4.75	1.25	4.00
11:16:00 11:21:00	5.00	6	3.125	2.875	1.74
11:21:00 11:26:00	5.00	6	3.375	2.625	1.90
11:26:00 11:31:00	5.00	6	3.875	2.125	2.35
11:31:00 11:36:00	5.00	6	4.5	1.5	3.33

ΔT - Change in time; D_0 - Initial Water Level; D_1 - Final Water Level; ΔD - Change in depth

Percolation Test Data **SP-2** **Martin Ranch Development** **San Bernardino County**	Project Number	022249-003	Leighton & Associates
	Project Name	Martin Ranch	
	Date	11/19/2008	

Test Hole Number:	SP-3	Depth of Test Hole:	13"
Date Excavated:	11/19/2008	Earth Material:	Silty Sand with Gravel (SM)
Actual Percolation Tested by:	SFR	Test Hole Diameter:	9" (Due to sloughing)

PRESOAK PERIOD

	Date	Time	Time Interval (min)
Start	11/19/2008	11:40	55
Stop	11/19/2008	12:35	

TEST PERIOD

Time	ΔT (min)	D_0 (in)	D_1 (in)	ΔD (in)	Percolation Rate (min/in)
12:35:00 12:40:00	5.00	6	3.375	2.625	1.90
12:40:00 12:45:00	5.00	6	3	3	1.67
12:45:00 12:50:00	5.00	6	3.125	2.875	1.74
12:50:00 12:55:00	5.00	6	3.375	2.625	1.90

ΔT - Change in time; D_0 - Initial Water Level; D_1 - Final Water Level; ΔD - Change in depth

Percolation Test Data **SP-3** **Martin Ranch Development** **San Bernardino County**	Project Number	022249-003	Leighton & Associates
	Project Name	Martin Ranch	
	Date	11/19/2008	

Test Hole Number:	SP-4	Depth of Test Hole:	13"
Date Excavated:	11/19/2008	Earth Material:	Silty Sand with Gravel (SM)
Actual Percolation Tested by:	SFR	Test Hole Diameter:	9" (Due to sloughing)

PRESOAK PERIOD

	Date	Time	Time Interval (min)
Start	11/19/2008	3:00	40
Stop	11/19/2008	3:40	

TEST PERIOD

Time	ΔT (min)	D_0 (in)	D_1 (in)	ΔD (in)	Percolation Rate (min/in)
15:40:00 15:45:00	5.00	6	3	3	1.67
15:45:00 15:50:00	5.00	6	3.375	2.625	1.90
15:50:00 15:55:00	5.00	6	3.125	2.875	1.74
15:55:00 16:00:00	5.00	6	3	3	1.67

ΔT - Change in time; D_0 - Initial Water Level; D_1 - Final Water Level; ΔD - Change in depth

Percolation Test Data **SP-4** **Martin Ranch Development** **San Bernardino County**	Project Number Project Name Date	022249-003 Martin Ranch 11/19/2008	Leighton & Associates

Leighton

PARTICLE-SIZE ANALYSIS OF SOILS

ASTM D 422

Project Name: Martin Ranch
Project No. : 022249-003
Exploration No.: TP-1
Sample No.: B-1
Soil Identification: Olive brown silty sand with gravel (SM)g

Tested By : G. Berdy — Date: 12/01/08
Data Input By: J. Ward — Date: 12/04/08

Depth (feet) : 3-5

% Gravel	**26**	**Soil Type**
% Sand	**55**	**(SM)g**
% Fines	**19**	

			Moisture Content of Total Air-Dry Soil	Moisture Content of Air-Dry Soil Passing #10	After Hydrometer & Wet Sieve ret. in #200 Sieve
Specific Gravity (Assumed)	2.70	Wt.of Air-Dry Soil + Cont.(g)	0.00	0.00	
Correction for Specific Gravity	0.99	Dry Wt. of Soil + Cont. (g)	0.00	0.00	156.80
Wt.of Air-Dry Soil + Cont. (g)	4486.10	Wt. of Container No.___ (g)	1.00	1.00	77.05
Wt. of Container	223.91	Moisture Content (%)	0.00	0.00	
Dry Wt. of Soil (g)	4262.19	Wt. of Dry Soil (g)			79.75

Coarse Sieve

U.S. Sieve	Cumulative Wt. Of Dry Soil Retained (g)	% Passing
3"	0.00	100.0
1½"	444.76	89.6
3/4"	689.35	83.8
3/8"	882.87	79.3
No. 4	1094.50	74.3
No. 10	1407.90	67.0
Pan		

Sieve after Hydrometer & Wet Sieve

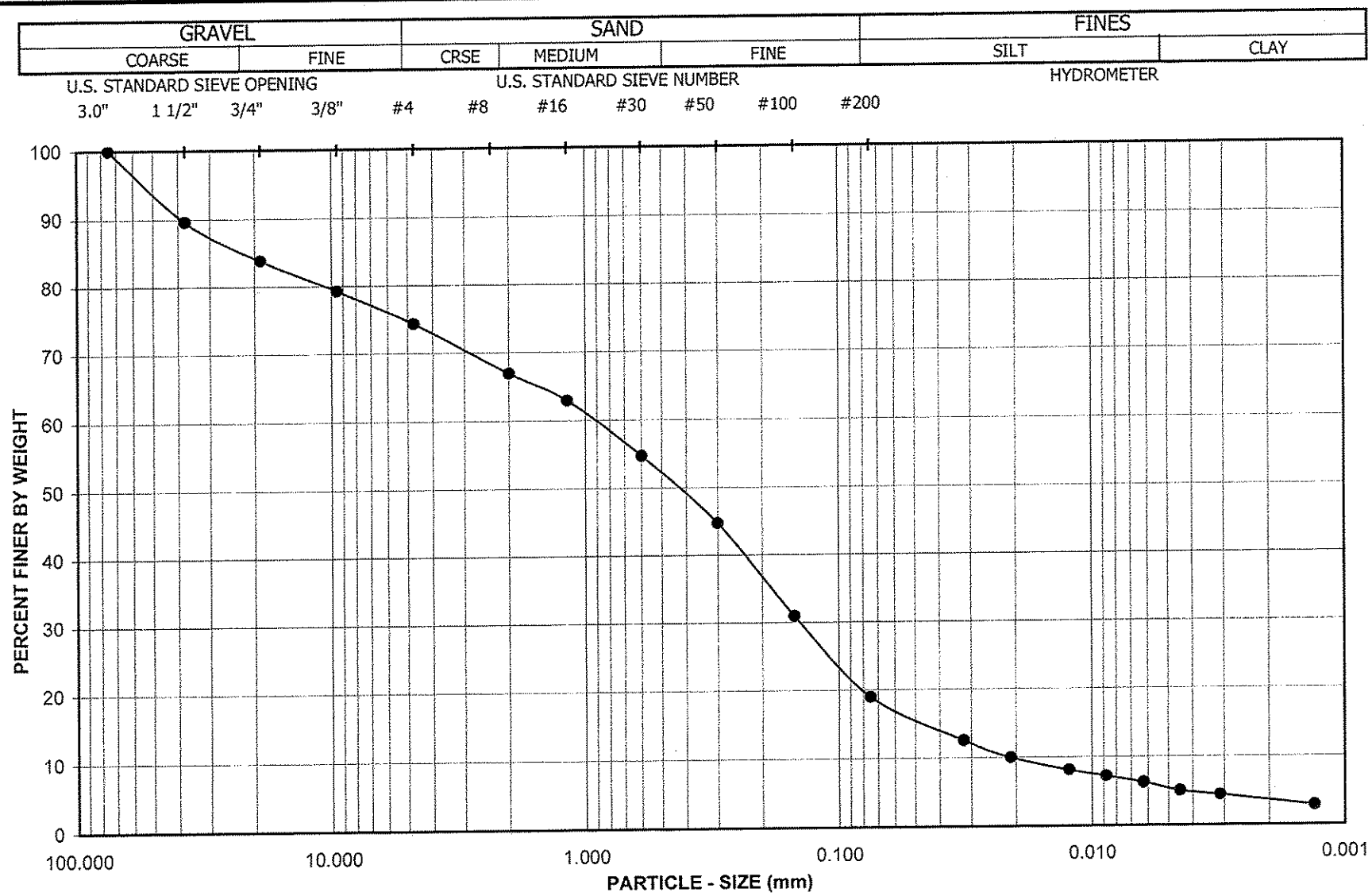
U.S. Sieve Size	Cumulative Wt. Of Dry Soil Retained (g)	% Passing	% Total Sample
No. 10	0.00	100.0	67.0
No. 16	6.39	94.0	62.9
No. 30	19.40	81.7	54.7
No. 50	35.19	66.8	44.8
No. 100	57.03	46.2	31.0
No. 200	76.09	28.3	18.9
Pan			

Hydrometer

Wt. of Air-Dry Soil (g): 106.08 — Wt. of Dry Soil (g): 106.08

Deflocculant 125 cc of 4% Solution

Date	Time	Elapsed Time (min)	Water Temperature (°C)	Composite Correction 152H	Actual Hydrometer Readings	% Total Sample (%)	Soil Particle Diameter (mm)
02-Dec-08	10:34	0		8.0			
	10:36	2	21.5	8.0	28.0	12.5	0.0321
	10:39	5	21.5	8.0	24.0	10.0	0.0209
	10:49	15	21.5	8.0	21.0	8.1	0.0123
	11:04	30	21.5	8.0	19.5	7.2	0.0088
	11:34	60	21.6	8.0	18.0	6.3	0.0063
	12:34	120	21.5	8.0	16.0	5.0	0.0045
	14:44	250	21.7	8.0	15.0	4.4	0.0031
03-Dec-08	10:34	1440	21.8	8.5	12.5	2.8	0.0013



Project Name: Martin Ranch

Project No.: 022249-003

Exploration No.: TP-1

Sample No.: B-1

Depth (feet) : 3-5

Soil Type : (SM)g

Soil Identification: Olive brown silty sand with gravel (SM)g

GR:SA:FI : (%) 26 : 55 : 19

Leighton

PARTICLE - SIZE DISTRIBUTION ASTM D 422

Dec-08

Leighton

PARTICLE-SIZE ANALYSIS OF SOILS

ASTM D 422

Project Name: Martin Ranch | Tested By : G. Berdy | Date: 12/01/08

Project No. : 022249-003 | Data Input By: J. Ward | Date: 12/04/08

Exploration No.: TP-2

Sample No.: B-2 | Depth (feet) : 5-7

Soil Identification: Yellowish brown poorly-graded gravel with silt and sand (GP-GM)s

% Gravel	**47**	**Soil Type**
% Sand	**46**	**(GP-GM)s**
% Fines	**7**	

			Moisture Content of Total Air-Dry Soil	Moisture Content of Air-Dry Soil Passing #10	After Hydrometer & Wet Sieve ret. in #200 Sieve
Specific Gravity (Assumed)	2.70	Wt.of Air-Dry Soil + Cont.(g)	0.00	0.00	
Correction for Specific Gravity	0.99	Dry Wt. of Soil + Cont. (g)	0.00	0.00	170.93
Wt.of Air-Dry Soil + Cont. (g)	5456.60	Wt. of Container No.___ (g)	1.00	1.00	77.91
Wt. of Container	238.50	Moisture Content (%)	0.00	0.00	
Dry Wt. of Soil (g)	5218.10	Wt. of Dry Soil (g)			93.02

Coarse Sieve

U.S. Sieve	Cumulative Wt. Of Dry Soil Retained (g)	% Passing
3"	0.00	100.0
1½"	472.33	90.9
3/4"	1571.60	69.9
3/8"	2008.30	61.5
No. 4	2464.10	52.8
No. 10	3062.60	41.3
Pan		

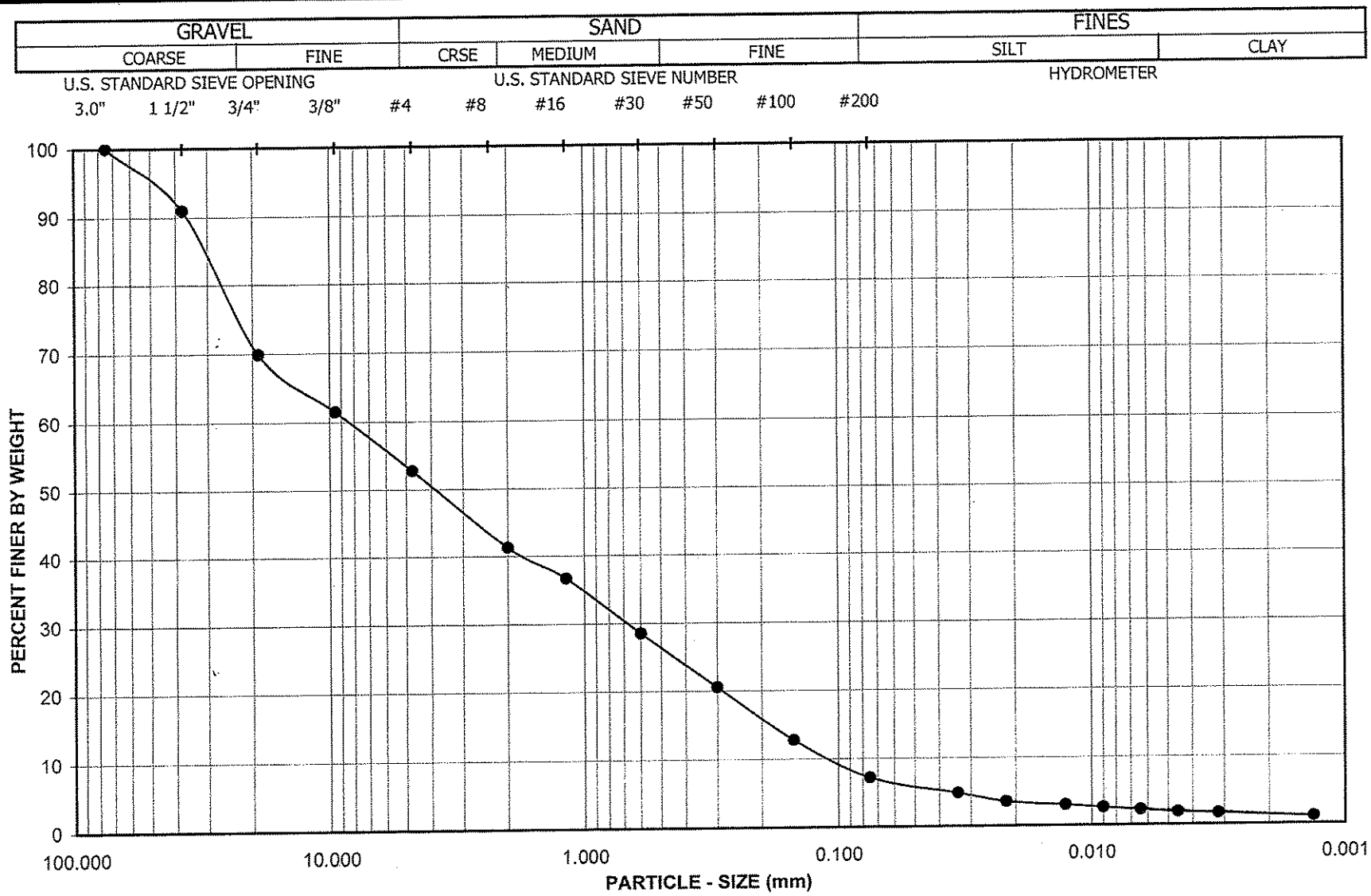
Sieve after Hydrometer & Wet Sieve

U.S. Sieve Size	Cumulative Wt. Of Dry Soil Retained (g)	% Passing	% Total Sample
No. 10	0.00	100.0	41.3
No. 16	12.31	88.7	36.7
No. 30	33.88	69.0	28.5
No. 50	54.96	49.8	20.6
No. 100	75.48	31.0	12.8
No. 200	90.27	17.5	7.2
Pan			

Hydrometer Wt. of Air-Dry Soil (g) 109.42 Wt. of Dry Soil (g) 109.42

Deflocculant 125 cc of 4% Solution

Date	Time	Elapsed Time (min)	Water Temperature (°C)	Composite Correction 152H	Actual Hydrometer Readings	% Total Sample (%)	Soil Particle Diameter (mm)
02-Dec-08	10:22	0		8.0			
	10:24	2	21.5	8.0	21.0	4.9	0.0337
	10:27	5	21.6	8.0	17.5	3.6	0.0217
	10:37	15	21.5	8.0	16.0	3.0	0.0127
	10:52	30	21.5	8.0	15.0	2.6	0.0090
	11:22	60	21.6	8.0	14.0	2.2	0.0064
	12:22	120	21.5	8.0	13.0	1.9	0.0046
	14:32	250	21.7	8.0	12.5	1.7	0.0032
03-Dec-08	10:22	1440	21.7	8.5	11.0	1.1	0.0013



Project Name: Martin Ranch

Project No.: 022249-003

Exploration No.: TP-2

Sample No.: B-2

Depth (feet) : 5-7

Soil Type : (GP-GM)s

Soil Identification: Yellowish brown poorly-graded gravel with silt and sand (GP-GM)s

GR:SA:FI : (%) **47 : 46 : 7**

Leighton

PARTICLE - SIZE DISTRIBUTION ASTM D 422

Dec-08

Leighton

SAND EQUIVALENT TEST

DOT CA Test 217

Project Name: Martin Ranch

Project No. : 022249-003

Tested By: G. Bathala Date: 12/01/08

Input By: J. Ward Date: 12/04/08

Boring No.	Sample No.	Depth (ft.)	Soil Type	T1	T2	T3	T4	R1	R2	SE	Average SE
TP-1	B-1	3-5	Olive brown silty sand with gravel (SM)g	09:42	09:52	09:54	10:14	8.3	2.8	34	**33**
				09:45	09:55	09:57	10:17	8.7	2.7	32	

T1 = Starting Time

T2 = (T1 + 10 min) Begin Agitation

(131 cycles in 45 sec)

T3 = Settlement Starting Time

T4 = (T3 + 20 min) Take Clay Reading (R1)

and Sand Reading (R2)

Sand Equivalent = R2 / R1 * 100

Record SE as Next Higher Integer

C. DETENTION BASIN BACKUP DATA

C-1 Pre-Project FLOOD-SCX Exhibit

C-2 Post-Project FLOOD-SCX Exhibit

C-3 Summary Precipitation Data

C-4 Pre-Project Adjusted Loss Rates

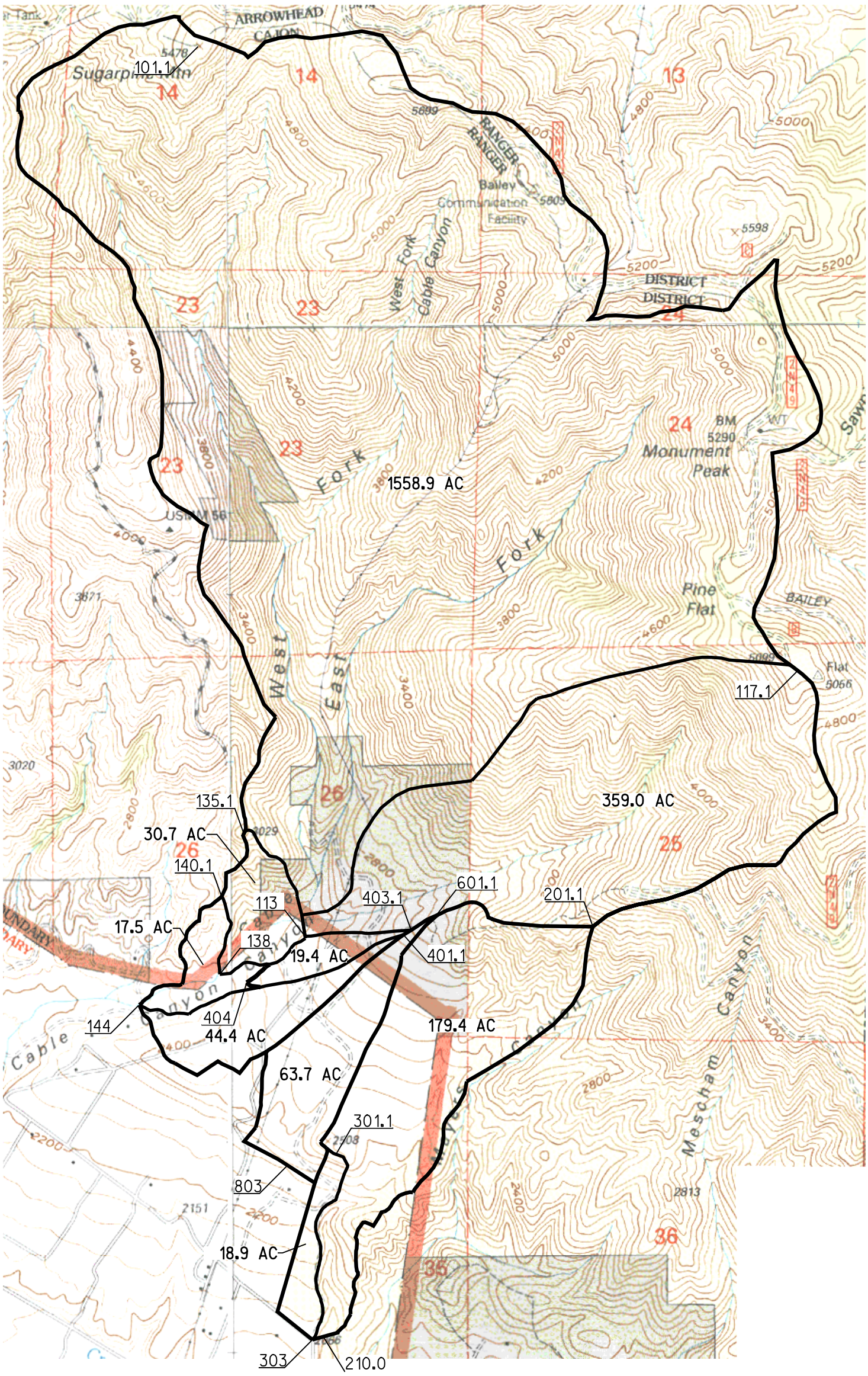
C-5 Post-Project Adjusted Loss Rates

C-6 Emergency Spillway design Calculations

C-7 FLOOD-SCX Input/Output Summary

- Basin A (1) Pre-project (25yr AMC II)
- Basin A (1) Post-project (100yr AMC III)
- Basin B (2) Pre-project (25yr AMC II)
- Basin B (2) Post-project (100yr AMC III)
- Basin C (3) Pre-project (25yr AMC II)
- Basin C (3) Post-project (100yr AMC III)

EXISTING FLOOD-SCX EXHIBIT



1"=1500'

RICK ENGINEERING COMPANY
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San Diego Orange Sacramento Phoenix Tucson

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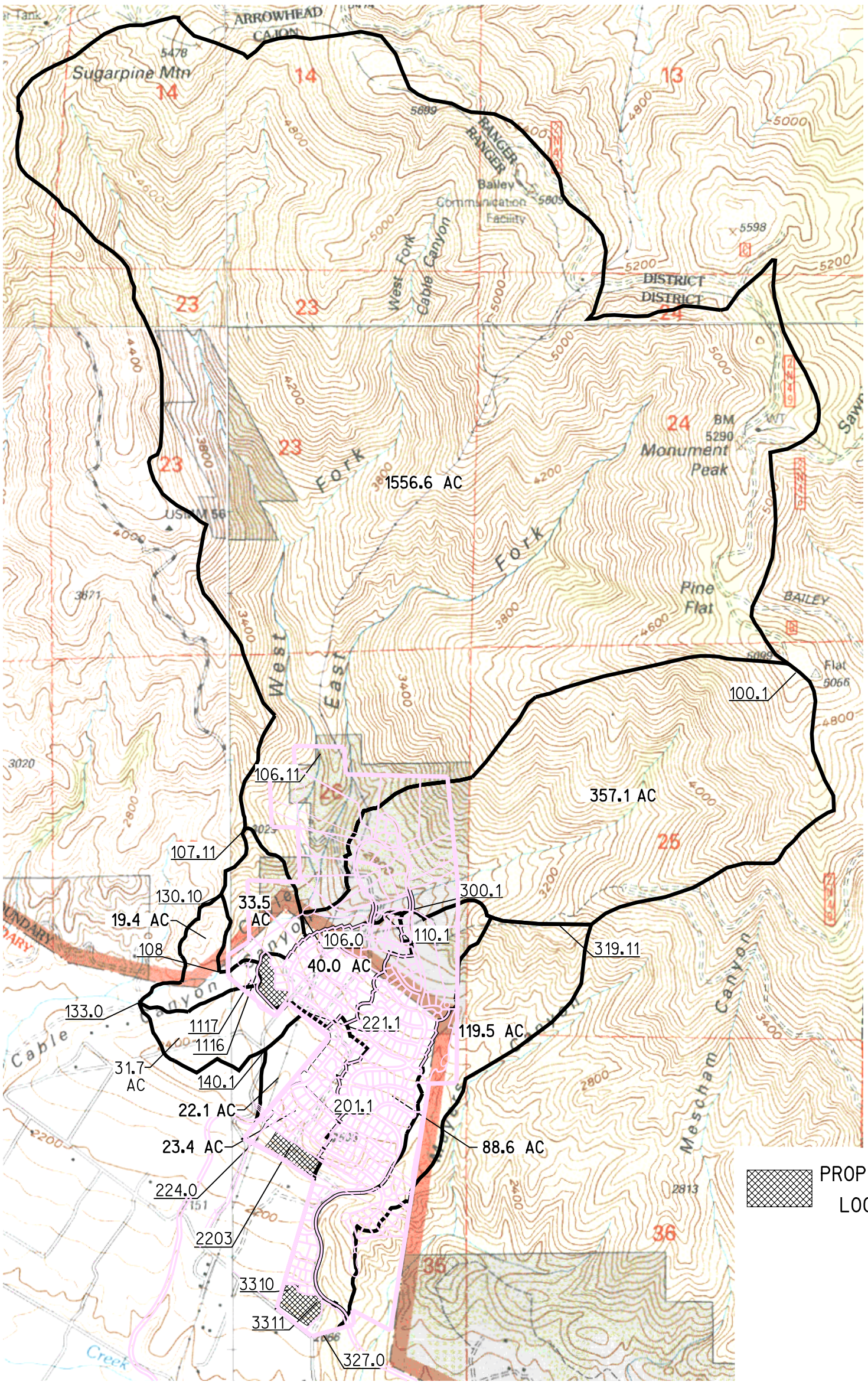
PLOT DATE: 13-JUN-2011 JN 13565C

PROPOSED FLOOD-SCX EXHIBIT



1"=1500'

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San Diego Orange Sacramento Phoenix Tucson

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PLOT DATE: 13-JUN-2011 JN 13565C

Spring Trails **TTM 15576**
1-Jun-11 (13565-C) **Summary of Precipitation Data**

Duration (Min)	**1-year point rainfall (inches)**	**2-year point rainfall (inches)**	**5-year point rainfall (inches)**	**10-year point rainfall (inches)**	**25-year point rainfall (inches)**	**100-year point rainfall (inches)**
5-min	0.18	0.19	0.21	0.24	0.27	0.32
30-min	0.45	0.55	0.63	0.72	0.82	1.04
1-hour	0.65	0.78	0.98	**1.12**	1.32	**1.6**
3-hour	1.12	1.5	1.9	2.15	2.65	3.25
6-hour	1.7	**2.3**	2.92	3.4	4.1	**5**
24-hour	3.2	**4.75**	6.92	8.5	10.7	**14**

Extrapolated from D-7

Bold indicates data obtained from Isopluvial Maps

Discharge Location	Basin ID Up Node	Down Node	Tc (min)	Lag (hrs)	Basin Area (Acres)	S-Graph	Adjusted Loss Rate (Fm) AMC I	AMC II	AMC III	Area Low Loss Fraction***
EXISTING CONDITION										
100	117.1	113	8.63	0.115	359.0	foothill	0.63	0.38	0.16	0.99
	101.1	113	15.5	0.207	1558.9	Mountain	0.39	0.19	0.065	0.99
	135.1*	138	13.03	0.174	30.7	foothill	0.955	0.77	0.45	0.99
	403.1	138	13.8	0.184	17.5	valley-undev	0.995	0.86	0.54	0.99
	140.1*	144	10.32	0.138	19.4	Foothill	0.98	0.82	0.495	0.99
	401.1	144	15.77	0.210	44.4	Foothill	0.985	0.83	0.51	0.99
				Total Area =	2029.9					
200	601.1	803	14.66	0.195	63.7	valley-undev	0.99	0.84	0.52	0.99
				Total Area =	63.7					
300	301.1	303	9.56	0.127	18.9	Valley-Unde	0.995	0.86	0.54	0.99
	201.1**	210	6.46	0.086	179.4	Foothill	0.95	0.76	0.43	0.99
				Total Area =	198.3					

*Tc from rational method node before confluence
**Min Lag of 0.1 used for FloodSCX
***See Weighted Loss Rates table for backup

Discharge Location	Basin ID: Up Node	Down Node	Tc (min)	Lag (hrs)	Basin Area (Acres)	S-Graph	Adjusted Loss Rate (Fm): AMC I	AMC II	AMC III	Area Low Loss Fraction**	
PROPOSED CONDITION											
100	100.1	106	8.87	0.118	357.1	Foothill	0.62	0.37	0.155	0.97	
	106.11	106	15.5	0.207	1556.6	Mountain	0.39	0.19	0.065	0.99	
	*107.11	108	13.03	0.174	33.5	Foothill	0.925	0.72	0.40	0.99	*area includes 1117.00 - 108.00
	110.1	1116	12.63	0.168	40.0	valley - dev	0.77	0.52	0.245	0.54	
	1116	1117	****	DETAIN *****							
	*130.1	133	10.32	0.138	19.4	Foothill	0.955	0.77	0.45	0.99	
	140.1	133	13.56	0.181	31.7	Foothill	0.975	0.81	0.48	0.99	
	Updated 5.10.2011		Total Area =		2038.3						
200	201.1	2203	13.3	0.177	23.4	valley-dev	0.85	0.49	0.225	0.53	
	2203	2203	****	DETAIN *****							
	221.1	224	13.29	0.177	22.1	Foothill	1.00	0.86	0.54	0.92	
			Total Area =		45.5						
300	300.1	3311	15.51	0.207	88.6	Valley-Dev	0.70	0.45	0.20	0.52	
	3310	3311	****	DETAIN *****							
	*319.11	327	6.66	0.089	119.5	Foothill	0.925	0.72	0.40	0.99	
			Total Area =		208.1						

*Tc from rational method node before confluence
**See Weighted Loss Rates table for backup
***Min Lag of 0.1 used for FloodSCX

Sedimed Yield Values:	(updated 06-2011)									**Q100-RM**
101.11	101.2	10.51	0.140	13.6	Foothill	0.57	0.33	0.13	0.99	51.71
100.1	106	8.87	0.118	357.1	Foothill	0.62	0.37	0.155	0.97	1406.84
310.11	310	11.08	0.148	14.7	Foothill	0.94	0.75	0.42	0.99	48.33
321.11	323	6.46	0.086	96.2	Foothill	0.91	0.69	0.37	0.99	391.65
319.11	325	6.66	0.089	116.5	Foothill	0.925	0.72	0.40	0.99	468.69
901.1	917	12.37	0.165	343.3	Foothill	0.79	0.54	0.255	0.99	1046.23

Basin Weighted Loss Rate Values:

Proposed Condition Watersheds

Node: 106 (From Offsite Watersheds)

Area	Fp	Fp * A/At	Ap	Ap*A/At
981.1	0.09	0.057	1	0.630
575.5	0.35	0.129	1	0.370
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
Totals:				
Area =		1556.6		
Fp =		0.186	(AMC II)	
Ap =		1.00		

Node: 107.11 - 108

Area	Fp	Fp * A/At	Ap	Ap*A/At
4.9	0.61	0.089	1	0.146
2.0	0.61	0.036	1	0.060
21.9	0.73	0.477	1	0.654
1.8	0.86	0.046	1	0.054
2.9	0.86	0.074	1	0.087
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
Totals:				
Area =		33.5		
Fp =		0.724	(AMC II)	
Ap =		1.00		

Node: 130.1 - 133

Area	Fp	Fp * A/At	Ap	Ap*A/At
3.3	0.61	0.104	1	0.170
4.8	0.72	0.178	1	0.247
5.2	0.86	0.231	0.97	0.260
1.0	0.86	0.044	1	0.052
2.0	0.76	0.078	1	0.103
3.1	0.86	0.137	1	0.160
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
Totals:				
Area =		19.4		
Fp =		0.773	(AMC II)	
Ap =		0.99		

Basin Weighted Loss Rate Values:

Proposed Condition Watersheds

Node:	**221.1 - 224**			
Area	Fp	Fp * A/At	Ap	Ap*A/At
4.6	0.86	0.179	1	0.208
5.1	0.86	0.198	1	0.231
9.7	0.86	0.377	1	0.439
2.7	0.86	0.105	1	0.122
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
	Totals:			
	Area =	22.1		
	Fp =	0.860	(AMC II)	
	Ap =	1.00		

Node:	**319.11 - 327**			
Area	Fp	Fp * A/At	Ap	Ap*A/At
116.5	0.72	0.702	1	0.975
3	0.86	0.022	1	0.025
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
	Totals:			
	Area =	119.5		
	Fp =	0.724	(AMC II)	
	Ap =	1.00		

Basin Weighted Loss Rate Values:

Existng Condition Watersheds

Node:	**101.1 & 113.1 - 113**			
Area	Fp	Fp * A/At	Ap	Ap*A/At
577.8	0.35	0.130	1	0.371
981.1	0.1	0.063	1	0.629
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
	Totals:			
	Area =	1558.9		
	Fp =	0.193	(AMC II)	
	Ap =	1		

Node:	**135.1 - 138**			
Area	Fp	Fp * A/At	Ap	Ap*A/At
6.8	0.86	0.190	1	0.221
22.1	0.73	0.526	1	0.720
1.8	0.86	0.050	1	0.059
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
	Totals:			
	Area =	30.7		
	Fp =	0.766	(AMC II)	
	Ap =	1		

Node:	**140.1 - 144**			
Area	Fp	Fp * A/At	Ap	Ap*A/At
3.3	0.86	0.146	1	0.170
4.8	0.72	0.178	1	0.247
5.2	0.86	0.231	1	0.268
1.0	0.86	0.044	1	0.052
5.1	0.82	0.216	1	0.263
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
	Totals:			
	Area =	19.4		
	Fp =	0.815	(AMC II)	
	Ap =	1		

Basin Weighted Loss Rate Values:

Existng Condition Watersheds

Node: 601.1 - 803

Area	Fp	Fp * A/At	Ap	Ap*A/At
37.2	0.84	0.491	1	0.584
24.3	0.83	0.317	1	0.381
2.2	0.86	0.030	1	0.035
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
Totals:				
Area =		63.7		
Fp =		0.837	(AMC II)	
Ap =		1		

Node: 403.1 - 138

Area	Fp	Fp * A/At	Ap	Ap*A/At
1.7	0.86	0.084	1	0.097
13.2	0.86	0.649	1	0.754
2.6	0.86	0.128	1	0.149
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
Totals:				
Area =		17.5		
Fp =		0.860	(AMC II)	
Ap =		1		

Node: 401.1 - 144

Area	Fp	Fp * A/At	Ap	Ap*A/At
17.2	0.86	0.333	1	0.387
20	0.86	0.387	1	0.450
0.4	0.61	0.005	1	0.009
1.8	0.72	0.029	1	0.041
0.5	0.86	0.010	1	0.011
4.3	0.65	0.063	1	0.097
0.2	0.86	0.004	1	0.005
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
		0.000		0.000
Totals:				
Area =		44.4		
Fp =		0.832	(AMC II)	
Ap =		1		

Infiltration Rates *For Water Quality/HCOC analysis ONLY*
Detention Basins

ID	Basin Footprint (square-feet)	Basin Footprint (acres)	Infilt. Rate (in/hr)	Q_{Infil} (cfs)
Basin 100	44,442	1.02	0.6	0.62
Basin 200	20,944	0.48	0.6	0.29
Basin 300	79,221	1.82	0.6	1.10

Emergency Spillway Design
Detention Basins

$Q = CL H^{3/2})$

ID	Q_{100} RM (inflow) (cfs)	Q 1000 = (1.35 x Q_{100}) (cfs)	Spillway Length (ft)	Depth of Flow (ft)
Basin 100	124.7	168.4	56.1	1
Basin 200	65.4	88.3	29.4	1
Basin 300	287.3	387.9	129.3	1

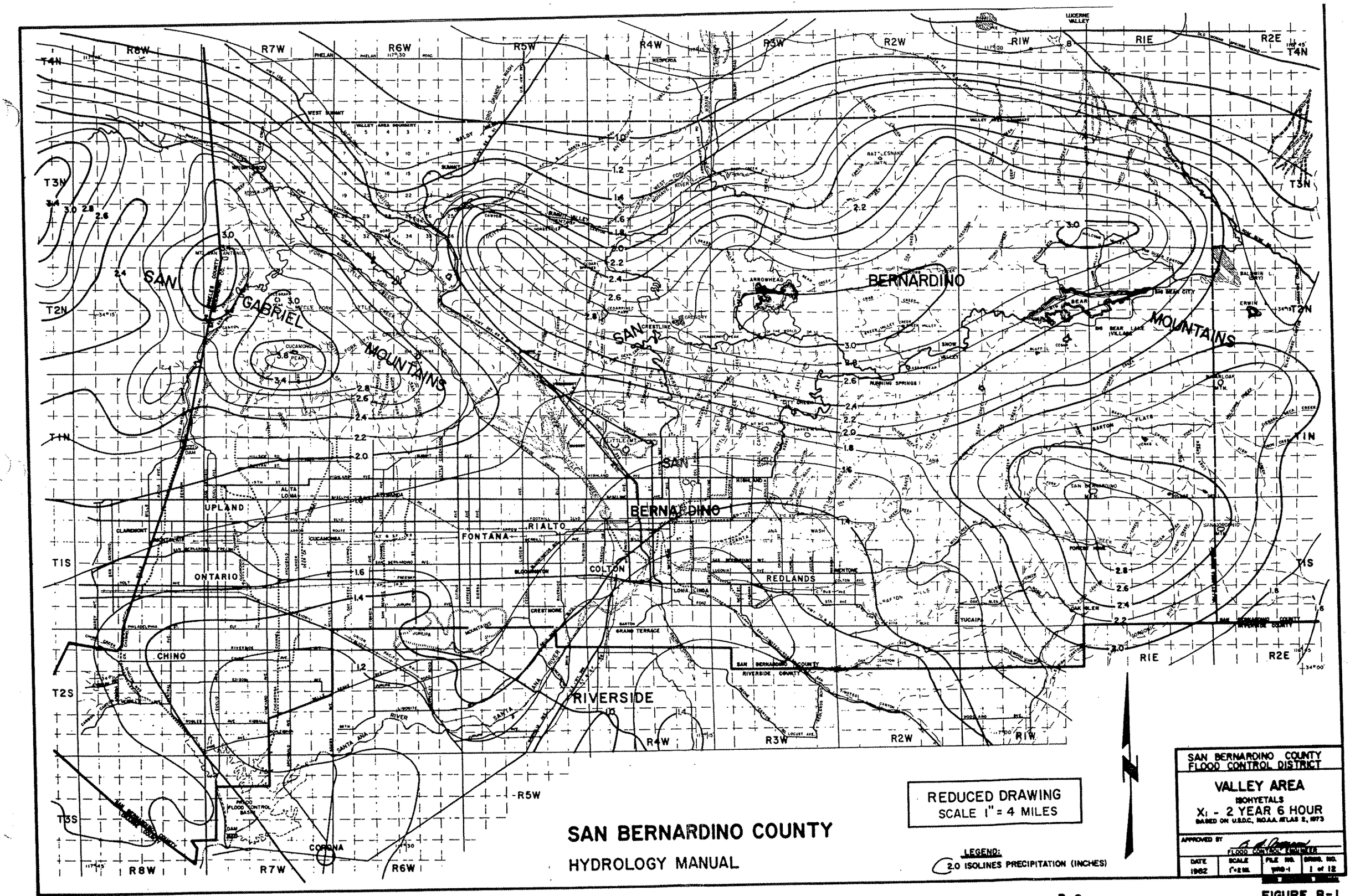
SAN BERNARDINO COUNTY
HYDROLOGY MANUAL
REDUCED DRAWING
SCALE 1" = 4 MILES
LEGEND:
2.0 ISOLINES PRECIPITATION (INCHES)
SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT
VALLEY AREA
ISOHYETALS
X1 - 2 YEAR 6 HOUR
BASED ON U.S.D.C. N.O.A.A. ATLAS 2, 1973
APPROVED BY
FLOOD CONTROL ENGINEER
DATE 1962
SCALE 1"=2 MI.
FILE NO. VAD-1
SHEET NO. 1 of 12
SAN GABRIEL MOUNTAINS
SAN BERNARDINO MOUNTAINS
SAN BERNARDINO
RIVERSIDE
UPLAND
ONTARIO
CHINO
FONTANA
RIALTO
COLTON
REDLANDS
CORONA
CUCAMONGA PEAK
L. ARROWHEAD
BIG BEAR LAKE
SAN BERNARDINO COUNTY
RIVERSIDE COUNTY
R8W
R7W
R6W
R5W
R4W
R3W
R2W
R1W
R1E
R2E
T4N
T3N
T2N
T1N
T1S
T2S
T3S

FIGURE B-1

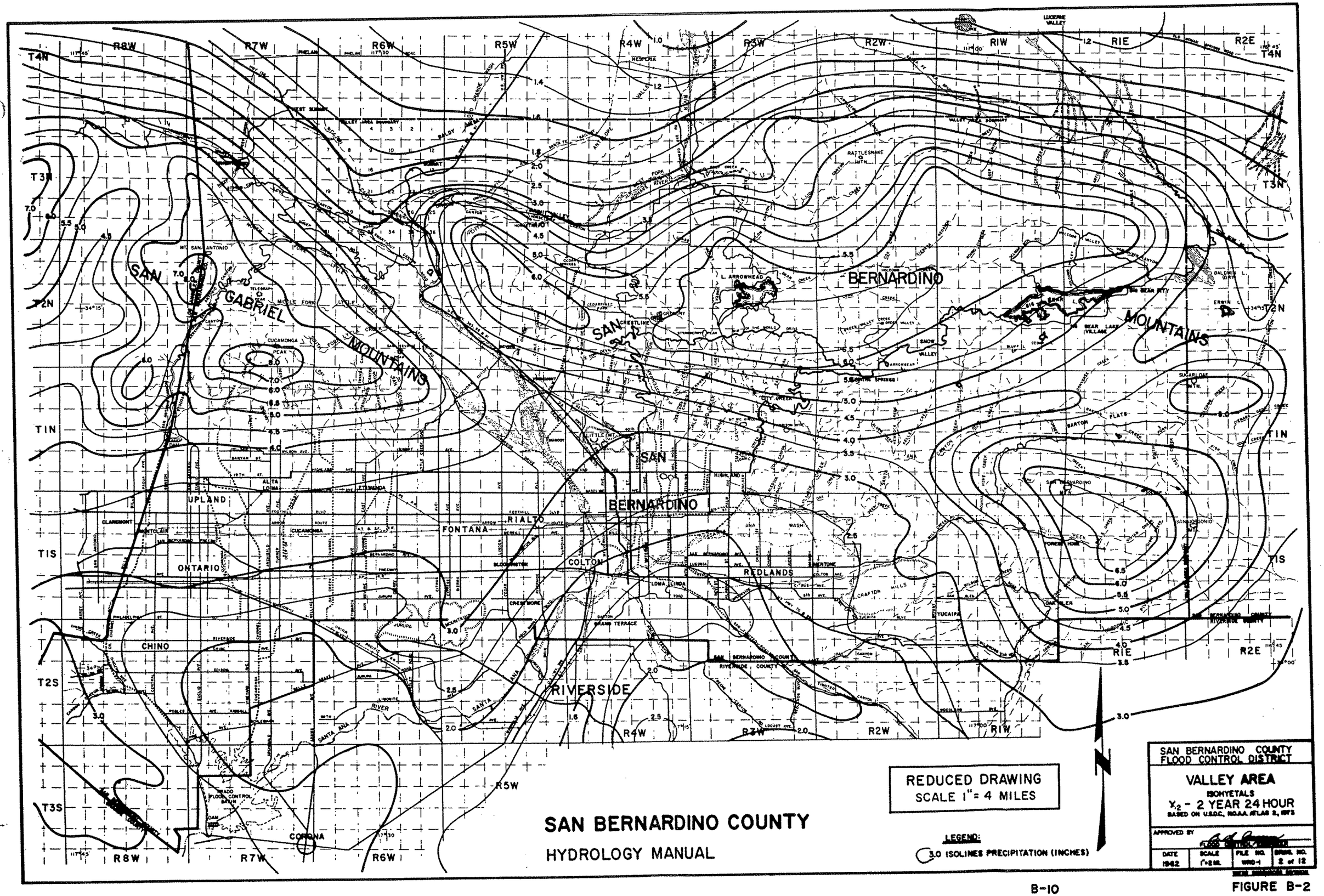
SAN BERNARDINO COUNTY
HYDROLOGY MANUAL
REDUCED DRAWING
SCALE 1" = 4 MILES
LEGEND:
3.0 ISOLINES PRECIPITATION (INCHES)
SAN BERNARDINO COUNTY
FLOOD CONTROL DISTRICT
VALLEY AREA
ISOHYETALS
X2 - 2 YEAR 24 HOUR
BASED ON U.S.D.C., N.O.A.A. ATLAS 2, 1973
APPROVED BY
DATE 1982
SCALE 1"=2 MI.
FILE NO. WRD-1
DRWG. NO. 2 of 12
SAN BERNARDINO
RIVERSIDE
UPLAND
ONTARIO
CHINO
FONTANA
RIALTO
COLTON
REDLANDS
CORONA
CUCAMONGA PEAK
MT. SAN ANTONIO
L. ARROWHEAD
BIG BEAR CITY
BEAR LAKE VILLAGE
SAN GABRIEL MOUNTAINS
SAN BERNARDINO MOUNTAINS
SAN BERNARDINO COUNTY
RIVERSIDE COUNTY
SANTA ANA RIVER
T4N
T3N
T2N
T1N
T1S
T2S
T3S
R8W
R7W
R6W
R5W
R4W
R3W
R2W
R1W
R1E
R2E

FIGURE B-2

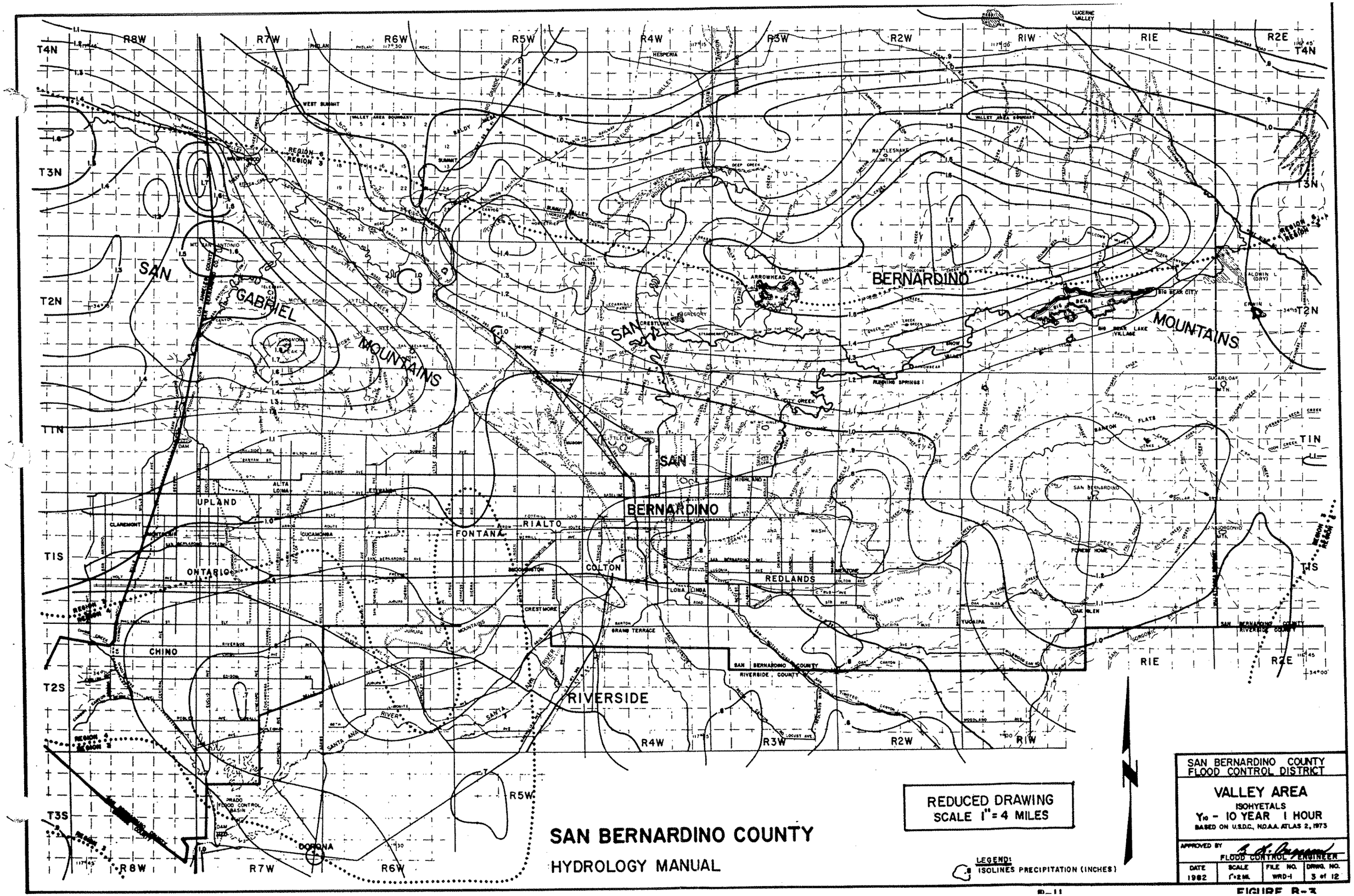
SAN BERNARDINO COUNTY
HYDROLOGY MANUAL
REDUCED DRAWING
SCALE 1" = 4 MILES
LEGEND:
ISOLINES PRECIPITATION (INCHES)
SAN BERNARDINO COUNTY
FLOOD CONTROL DISTRICT
VALLEY AREA
ISOHYETALS
Y10 - 10 YEAR 1 HOUR
BASED ON U.S.D.C., N.O.A.A. ATLAS 2, 1973
APPROVED BY
FLOOD CONTROL ENGINEER
DATE 1982
SCALE 1"=2 MI.
FILE NO. WRD-1
DRWG. NO. 3 of 12
SAN GABRIEL MOUNTAINS
SAN BERNARDINO MOUNTAINS
SAN BERNARDINO
RIVERSIDE
UPLAND
ONTARIO
CHINO
FONTANA
RIALTO
COLTON
REDLANDS
CRESTMORE
GRAND TERRACE
YUCAIPA
DONNA
L. ARROWHEAD
BIG BEAR CITY
BIG BEAR LAKE VILLAGE
SAN BERNARDINO COUNTY
RIVERSIDE COUNTY
R8W
R7W
R6W
R5W
R4W
R3W
R2W
R1W
R1E
R2E
T4N
T3N
T2N
T1N
T1S
T2S
T3S

FIGURE B-3

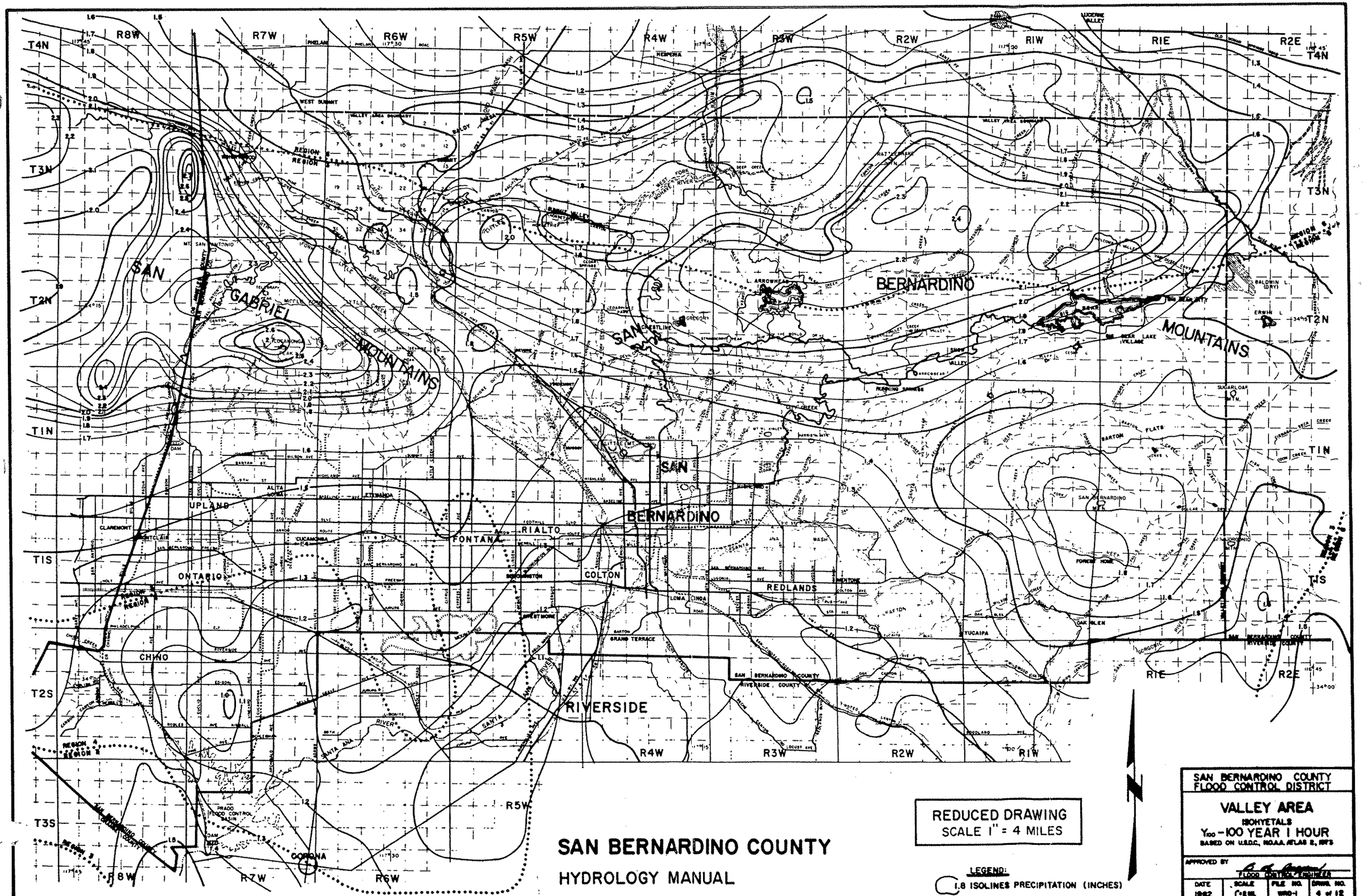
SAN BERNARDINO COUNTY
HYDROLOGY MANUAL
REDUCED DRAWING
SCALE 1" = 4 MILES
LEGEND:
1.8 ISOLINES PRECIPITATION (INCHES)
SAN BERNARDINO COUNTY
FLOOD CONTROL DISTRICT
VALLEY AREA
ISOHYETALS
Y100 - 100 YEAR 1 HOUR
BASED ON U.S.D.C., NOAA ATLAS 2, 1973
APPROVED BY
FLOOD CONTROL ENGINEER
DATE
1982
SCALE
1"=2 MI.
FILE NO.
WRD-1
DRWG. NO.
4 of 12
SAN GABRIEL MOUNTAINS
SAN BERNARDINO MOUNTAINS
UPLAND
ONTARIO
CHINO
CLAREMONT
RIALTO
FONTANA
COLTON
REDLANDS
RIVERSIDE
CORONA
YUCAIPA
BERNARDINO
T4N
T3N
T2N
T1N
T1S
T2S
T3S
R8W
R7W
R6W
R5W
R4W
R3W
R2W
R1W
R1E
R2E

FIGURE B-4

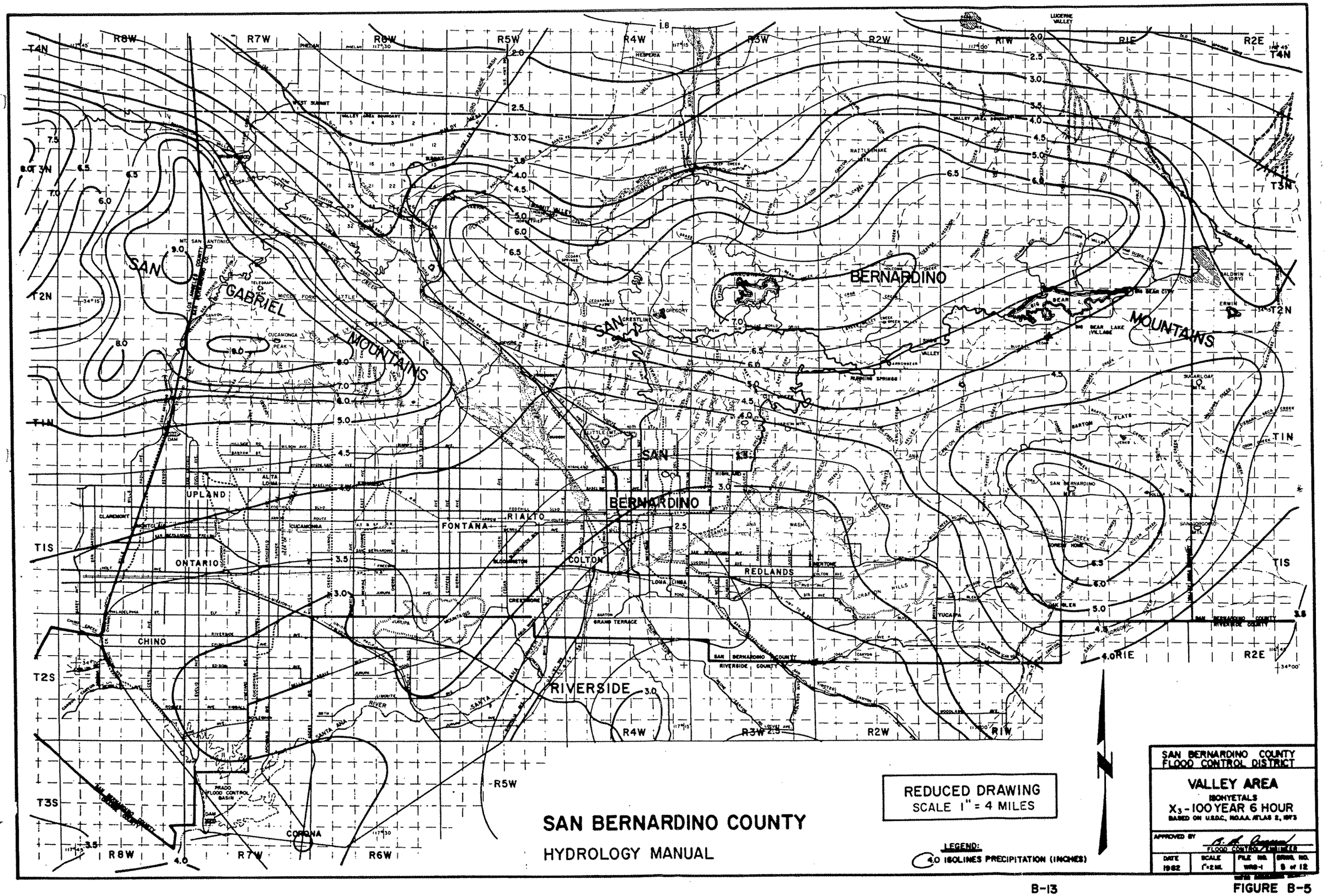
SAN BERNARDINO COUNTY
HYDROLOGY MANUAL
REDUCED DRAWING
SCALE 1" = 4 MILES
LEGEND:
4.0 ISOLINES PRECIPITATION (INCHES)
SAN BERNARDINO COUNTY
FLOOD CONTROL DISTRICT
VALLEY AREA
ISOHYETALS
X3 - 100 YEAR 6 HOUR
BASED ON U.S.D.C., NOAA ATLAS 2, 1973
APPROVED BY
FLOOD CONTROL ENGINEER
DATE 1982
SCALE 1"=2 MI.
FILE NO. WRB-1
DRWG. NO. 8 of 12
SAN GABRIEL MOUNTAINS
SAN BERNARDINO MOUNTAINS
UPLAND
ONTARIO
CHINO
FONTANA
RIALTO
COLTON
REDLANDS
RIVERSIDE
CORONA
YUCAIPA
R8W
R7W
R6W
R5W
R4W
R3W
R2W
R1W
R1E
R2E
T4N
T3N
T2N
T1N
T1S
T2S
T3S

FIGURE B-5

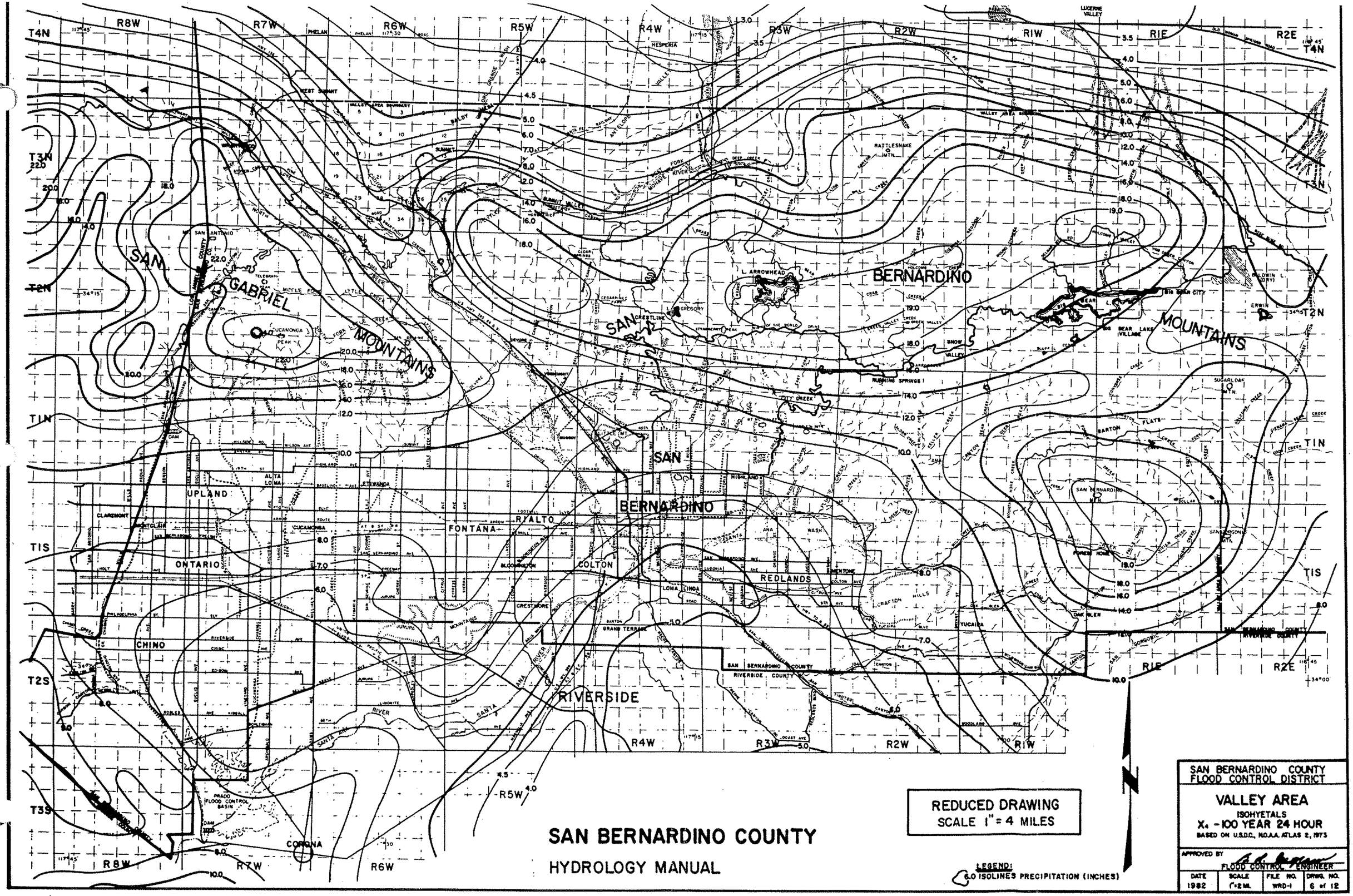
SAN BERNARDINO COUNTY
HYDROLOGY MANUAL
REDUCED DRAWING
SCALE 1" = 4 MILES
LEGEND:
6.0 ISOLINES PRECIPITATION (INCHES)
SAN BERNARDINO COUNTY
FLOOD CONTROL DISTRICT
VALLEY AREA
ISOHYETALS
X4 - 100 YEAR 24 HOUR
BASED ON U.S.D.C., N.O.A.A. ATLAS 2, 1973
APPROVED BY
FLOOD CONTROL ENGINEER
DATE 1982
SCALE 1"=2 MI.
FILE NO. WRD-1
DRWG. NO. 6 of 12
SAN GABRIEL MOUNTAINS
SAN BERNARDINO MOUNTAINS
UPLAND
ONTARIO
CHINO
FONTANA
RIALTO
COLTON
REDLANDS
RIVERSIDE
CORONA
BERNARDINO
L. ARROWHEAD
L. GREGORY
BIG BEAR CITY
BIG BEAR LAKE VILLAGE
SNOW VALLEY
RUNNING SPRINGS
SAN BERNARDINO COUNTY
RIVERSIDE COUNTY
PRADO FLOOD CONTROL BASIN
T4N
T3N
T2N
T1N
T1S
T2S
T3S
R8W
R7W
R6W
R5W
R4W
R3W
R2W
R1W
R1E
R2E

FIGURE B-6

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

              F L O O D    R O U T I N G    A N A L Y S I S
          USING COUNTY HYDROLOGY MANUAL OF SAN BERNARDINO(1986)
         (c) Copyright 1989-2003 Advanced Engineering Software (aes)
             Ver. 8.0  Release Date: 01/01/2003  License ID 1261

                          Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* SPRING TRAILS                JUNE, 2011                  J - 13565-C    *
* BASIN 1 - POST PROJECT           100 YR PRECIPITATION WITH AMC-III       *
* FOR DETENTION BASIN SIZING (100-YEAR)                                    *
 ***************************************************************************

  FILE NAME: ST1_H_P.DAT
  TIME/DATE OF STUDY: 18:32 06/07/2011


                          ** INPUT SUMMARY **


****************************************************************************
  FLOW PROCESS FROM NODE    100.10 TO NODE    106.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #1<<<<<
============================================================================
  WATERSHED AREA =     357.100 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.118 HOURS
  FOOTHILL S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.370; LOW LOSS FRACTION = 0.970
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.27; 30-MINUTE =  0.82;  1-HOUR =  1.32
    3-HOUR =  2.65;    6-HOUR =  4.10; 24-HOUR = 10.70
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.984; 30-MINUTE = 0.984;  1-HOUR = 0.984
    3-HOUR = 0.998;    6-HOUR = 0.999; 24-HOUR = 0.999


****************************************************************************
  FLOW PROCESS FROM NODE    106.11 TO NODE    106.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERSHED AREA =    1556.600 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.207 HOURS
  MOUNTAIN S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.190; LOW LOSS FRACTION = 0.990
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.27; 30-MINUTE =  0.82;  1-HOUR =  1.32
    3-HOUR =  2.65;    6-HOUR =  4.10; 24-HOUR = 10.70
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.931; 30-MINUTE = 0.931;  1-HOUR = 0.931
    3-HOUR = 0.990;    6-HOUR = 0.995; 24-HOUR = 0.997


****************************************************************************
  FLOW PROCESS FROM NODE    106.00 TO NODE    106.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    107.11 TO NODE    108.00 IS CODE =   1
```

```
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #3<<<<<
============================================================================
  WATERSHED AREA =      33.500 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.174 HOURS
  FOOTHILL S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.720; LOW LOSS FRACTION = 0.990
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.27; 30-MINUTE =  0.82;  1-HOUR =  1.32
    3-HOUR =  2.65;    6-HOUR =  4.10; 24-HOUR = 10.70
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.999; 30-MINUTE = 0.999;  1-HOUR = 0.999
    3-HOUR = 1.000;    6-HOUR = 1.000; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE    108.00 TO NODE    108.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    110.10 TO NODE   1116.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #4<<<<<
============================================================================
  WATERSHED AREA =      40.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.168 HOURS
  VALLEY(DEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.245; LOW LOSS FRACTION = 0.540
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.32; 30-MINUTE =  1.04;  1-HOUR =  1.60
    3-HOUR =  3.25;    6-HOUR =  5.00; 24-HOUR = 14.00
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.998; 30-MINUTE = 0.998;  1-HOUR = 0.998
    3-HOUR = 1.000;    6-HOUR = 1.000; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE   1116.00 TO NODE   1117.00 IS CODE = 3.2
----------------------------------------------------------------------------
  >>>>>FLOW-THROUGH DETENTION BASIN ROUTING MODEL APPLIED TO STREAM #4<<<<<
============================================================================
  ROUTE RUNOFF HYDROGRAPH FROM STREAM NUMBER 4
  THROUGH A FLOW-THROUGH DETENTION BASIN.
  SPECIFIED BASIN CONDITIONS ARE AS FOLLOWS:
  DEAD STORAGE(AF) =      0.000
  SPECIFIED DEAD STORAGE(AF) FILLED =      0.000
  SPECIFIED EFFECTIVE VOLUME(AF) FILLED ABOVE OUTLET =      0.000
  DETENTION BASIN CONSTANT LOSS RATE(CFS) =    0.00

  BASIN DEPTH VERSUS OUTFLOW AND STORAGE INFORMATION:

          INTERVAL    DEPTH      OUTFLOW     STORAGE
           NUMBER      (FT)       (CFS)        (AF)
               1        0.00        0.00       0.000
               2        1.00        1.52       3.010
               3        2.00       28.00       9.420
               4        3.00      100.00      20.000
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE   1117.00 TO NODE    108.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 4 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


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

```
  FLOW PROCESS FROM NODE    130.10 TO NODE    133.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #5<<<<<
============================================================================
  WATERSHED AREA =      19.400 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.138 HOURS
  FOOTHILL S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.770; LOW LOSS FRACTION = 0.990
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.27; 30-MINUTE =  0.82;  1-HOUR =  1.32
    3-HOUR =  2.65;    6-HOUR =  4.10; 24-HOUR = 10.70
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.999; 30-MINUTE = 0.999;  1-HOUR = 0.999
    3-HOUR = 1.000;    6-HOUR = 1.000; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE    133.00 TO NODE    133.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 5 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      1.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    140.10 TO NODE    133.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERSHED AREA =      31.700 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.181 HOURS
  FOOTHILL S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.810; LOW LOSS FRACTION = 0.990
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.27; 30-MINUTE =  0.82;  1-HOUR =  1.32
    3-HOUR =  2.65;    6-HOUR =  4.10; 24-HOUR = 10.70
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.999; 30-MINUTE = 0.999;  1-HOUR = 0.999
    3-HOUR = 1.000;    6-HOUR = 1.000; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE    133.00 TO NODE    133.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    133.00 TO NODE    133.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================
============================================================================
```

```
+-----------------------------------------------------------------------------------------------------------------------+
|                                        * AES FLOODSCx PROGRAM RESULTS SUMMARY *                                       |
|INPUT FILENAME: [ST1_H_P.DAT    ]                                                                   Page:   1 of    |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|UPSTREAM  DOWNSTREAM|                               | UPSTREAM   DOWNSTREAM| TIME(2) TO | MAX. STORAGE|           |
| NODE #     NODE #  | HYDROLOGIC/HYDRAULIC PROCESS  |PEAK (CFS)  PEAK (CFS)| PEAK (HR)  | MODELED (AF)| FOOTNOTES |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|   100.10     106.00| Subarea (UH) Added to Stream #1|       0.0       709.4|     16.100 |             |           |
|   106.11     106.00| Subarea (UH) Added to Stream #2|       0.0      2318.5|     16.117 |             |           |
|   106.00     106.00| Stream #2 Added to:   Stream #1|     709.4      3026.2|     16.117 |             |           |
|   107.11     108.00| Subarea (UH) Added to Stream #3|       0.0        48.3|     16.150 |             |           |
|   108.00     108.00| Stream #3 Added to:   Stream #1|    3026.2      3068.1|     16.117 |             |           |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|   110.10    1116.00| Subarea (UH) Added to Stream #4|       0.0        99.4|     16.167 |             |           |
|  1116.00    1117.00| Flow-Through Basin:   Stream #4|      99.4        28.0|     16.650 |         9.42|           |
|  1117.00     108.00| Stream #4 Added to:   Stream #1|    3068.1      3090.9|     16.117 |             |           |
|   130.10     133.00| Subarea (UH) Added to Stream #5|       0.0        29.6|     16.117 |             |           |
|   133.00     133.00| Stream #5 Added to:   Stream #1|    3090.9      3120.5|     16.117 |             |           |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|     0.00       1.00| Zero Out:             Stream #2|    2318.5         0.0|            |             |           |
|   140.10     133.00| Subarea (UH) Added to Stream #2|       0.0        42.2|     16.167 |             |           |
|   133.00     133.00| Stream #2 Added to:   Stream #1|    3120.5      3154.8|     16.117 |             |           |
|   133.00     133.00| View:                 Stream #1|                3154.8|     16.117 |       884.86|     3     |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|Notes: 1 = BASIN MODEL VOLUME EXCEEDED; 2 = TIME IS AT END OF 1-MINUTE UNIT INTERVAL                                   |
|       3 = RUNOFF ESTIMATES DO NOT EXTEND PAST 2 DAYS AFTER THE PEAK DAY OF THE DESIGN STORM                            |
+-----------------------------------------------------------------------------------------------------------------------+

  END OF FLOODSCx ROUTING ANALYSIS
```

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

             F L O O D    R O U T I N G    A N A L Y S I S
          USING COUNTY HYDROLOGY MANUAL OF SAN BERNARDINO(1986)
         (c) Copyright 1989-2003 Advanced Engineering Software (aes)
             Ver. 8.0  Release Date: 01/01/2003  License ID 1261

                           Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* SPRING TRAILS              JUNE, 2011                  J - 13565-C       *
* BASIN 1 - PRE PROJECT              25 YR PRECIPITATION WITH AMC-II       *
* FOR DETENTION BASIN SIZING (100-YEAR)                                    *
 ***************************************************************************

  FILE NAME: ST1_H_E.DAT
  TIME/DATE OF STUDY: 10:40 06/10/2011


****************************************************************************
  FLOW PROCESS FROM NODE    117.10 TO NODE    113.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
============================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERSHED AREA =     359.000 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.115 HOURS
         FOOTHILL S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.380
         LOW LOSS FRACTION = 0.990
         *HYDROGRAPH MODEL #7 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.27
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.82
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.32
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  2.65
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  4.10
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) = 10.70

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
           5-MINUTE FACTOR = 0.984
          30-MINUTE FACTOR = 0.984
           1-HOUR FACTOR = 0.984
           3-HOUR FACTOR = 0.998
           6-HOUR FACTOR = 0.999
          24-HOUR FACTOR = 0.999

         UNIT HYDROGRAPH TIME UNIT =   1.000 MINUTES
         UNIT INTERVAL PERCENTAGE OF LAG-TIME =  14.493


         RUNOFF HYDROGRAPH LISTING LIMITS:
         MODEL TIME(HOURS) FOR BEGINNING OF RESULTS =  14.00
         MODEL TIME(HOURS) FOR END OF RESULTS =  17.00


============================================================================
                       UNIT HYDROGRAPH DETERMINATION

----------------------------------------------------------------------------
    INTERVAL          "S" GRAPH          UNIT HYDROGRAPH
     NUMBER          MEAN VALUES          ORDINATES(CFS)
```

1	0.942	204.498
2	3.212	492.833
3	6.532	720.575
4	10.676	899.656
5	16.623	1291.091
6	25.266	1876.165
7	41.697	3566.864
8	55.575	3012.736
9	62.974	1606.083
10	67.921	1074.018
11	72.163	920.898
12	75.875	805.837
13	78.778	630.100
14	81.428	575.358
15	83.767	507.769
16	85.834	448.689
17	87.638	391.568
18	89.162	330.891
19	90.556	302.455
20	91.854	281.758
21	92.970	242.454
22	94.002	223.862
23	94.816	176.673
24	95.599	170.061
25	96.228	136.621
26	96.696	101.458
27	97.163	101.516
28	97.631	101.458
29	97.999	80.043
30	98.091	19.835
31	98.166	16.266
32	98.241	16.325
33	98.316	16.206
34	98.391	16.267
35	98.466	16.324
36	98.541	16.266
37	98.615	16.208
38	98.690	16.266
39	98.765	16.325
40	98.840	16.208
41	98.915	16.324
42	98.990	16.266
43	99.065	16.208
44	99.140	16.208
45	99.214	16.208
46	99.289	16.208
47	99.364	16.208
48	99.438	16.208
49	99.513	16.208
50	99.587	16.208
51	99.662	16.208
52	99.737	16.208
53	99.811	16.208
54	99.886	16.208
55	99.961	16.208
56	100.000	8.510

```
----------------------------------------------------------------------------
    TOTAL SOIL-LOSS VOLUME(ACRE-FEET) =     257.1116
    TOTAL STORM RUNOFF VOLUME(ACRE-FEET) =      62.7321
----------------------------------------------------------------------------
```

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

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

============================================================================
               HYDROGRAPH IN  ONE-MINUTE UNIT INTERVALS(CFS)
        (Notes: Time indicated is at END of Each Unit Intervals.
                Peak 5-minute rainfall intensity is modeled as
                a constant value for entire 5-minute period.)
----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.       200.0     400.0     600.0     800.0
----------------------------------------------------------------------------
  14.000     11.0499     58.00  . Q    V  .         .         .         .
  14.017     11.1307     58.61  . Q    V  .         .         .         .
  14.033     11.2123     59.28  . Q    V  .         .         .         .
  14.050     11.2950     60.02  .  Q   V  .         .         .         .
  14.067     11.3787     60.80  .  Q   V  .         .         .         .
  14.083     11.4637     61.68  .  Q   V  .         .         .         .
  14.100     11.5500     62.69  .  Q   V  .         .         .         .
  14.117     11.6383     64.10  .  Q   V  .         .         .         .
  14.133     11.7284     65.38  .  Q   V  .         .         .         .
  14.150     11.8197     66.35  .  Q   V  .         .         .         .
  14.167     11.9123     67.20  .  Q   V  .         .         .         .
  14.183     12.0060     68.03  .  Q   V  .         .         .         .
  14.200     12.1008     68.83  .  Q   V  .         .         .         .
  14.217     12.1967     69.61  .  Q   V  .         .         .         .
  14.233     12.2936     70.37  .  Q   V  .         .         .         .
  14.250     12.3916     71.13  .  Q   V  .         .         .         .
  14.267     12.4906     71.88  .  Q   V  .         .         .         .
  14.283     12.5907     72.63  .  Q    V .         .         .         .
  14.300     12.6917     73.37  .  Q    V .         .         .         .
  14.317     12.7938     74.12  .  Q    V .         .         .         .
  14.333     12.8969     74.86  .  Q    V .         .         .         .
  14.350     13.0011     75.61  .  Q    V .         .         .         .
  14.367     13.1062     76.36  .  Q    V .         .         .         .
  14.383     13.2125     77.11  .  Q    V .         .         .         .
  14.400     13.3197     77.86  .  Q    V .         .         .         .
  14.417     13.4280     78.62  .  Q    V .         .         .         .
  14.433     13.5373     79.37  .  Q    V .         .         .         .
  14.450     13.6477     80.15  .   Q   V .         .         .         .
  14.467     13.7592     80.92  .   Q   V .         .         .         .
  14.483     13.8717     81.71  .   Q   V .         .         .         .
  14.500     13.9853     82.48  .   Q   V .         .         .         .
  14.517     14.1000     83.28  .   Q   V .         .         .         .
  14.533     14.2158     84.07  .   Q    V.         .         .         .
  14.550     14.3328     84.89  .   Q    V.         .         .         .
  14.567     14.4508     85.71  .   Q    V.         .         .         .
  14.583     14.5700     86.55  .   Q    V.         .         .         .
  14.600     14.6904     87.39  .   Q    V.         .         .         .
  14.617     14.8120     88.25  .   Q    V.         .         .         .
  14.633     14.9347     89.12  .   Q    V.         .         .         .
  14.650     15.0587     90.01  .   Q    V.         .         .         .
  14.667     15.1839     90.90  .   Q    V.         .         .         .
  14.683     15.3104     91.82  .   Q    V.         .         .         .
  14.700     15.4381     92.74  .   Q    V.         .         .         .
  14.717     15.5672     93.69  .   Q    V.         .         .         .
  14.733     15.6975     94.63  .   Q     V         .         .         .
  14.750     15.8292     95.61  .   Q     V         .         .         .
  14.767     15.9623     96.59  .   Q     V         .         .         .
  14.783     16.0967     97.60  .   Q     V         .         .         .
  14.800     16.2325     98.61  .   Q     V         .         .         .
  14.817     16.3698     99.66  .   Q     V         .         .         .
  14.833     16.5085    100.70  .    Q    V         .         .         .
  14.850     16.6487    101.78  .    Q    V         .         .         .
  14.867     16.7904    102.86  .    Q    V         .         .         .
  14.883     16.9336    103.98  .    Q    V         .         .         .
  14.900     17.0784    105.10  .    Q    V         .         .         .
  14.917     17.2248    106.26  .    Q    V         .         .         .
  14.933     17.3727    107.42  .    Q    .V        .         .         .
  14.950     17.5223    108.62  .    Q    .V        .         .         .
  14.967     17.6736    109.82  .    Q    .V        .         .         .
  14.983     17.8266    111.07  .    Q    .V        .         .         .
  15.000     17.9813    112.31  .    Q    .V        .         .         .
  15.017     18.1378    113.61  .    Q    .V        .         .         .
  15.033     18.2960    114.91  .    Q    .V        .         .         .
  15.050     18.4562    116.26  .    Q    .V        .         .         .
  15.067     18.6182    117.61  .    Q    .V        .         .         .
  15.083     18.7821    119.01  .    Q    .V        .         .         .
  15.100     18.9480    120.42  .     Q   . V       .         .         .
  15.117     19.1159    121.89  .     Q   . V       .         .         .
  15.133     19.2858    123.36  .     Q   . V       .         .         .
  15.150     19.4578    124.90  .     Q   . V       .         .         .
  15.167     19.6320    126.44  .     Q   . V       .         .         .
  15.183     19.8084    128.04  .     Q   . V       .         .         .
  15.200     19.9869    129.66  .     Q   . V       .         .         .
  15.217     20.1679    131.34  .     Q   . V       .         .         .
  15.233     20.3511    133.03  .     Q   . V       .         .         .
  15.250     20.5368    134.80  .     Q   .  V      .         .         .
  15.267     20.7249    136.58  .     Q   .  V      .         .         .
  15.283     20.9156    138.44  .     Q   .  V      .         .         .
  15.300     21.1089    140.32  .      Q  .  V      .         .         .
  15.317     21.3048    142.28  .      Q  .  V      .         .         .
  15.333     21.5035    144.26  .      Q  .  V      .         .         .
  15.350     21.7053    146.51  .      Q  .  V      .         .         .
  15.367     21.9106    149.03  .      Q  .  V      .         .         .
  15.383     22.1198    151.84  .      Q  .   V     .         .         .
  15.400     22.3330    154.82  .      Q  .   V     .         .         .
  15.417     22.5510    158.25  .      Q  .   V     .         .         .
  15.433     22.7744    162.21  .       Q .   V     .         .         .
  15.450     23.0054    167.72  .       Q .   V     .         .         .
  15.467     23.2434    172.78  .       Q .   V     .         .         .
  15.483     23.4868    176.71  .       Q .   V     .         .         .
  15.500     23.7351    180.23  .        Q.    V    .         .         .
  15.517     23.9882    183.73  .        Q.    V    .         .         .
  15.533     24.2460    187.18  .        Q.    V    .         .         .
  15.550     24.5086    190.63  .        Q.    V    .         .         .
  15.567     24.7759    194.08  .        Q.    V    .         .         .
  15.583     25.0481    197.64  .        Q.    V    .         .         .
  15.600     25.3253    201.21  .         Q     V   .         .         .
  15.617     25.6075    204.93  .         Q     V   .         .         .
  15.633     25.8949    208.67  .         Q     V   .         .         .
  15.650     26.1878    212.60  .         Q     V   .         .         .
  15.667     26.4862    216.62  .         Q     V   .         .         .
  15.683     26.7899    220.49  .         .Q     V  .         .         .
  15.700     27.0984    223.96  .         .Q     V  .         .         .
  15.717     27.4114    227.29  .         .Q     V  .         .         .
  15.733     27.7289    230.47  .         .Q     V  .         .         .
  15.750     28.0502    233.30  .         .Q     V  .         .         .
  15.767     28.3743    235.30  .         .Q      V .         .         .
  15.783     28.6977    234.77  .         .Q      V .         .         .
  15.800     29.0222    235.61  .         .Q      V .         .         .
  15.817     29.3523    239.63  .         .Q      V .         .         .
  15.833     29.6898    245.00  .         . Q     V .         .         .
  15.850     30.0361    251.45  .         . Q      V.         .         .
  15.867     30.3925    258.69  .         . Q      V.         .         .
  15.883     30.7607    267.33  .         .  Q     V.         .         .
  15.900     31.1421    276.90  .         .  Q     V.         .         .
  15.917     31.5390    288.13  .         .   Q     V         .         .
  15.933     31.9532    300.77  .         .    Q    V         .         .
  15.950     32.3884    315.94  .         .    Q    V         .         .
  15.967     32.8532    337.42  .         .     Q   V         .         .
  15.983     33.3591    367.33  .         .       Q .V        .         .
  16.000     33.9146    403.29  .         .         QV        .         .
  16.017     34.5282    445.47  .         .         . Q       .         .
  16.033     35.2124    496.69  .         .         . V Q     .         .
  16.050     35.9794    556.88  .         .         . V    Q  .         .
  16.067     36.8610    640.01  .         .         .  V      . Q       .
  16.083     37.8220    697.72  .         .         .   V     .   Q     .
  16.100     38.8089    716.44  .         .         .   V     .    Q    .
  16.117     39.7884    711.10  .         .         .    V    .    Q    .
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 16.133     40.7314    684.67  .          .          .    V     .   Q     .
 16.150     41.5727    610.76  .          .          .     V   Q          .
 16.167     42.3103    535.49  .          .          .     Q   .          .
 16.183     42.9811    487.04  .          .          .   Q  V  .          .
 16.200     43.6031    451.54  .          .          . Q    V  .          .
 16.217     44.1831    421.05  .          .          .Q      V .          .
 16.233     44.7258    394.00  .          .        Q.       V .          .
 16.250     45.2379    371.82  .          .       Q .       V .          .
 16.267     45.7239    352.86  .          .      Q  .        V.          .
 16.283     46.1911    339.16  .          .     Q   .        V.          .
 16.300     46.6402    326.08  .          .     Q   .        V.          .
 16.317     47.0703    312.24  .          .    Q    .         V          .
 16.333     47.4817    298.65  .          .   Q     .         V          .
 16.350     47.8754    285.87  .          .   Q     .         V          .
 16.367     48.2515    272.98  .          .  Q      .         V          .
 16.383     48.6100    260.33  .          .  Q      .         V          .
 16.400     48.9521    248.37  .          . Q       .         .V         .
 16.417     49.2793    237.48  .          .Q        .         .V         .
 16.433     49.5907    226.08  .          .Q        .         .V         .
 16.450     49.8842    213.09  .          Q         .         .V         .
 16.467     50.1620    201.71  .          Q         .         .V         .
 16.483     50.4265    192.03  .         Q.         .         . V        .
 16.500     50.6789    183.20  .         Q.         .         . V        .
 16.517     50.9203    175.27  .        Q .         .         . V        .
 16.533     51.1533    169.18  .        Q .         .         . V        .
 16.550     51.3789    163.79  .        Q .         .         . V        .
 16.567     51.5977    158.86  .       Q  .         .         . V        .
 16.583     51.8102    154.27  .       Q  .         .         .  V       .
 16.600     52.0168    149.96  .       Q  .         .         .  V       .
 16.617     52.2178    145.95  .       Q  .         .         .  V       .
 16.633     52.4137    142.20  .       Q  .         .         .  V       .
 16.650     52.6046    138.63  .      Q   .         .         .  V       .
 16.667     52.7908    135.12  .      Q   .         .         .  V       .
 16.683     52.9723    131.79  .      Q   .         .         .  V       .
 16.700     53.1494    128.60  .      Q   .         .         .  V       .
 16.717     53.3224    125.57  .      Q   .         .         .   V      .
 16.733     53.4913    122.65  .      Q   .         .         .   V      .
 16.750     53.6564    119.86  .     Q    .         .         .   V      .
 16.767     53.8178    117.18  .     Q    .         .         .   V      .
 16.783     53.9757    114.59  .     Q    .         .         .   V      .
 16.800     54.1300    112.06  .     Q    .         .         .   V      .
 16.817     54.2810    109.62  .     Q    .         .         .   V      .
 16.833     54.4288    107.28  .     Q    .         .         .   V      .
 16.850     54.5734    104.98  .     Q    .         .         .   V      .
 16.867     54.7149    102.72  .     Q    .         .         .   V      .
 16.883     54.8530    100.32  .     Q    .         .         .   V      .
 16.900     54.9878     97.80  .    Q     .         .         .    V     .
 16.917     55.1191     95.34  .    Q     .         .         .    V     .
 16.933     55.2471     92.93  .    Q     .         .         .    V     .
 16.950     55.3718     90.57  .    Q     .         .         .    V     .
 16.967     55.4937     88.44  .    Q     .         .         .    V     .
 16.983     55.6129     86.58  .    Q     .         .         .    V     .
 17.000     55.7297     84.82  .    Q     .         .         .    V     .

****************************************************************************
  FLOW PROCESS FROM NODE    101.10 TO NODE    113.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
============================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #2)

         WATERSHED AREA =    1558.900 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.207 HOURS
         MOUNTAIN S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.190
         LOW LOSS FRACTION = 0.990
         *HYDROGRAPH MODEL #7 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.27
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.82
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.32
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  2.65
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  4.10
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) = 10.70

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
           5-MINUTE FACTOR = 0.930
          30-MINUTE FACTOR = 0.930
           1-HOUR FACTOR = 0.930
           3-HOUR FACTOR = 0.990
           6-HOUR FACTOR = 0.995
          24-HOUR FACTOR = 0.997

         UNIT HYDROGRAPH TIME UNIT =   1.000 MINUTES
         UNIT INTERVAL PERCENTAGE OF LAG-TIME =   8.052


         RUNOFF HYDROGRAPH LISTING LIMITS:
         MODEL TIME(HOURS) FOR BEGINNING OF RESULTS =  14.00
         MODEL TIME(HOURS) FOR END OF RESULTS =  17.00
```

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	0.895	843.306
2	2.677	1679.700
3	5.043	2231.225
4	7.844	2640.095
5	11.495	3441.558
6	16.209	4443.446
7	22.176	5625.126
8	29.149	6572.754
9	35.017	5531.707
10	39.816	4523.829
11	43.715	3675.298
12	47.106	3196.746
13	50.167	2885.347
14	52.765	2448.580
15	54.788	1906.813
16	56.702	1804.714
17	58.365	1567.506
18	59.980	1522.568
19	61.583	1510.280
20	63.001	1336.950
21	64.304	1228.850
22	65.526	1151.218
23	66.737	1141.897
24	67.876	1073.359
25	68.908	972.911
26	69.914	948.624
27	70.921	948.847
28	71.909	931.356
29	72.747	789.922
30	73.552	759.062
31	74.325	728.295
32	75.057	690.229
33	75.787	688.625
34	76.477	650.443
35	77.148	632.370
36	77.817	629.975
37	78.420	569.039
38	78.995	542.163
39	79.570	542.048
40	80.135	531.994

41	80.673	507.182
42	81.209	505.808
43	81.746	506.039
44	82.229	455.502
45	82.665	410.222
46	83.100	410.459
47	83.535	410.222
48	83.963	403.138
49	84.333	349.170
50	84.691	337.513
51	85.049	337.513
52	85.407	337.052
53	85.765	337.513
54	86.108	323.100
55	86.424	298.180
56	86.740	297.497
57	87.055	297.720
58	87.371	297.720
59	87.687	297.727
60	87.999	293.606
61	88.285	270.053
62	88.567	266.170
63	88.850	266.393
64	89.132	265.709
65	89.415	266.623
66	89.698	266.623
67	89.977	262.969
68	90.231	240.099
69	90.481	235.525
70	90.731	235.525
71	90.981	235.525
72	91.230	235.065
73	91.480	235.532
74	91.729	235.065
75	91.976	232.325
76	92.190	202.141
77	92.398	196.193
78	92.606	195.740
79	92.814	195.740
80	93.021	195.733
81	93.230	196.193
82	93.437	195.740
83	93.645	195.740
84	93.853	196.193
85	94.046	181.565
86	94.206	150.913
87	94.365	150.467
88	94.524	150.000
89	94.685	150.921
90	94.844	150.007
91	95.003	150.000
92	95.162	150.467
93	95.322	150.460
94	95.481	150.007
95	95.641	150.460
96	95.800	150.460
97	95.958	148.173
98	96.087	121.650
99	96.203	109.301
100	96.318	108.848
101	96.434	109.301
102	96.549	108.848
103	96.666	109.754
104	96.781	108.848
105	96.898	109.754
106	97.013	108.848
107	97.129	109.301
108	97.245	108.848
109	97.361	109.754
110	97.477	108.848
111	97.592	108.841
112	97.709	109.762
113	97.824	108.848
114	97.940	109.754
115	98.015	70.430
116	98.046	29.271
117	98.079	31.097
118	98.110	29.271
119	98.141	29.271
120	98.174	31.097
121	98.205	29.271
122	98.236	29.264
123	98.267	29.271
124	98.300	31.097
125	98.331	29.271
126	98.363	29.271
127	98.395	30.184
128	98.426	29.271
129	98.458	30.184
130	98.490	30.184
131	98.522	30.184
132	98.552	28.350
133	98.585	31.097
134	98.616	29.271
135	98.648	30.184
136	98.679	29.271
137	98.710	29.271
138	98.743	31.097
139	98.774	29.271
140	98.805	29.264
141	98.837	30.184
142	98.868	29.271
143	98.900	30.184
144	98.931	29.271
145	98.963	30.184
146	98.995	30.184
147	99.027	30.184
148	99.059	30.184
149	99.091	30.184
150	99.123	30.184

```
--------------------------------------------------------------------------
    TOTAL SOIL-LOSS VOLUME(ACRE-FEET) =     592.3835
    TOTAL STORM RUNOFF VOLUME(ACRE-FEET) =     785.9140
--------------------------------------------------------------------------
```

```
============================================================================

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

============================================================================
              HYDROGRAPH IN  ONE-MINUTE UNIT INTERVALS(CFS)
        (Notes: Time indicated is at END of Each Unit Intervals.
                Peak 5-minute rainfall intensity is modeled as
                a constant value for entire 5-minute period.)
----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.      600.0    1200.0    1800.0    2400.0
----------------------------------------------------------------------------
  14.000    330.6921    520.73  .       Q .     V   .         .         .
  14.017    331.4132    523.49  .       Q .     V   .         .         .
  14.033    332.1390    526.92  .       Q .     V   .         .         .
  14.050    332.8701    530.79  .       Q .     V   .         .         .
  14.067    333.6070    535.01  .       Q .     V   .         .         .
  14.083    334.3506    539.85  .       Q .      V  .         .         .
  14.100    335.1020    545.50  .        Q.      V  .         .         .
  14.117    335.8624    552.07  .        Q.      V  .         .         .
  14.133    336.6329    559.39  .        Q.      V  .         .         .
  14.150    337.4124    565.90  .        Q.      V  .         .         .
  14.167    338.1998    571.66  .        Q.      V  .         .         .
  14.183    338.9942    576.76  .        Q.      V  .         .         .
  14.200    339.7952    581.51  .        Q.      V  .         .         .
  14.217    340.6024    586.04  .        Q.      V  .         .         .
  14.233    341.4155    590.25  .        Q.      V  .         .         .
  14.250    342.2337    594.05  .        Q.      V  .         .         .
  14.267    343.0572    597.81  .        Q.      V  .         .         .
  14.283    343.8855    601.39  .         Q      V  .         .         .
  14.300    344.7188    604.97  .         Q      V  .         .         .
  14.317    345.5570    608.56  .         Q      V  .         .         .
  14.333    346.4001    612.04  .         Q      V  .         .         .
  14.350    347.2478    615.46  .         Q      V  .         .         .
  14.367    348.1003    618.85  .         Q      V  .         .         .
  14.383    348.9574    622.26  .         Q      V  .         .         .
  14.400    349.8191    625.64  .         Q      V  .         .         .
  14.417    350.6855    628.97  .         Q      V  .         .         .
  14.433    351.5564    632.31  .         Q      V  .         .         .
  14.450    352.4320    635.68  .         Q      V  .         .         .
  14.467    353.3122    639.07  .         Q      V  .         .         .
  14.483    354.1970    642.37  .         Q       V .         .         .
  14.500    355.0864    645.69  .         Q       V .         .         .
  14.517    355.9804    649.03  .         Q       V .         .         .
  14.533    356.8790    652.38  .         Q       V .         .         .
  14.550    357.7822    655.76  .         Q       V .         .         .
  14.567    358.6902    659.15  .         Q       V .         .         .
  14.583    359.6028    662.56  .         .Q      V .         .         .
  14.600    360.5201    666.00  .         .Q      V .         .         .
  14.617    361.4422    669.43  .         .Q      V .         .         .
  14.633    362.3690    672.89  .         .Q      V .         .         .
  14.650    363.3007    676.38  .         .Q      V .         .         .
  14.667    364.2372    679.90  .         .Q      V .         .         .
  14.683    365.1786    683.45  .         .Q      V .         .         .
  14.700    366.1249    687.04  .         .Q      V .         .         .
  14.717    367.0762    690.67  .         .Q      V .         .         .
  14.733    368.0326    694.31  .         .Q      V .         .         .
  14.750    368.9939    697.95  .         .Q      V .         .         .
  14.767    369.9604    701.66  .         .Q      V .         .         .
  14.783    370.9320    705.40  .         .Q      V .         .         .
  14.800    371.9088    709.19  .         .Q      V .         .         .
  14.817    372.8909    712.99  .         .Q      V .         .         .
  14.833    373.8783    716.84  .         .Q       V.         .         .
  14.850    374.8711    720.73  .         . Q      V.         .         .
  14.867    375.8693    724.69  .         . Q      V.         .         .
  14.883    376.8730    728.70  .         . Q      V.         .         .
  14.900    377.8823    732.77  .         . Q      V.         .         .
  14.917    378.8973    736.87  .         . Q      V.         .         .
  14.933    379.9180    741.04  .         . Q      V.         .         .
  14.950    380.9446    745.27  .         . Q      V.         .         .
  14.967    381.9771    749.58  .         . Q      V.         .         .
  14.983    383.0155    753.94  .         . Q      V.         .         .
  15.000    384.0602    758.39  .         . Q      V.         .         .
  15.017    385.1109    762.88  .         . Q      V.         .         .
  15.033    386.1680    767.45  .         . Q      V.         .         .
  15.050    387.2315    772.09  .         . Q      V.         .         .
  15.067    388.3015    776.83  .         . Q      V.         .         .
  15.083    389.3781    781.63  .         .  Q     V.         .         .
  15.100    390.4615    786.54  .         .  Q     V.         .         .
  15.117    391.5518    791.52  .         .  Q     V.         .         .
  15.133    392.6490    796.59  .         .  Q     V.         .         .
  15.150    393.7533    801.75  .         .  Q      V         .         .
  15.167    394.8649    807.01  .         .  Q      V         .         .
  15.183    395.9839    812.37  .         .  Q      V         .         .
  15.200    397.1104    817.85  .         .  Q      V         .         .
  15.217    398.2446    823.43  .         .  Q      V         .         .
  15.233    399.3866    829.14  .         .  Q      V         .         .
  15.250    400.5367    834.96  .         .  Q      V         .         .
  15.267    401.6950    840.89  .         .   Q     V         .         .
  15.283    402.8616    846.94  .         .   Q     V         .         .
  15.300    404.0367    853.14  .         .   Q     V         .         .
  15.317    405.2206    859.47  .         .   Q     V         .         .
  15.333    406.4134    865.97  .         .   Q     V         .         .
  15.350    407.6152    872.55  .         .   Q     V         .         .
  15.367    408.8263    879.25  .         .   Q     V         .         .
  15.383    410.0468    886.06  .         .   Q     V         .         .
  15.400    411.2769    893.05  .         .   Q     V         .         .
  15.417    412.5168    900.14  .         .    Q    V         .         .
  15.433    413.7666    907.36  .         .    Q    .V        .         .
  15.450    415.0265    914.69  .         .    Q    .V        .         .
  15.467    416.2967    922.19  .         .    Q    .V        .         .
  15.483    417.5777    929.99  .         .    Q    .V        .         .
  15.500    418.8699    938.14  .         .    Q    .V        .         .
  15.517    420.1738    946.61  .         .    Q    .V        .         .
  15.533    421.4898    955.41  .         .    Q    .V        .         .
  15.550    422.8183    964.53  .         .     Q   .V        .         .
  15.567    424.1599    974.01  .         .     Q   .V        .         .
  15.583    425.5151    983.86  .         .     Q   .V        .         .
  15.600    426.8844    994.10  .         .     Q   .V        .         .
  15.617    428.2683   1004.73  .         .     Q   .V        .         .
  15.633    429.6674   1015.78  .         .     Q   .V        .         .
  15.650    431.0824   1027.25  .         .      Q  .V        .         .
  15.667    432.5139   1039.25  .         .      Q  . V       .         .
  15.683    433.9606   1050.34  .         .      Q  . V       .         .
  15.700    435.4215   1060.62  .         .      Q  . V       .         .
  15.717    436.8962   1070.63  .         .      Q  . V       .         .
  15.733    438.3848   1080.72  .         .       Q . V       .         .
  15.750    439.8866   1090.28  .         .       Q . V       .         .
  15.767    441.4005   1099.12  .         .       Q . V       .         .
  15.783    442.9254   1107.03  .         .       Q . V       .         .
  15.800    444.4606   1114.59  .         .       Q . V       .         .
  15.817    446.0107   1125.36  .         .       Q . V       .         .
  15.833    447.5802   1139.46  .         .       Q . V       .         .
  15.850    449.1736   1156.82  .         .        Q. V       .         .
  15.867    450.7950   1177.06  .         .        Q. V       .         .
  15.883    452.4482   1200.28  .         .         Q  V      .         .
  15.900    454.1384   1227.08  .         .         Q  V      .         .
  15.917    455.8717   1258.35  .         .         Q  V      .         .
  15.933    457.6540   1293.98  .         .         .Q V      .         .
  15.950    459.4941   1335.88  .         .         . QV      .         .
  15.967    461.4227   1400.15  .         .         .  Q      .         .
  15.983    463.4680   1484.91  .         .         .  VQ     .         .
  16.000    465.6504   1584.40  .         .         .  V  Q   .         .
  16.017    467.9853   1695.17  .         .         .  V    Q .         .
  16.033    470.4987   1824.69  .         .         .  V      Q         .
  16.050    473.1920   1955.33  .         .         .   V     . Q       .
  16.067    476.0646   2085.53  .         .         .   V     .   Q     .
  16.083    479.1074   2209.10  .         .         .   V     .     Q   .
  16.100    482.2617   2289.99  .         .         .   V     .       Q .
  16.117    485.4595   2321.64  .         .         .   V     .       Q .
```

```
  16.133    488.6319   2303.12  .          .          .   V     .       Q .
  16.150    491.7129   2236.85  .          .          .    V    .      Q  .
  16.167    494.6463   2129.61  .          .          .    V    .    Q    .
  16.183    497.4338   2023.73  .          .          .    V    .  Q      .
  16.200    500.0853   1924.99  .          .          .    V    . Q       .
  16.217    502.6228   1842.27  .          .          .    V    Q         .
  16.233    505.0572   1767.32  .          .          .    V   Q.         .
  16.250    507.4008   1701.46  .          .          .    V  Q .         .
  16.267    509.6707   1647.95  .          .          .    V Q  .         .
  16.283    511.8844   1607.20  .          .          .     Q   .         .
  16.300    514.0490   1571.45  .          .          .     Q   .         .
  16.317    516.1701   1539.97  .          .          .    QV   .         .
  16.333    518.2498   1509.83  .          .          .    QV   .         .
  16.350    520.2865   1478.66  .          .          .   Q V   .         .
  16.367    522.2833   1449.66  .          .          .   Q V   .         .
  16.383    524.2438   1423.38  .          .          .  Q  V   .         .
  16.400    526.1713   1399.38  .          .          .  Q  V   .         .
  16.417    528.0656   1375.21  .          .          . Q   V   .         .
  16.433    529.9255   1350.37  .          .          . Q   V   .         .
  16.450    531.7542   1327.59  .          .          . Q    V  .         .
  16.467    533.5526   1305.63  .          .          .Q     V  .         .
  16.483    535.3207   1283.65  .          .          .Q     V  .         .
  16.500    537.0591   1262.12  .          .          .Q     V  .         .
  16.517    538.7714   1243.06  .          .          Q      V  .         .
  16.533    540.4587   1224.99  .          .          Q      V  .         .
  16.550    542.1227   1208.06  .          .          Q      V  .         .
  16.567    543.7634   1191.19  .          .         Q.      V  .         .
  16.583    545.3809   1174.25  .          .         Q.      V  .         .
  16.600    546.9766   1158.51  .          .         Q.      V  .         .
  16.617    548.5515   1143.35  .          .         Q.      V  .         .
  16.633    550.1053   1128.09  .          .       Q .      V  .         .
  16.650    551.6400   1114.15  .          .       Q .       V .         .
  16.667    553.1566   1101.08  .          .       Q .       V .         .
  16.683    554.6542   1087.29  .          .       Q .       V .         .
  16.700    556.1323   1073.10  .          .      Q  .       V .         .
  16.717    557.5920   1059.72  .          .      Q  .       V .         .
  16.733    559.0336   1046.58  .          .      Q  .       V .         .
  16.750    560.4570   1033.37  .          .      Q  .       V .         .
  16.767    561.8625   1020.39  .          .      Q  .       V .         .
  16.783    563.2516   1008.47  .          .     Q   .       V .         .
  16.800    564.6248    996.97  .          .     Q   .       V .         .
  16.817    565.9827    985.78  .          .     Q   .       V .         .
  16.833    567.3256    974.94  .          .     Q   .       V .         .
  16.850    568.6550    965.14  .          .     Q   .       V .         .
  16.867    569.9711    955.50  .          .    Q    .        V.         .
  16.883    571.2744    946.19  .          .    Q    .        V.         .
  16.900    572.5651    937.07  .          .    Q    .        V.         .
  16.917    573.8434    928.06  .          .    Q    .        V.         .
  16.933    575.1100    919.55  .          .    Q    .        V.         .
  16.950    576.3657    911.67  .          .    Q    .        V.         .
  16.967    577.6103    903.56  .          .    Q    .        V.         .
  16.983    578.8438    895.49  .          .   Q     .        V.         .
  17.000    580.0663    887.55  .          .   Q     .        V.         .


****************************************************************************
  FLOW PROCESS FROM NODE    113.00 TO NODE    113.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    113.00 TO NODE    113.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================

            STREAM HYDROGRAPH IN  ONE-MINUTE UNIT INTERVALS(CFS)
        (Notes: Time indicated is at END of Each Unit Intervals.
                Peak 5-minute rainfall intensity is modeled as
```

```
                a constant value for entire 5-minute period.)
--------------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.      775.0    1550.0    2325.0    3100.0
--------------------------------------------------------------------------------
  14.000    341.7422    578.73  .      Q  .     V   .         .         .
  14.017    342.5440    582.09  .      Q  .     V   .         .         .
  14.033    343.3514    586.20  .      Q  .     V   .         .         .
  14.050    344.1652    590.81  .      Q  .     V   .         .         .
  14.067    344.9859    595.80  .      Q  .     V   .         .         .
  14.083    345.8144    601.53  .      Q  .     V   .         .         .
  14.100    346.6521    608.18  .      Q  .     V   .         .         .
  14.117    347.5008    616.16  .      Q  .     V   .         .         .
  14.133    348.3614    624.76  .       Q .     V   .         .         .
  14.150    349.2323    632.25  .       Q .     V   .         .         .
  14.167    350.1122    638.86  .       Q .     V   .         .         .
  14.183    351.0004    644.79  .       Q .     V   .         .         .
  14.200    351.8962    650.35  .       Q .     V   .         .         .
  14.217    352.7993    655.65  .       Q .     V   .         .         .
  14.233    353.7092    660.62  .       Q .     V   .         .         .
  14.250    354.6255    665.19  .       Q .     V   .         .         .
  14.267    355.5479    669.69  .       Q .     V   .         .         .
  14.283    356.4763    674.03  .       Q .     V   .         .         .
  14.300    357.4106    678.34  .       Q .     V   .         .         .
  14.317    358.3510    682.68  .       Q .     V   .         .         .
  14.333    359.2971    686.90  .       Q .     V   .         .         .
  14.350    360.2490    691.07  .       Q .     V   .         .         .
  14.367    361.2066    695.21  .       Q .      V  .         .         .
  14.383    362.1699    699.36  .        Q.      V  .         .         .
  14.400    363.1389    703.50  .        Q.      V  .         .         .
  14.417    364.1136    707.59  .        Q.      V  .         .         .
  14.433    365.0938    711.69  .        Q.      V  .         .         .
  14.450    366.0798    715.83  .        Q.      V  .         .         .
  14.467    367.0716    719.99  .        Q.      V  .         .         .
  14.483    368.0689    724.08  .        Q.      V  .         .         .
  14.500    369.0719    728.17  .        Q.      V  .         .         .
  14.517    370.0806    732.31  .        Q.      V  .         .         .
  14.533    371.0950    736.46  .        Q.      V  .         .         .
  14.550    372.1152    740.65  .        Q.      V  .         .         .
  14.567    373.1411    744.86  .        Q.      V  .         .         .
  14.583    374.1730    749.10  .        Q.      V  .         .         .
  14.600    375.2107    753.39  .        Q.      V  .         .         .
  14.617    376.2543    757.69  .        Q.      V  .         .         .
  14.633    377.3039    762.01  .        Q.      V  .         .         .
  14.650    378.3596    766.39  .        Q.      V  .         .         .
  14.667    379.4213    770.81  .        Q.      V  .         .         .
  14.683    380.4891    775.27  .         Q      V  .         .         .
  14.700    381.5632    779.78  .         Q      V  .         .         .
  14.717    382.6436    784.35  .         Q       V .         .         .
  14.733    383.7303    788.94  .         Q       V .         .         .
  14.750    384.8234    793.57  .         Q       V .         .         .
  14.767    385.9229    798.25  .         Q       V .         .         .
  14.783    387.0289    803.00  .         Q       V .         .         .
  14.800    388.1416    807.80  .         Q       V .         .         .
  14.817    389.2610    812.65  .         Q       V .         .         .
  14.833    390.3871    817.54  .         Q       V .         .         .
  14.850    391.5200    822.51  .         Q       V .         .         .
  14.867    392.6599    827.56  .         Q       V .         .         .
  14.883    393.8068    832.68  .         Q       V .         .         .
  14.900    394.9609    837.87  .         Q       V .         .         .
  14.917    396.1223    843.13  .         Q       V .         .         .
  14.933    397.2909    848.46  .         Q       V .         .         .
  14.950    398.4671    853.89  .        .Q       V .         .         .
  14.967    399.6508    859.40  .        .Q       V .         .         .
  14.983    400.8423    865.01  .        .Q       V .         .         .
  15.000    402.0416    870.70  .        .Q       V .         .         .
  15.017    403.2489    876.49  .        .Q        V.         .         .
  15.033    404.4642    882.36  .        .Q        V.         .         .
  15.050    405.6879    888.35  .        .Q        V.         .         .
  15.067    406.9199    894.43  .        .Q        V.         .         .
  15.083    408.1604    900.65  .        .Q        V.         .         .
  15.100    409.4097    906.97  .        .Q        V.         .         .
```

```
15.117    410.6678    913.41  .         .Q       V.         .         .
15.133    411.9350    919.96  .         .Q       V.         .         .
15.150    413.2114    926.64  .         .Q       V.         .         .
15.167    414.4971    933.45  .         . Q      V.         .         .
15.183    415.7924    940.41  .         . Q      V.         .         .
15.200    417.0976    947.51  .         . Q      V.         .         .
15.217    418.4127    954.77  .         . Q      V.         .         .
15.233    419.7380    962.17  .         . Q      V.         .         .
15.250    421.0737    969.76  .         . Q      V.         .         .
15.267    422.4201    977.47  .         . Q      V.         .         .
15.283    423.7774    985.38  .         . Q      V.         .         .
15.300    425.1458    993.46  .         . Q       V         .         .
15.317    426.5256   1001.75  .         . Q       V         .         .
15.333    427.9171   1010.23  .         .  Q      V         .         .
15.350    429.3208   1019.06  .         .  Q      V         .         .
15.367    430.7371   1028.27  .         .  Q      V         .         .
15.383    432.1667   1037.90  .         .  Q      V         .         .
15.400    433.6101   1047.88  .         .  Q      V         .         .
15.417    435.0680   1058.40  .         .  Q      V         .         .
15.433    436.5412   1069.57  .         .  Q      V         .         .
15.450    438.0321   1082.41  .         .  Q      V         .         .
15.467    439.5403   1094.97  .         .   Q     V         .         .
15.483    441.0647   1106.71  .         .   Q     V         .         .
15.500    442.6052   1118.37  .         .   Q     V         .         .
15.517    444.1621   1130.34  .         .   Q     V         .         .
15.533    445.7360   1142.60  .         .   Q     .V        .         .
15.550    447.3271   1155.15  .         .   Q     .V        .         .
15.567    448.9360   1168.09  .         .    Q    .V        .         .
15.583    450.5634   1181.49  .         .    Q    .V        .         .
15.600    452.2099   1195.31  .         .    Q    .V        .         .
15.617    453.8761   1209.65  .         .    Q    .V        .         .
15.633    455.5626   1224.45  .         .    Q    .V        .         .
15.650    457.2704   1239.86  .         .    Q    .V        .         .
15.667    459.0003   1255.87  .         .     Q   .V        .         .
15.683    460.7507   1270.83  .         .     Q   .V        .         .
15.700    462.5201   1284.58  .         .     Q   .V        .         .
15.717    464.3079   1297.91  .         .     Q   .V        .         .
15.733    466.1139   1311.18  .         .     Q   .V        .         .
15.750    467.9370   1323.58  .         .      Q  . V       .         .
15.767    469.7751   1334.42  .         .      Q  . V       .         .
15.783    471.6233   1341.80  .         .      Q  . V       .         .
15.800    473.4830   1350.20  .         .      Q  . V       .         .
15.817    475.3632   1365.00  .         .      Q  . V       .         .
15.833    477.2702   1384.47  .         .      Q  . V       .         .
15.850    479.2099   1408.27  .         .       Q . V       .         .
15.867    481.1876   1435.76  .         .       Q . V       .         .
15.883    483.2091   1467.61  .         .       Q . V       .         .
15.900    485.2807   1503.98  .         .        Q. V       .         .
15.917    487.4108   1546.47  .         .        Q. V       .         .
15.933    489.6074   1594.75  .         .         Q  V      .         .
15.950    491.8827   1651.81  .         .         .Q V      .         .
15.967    494.2760   1737.57  .         .         . QV      .         .
15.983    496.8273   1852.24  .         .         .  Q      .         .
16.000    499.5652   1987.70  .         .         .  V Q    .         .
16.017    502.5137   2140.64  .         .         .  V   Q  .         .
16.033    505.7112   2321.38  .         .         .  V     Q.         .
16.050    509.1716   2512.21  .         .         .  V      . Q       .
16.067    512.9258   2725.54  .         .         .   V     .    Q    .
16.083    516.9297   2906.82  .         .         .   V     .      Q  .
16.100    521.0708   3006.43  .         .         .   V     .       Q .
16.117    525.2481   3032.74  .         .         .   V     .        Q.
16.133    529.3635   2987.79  .         .         .   V     .       Q .
16.150    533.2858   2847.61  .         .         .    V    .     Q   .
16.167    536.9568   2665.11  .         .         .    V    .   Q     .
16.183    540.4152   2510.77  .         .         .    V     . Q      .
16.200    543.6886   2376.52  .         .         .    V    Q         .
16.217    546.8061   2263.31  .         .         .    V   Q.         .
16.233    549.7831   2161.33  .         .         .    V Q  .         .
16.250    552.6389   2073.27  .         .         .     Q   .         .
16.267    555.3948   2000.81  .         .         .    QV   .         .
16.283    558.0757   1946.36  .         .         .    QV   .         .
16.300    560.6894   1897.52  .         .         .   Q V   .         .
16.317    563.2407   1852.20  .         .         .  Q  V   .         .
16.333    565.7317   1808.48  .         .         .  Q  V   .         .
16.350    568.1622   1764.53  .         .         . Q   V   .         .
16.367    570.5350   1722.64  .         .         . Q   V   .         .
16.383    572.8541   1683.70  .         .         .Q     V  .         .
16.400    575.1238   1647.75  .         .         .Q     V  .         .
16.417    577.3451   1612.69  .         .         Q      V  .         .
16.433    579.5165   1576.45  .         .         Q      V  .         .
16.450    581.6387   1540.68  .         .        Q.      V  .         .
16.467    583.7149   1507.35  .         .        Q.      V  .         .
16.483    585.7475   1475.68  .         .        Q.      V  .         .
16.500    587.7383   1445.32  .         .       Q .      V  .         .
16.517    589.6919   1418.33  .         .       Q .      V  .         .
16.533    591.6122   1394.18  .         .      Q  .      V  .         .
16.550    593.5018   1371.85  .         .      Q  .      V  .         .
16.567    595.3614   1350.05  .         .      Q  .       V .         .
16.583    597.1913   1328.51  .         .      Q  .       V .         .
16.600    598.9936   1308.47  .         .     Q   .       V .         .
16.617    600.7695   1289.29  .         .     Q   .       V .         .
16.633    602.5192   1270.29  .         .     Q   .       V .         .
16.650    604.2448   1252.78  .         .     Q   .       V .         .
16.667    605.9475   1236.20  .         .    Q    .       V .         .
16.683    607.6267   1219.08  .         .    Q    .       V .         .
16.700    609.2819   1201.70  .         .    Q    .       V .         .
16.717    610.9146   1185.29  .         .    Q    .       V .         .
16.733    612.5251   1169.23  .         .    Q    .       V .         .
16.750    614.1135   1153.23  .         .   Q     .       V .         .
16.767    615.6804   1137.57  .         .   Q     .        V.         .
16.783    617.2274   1123.05  .         .   Q     .        V.         .
16.800    618.7549   1109.04  .         .   Q     .        V.         .
16.817    620.2637   1095.40  .         .   Q     .        V.         .
16.833    621.7544   1082.22  .         .  Q      .        V.         .
16.850    623.2284   1070.12  .         .  Q      .        V.         .
16.867    624.6860   1058.22  .         .  Q      .        V.         .
16.883    626.1274   1046.52  .         .  Q      .        V.         .
16.900    627.5529   1034.88  .         .  Q      .        V.         .
16.917    628.9626   1023.40  .         .  Q      .        V.         .
16.933    630.3572   1012.49  .         .  Q      .        V.         .
16.950    631.7377   1002.24  .         . Q       .        V.         .
16.967    633.1041    992.00  .         . Q       .        V.         .
16.983    634.4568    982.07  .         . Q       .        V.         .
17.000    635.7961    972.36  .         . Q       .        V.         .
```

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****************************************************************************
  FLOW PROCESS FROM NODE    135.10 TO NODE    138.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
============================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #3)

         WATERSHED AREA =      30.700 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.174 HOURS
         FOOTHILL S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.770
         LOW LOSS FRACTION = 0.990
         *HYDROGRAPH MODEL #7 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.27
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.82
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.32
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  2.65
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  4.10
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) = 10.70

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
           5-MINUTE FACTOR = 0.999
          30-MINUTE FACTOR = 0.999
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  1-HOUR FACTOR = 0.999
  3-HOUR FACTOR = 1.000
  6-HOUR FACTOR = 1.000
 24-HOUR FACTOR = 1.000

UNIT HYDROGRAPH TIME UNIT =   1.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME =   9.579


RUNOFF HYDROGRAPH LISTING LIMITS:
MODEL TIME(HOURS) FOR BEGINNING OF RESULTS =  14.00
MODEL TIME(HOURS) FOR END OF RESULTS =  17.00
```

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	0.623	11.558
2	1.917	24.037
3	3.625	31.693
4	5.736	39.193
5	8.494	51.210
6	11.243	51.032
7	15.164	72.774
8	19.972	89.254
9	26.489	120.993
10	37.008	195.261
11	49.884	239.028
12	56.545	123.665
13	61.552	92.951
14	65.200	67.714
15	68.365	58.755
16	71.171	52.090
17	73.700	46.953
18	76.118	44.885
19	78.083	36.483
20	79.778	31.471
21	81.554	32.969
22	83.192	30.398
23	84.522	24.699
24	85.913	25.820
25	87.112	22.256
26	88.218	20.533
27	89.183	17.916
28	90.123	17.441
29	90.999	16.267
30	91.860	15.980
31	92.604	13.805
32	93.313	13.171
33	93.995	12.666
34	94.534	10.005
35	95.052	9.611
36	95.570	9.611
37	96.041	8.748
38	96.361	5.947
39	96.670	5.739
40	96.979	5.731
41	97.288	5.739
42	97.597	5.738
43	97.901	5.640
44	98.035	2.479
45	98.084	0.916
46	98.134	0.924
47	98.183	0.920
48	98.233	0.916
49	98.282	0.920
50	98.332	0.920
51	98.382	0.924
52	98.431	0.916
53	98.481	0.924
54	98.530	0.916
55	98.580	0.924
56	98.629	0.916
57	98.679	0.924
58	98.728	0.916
59	98.777	0.916
60	98.827	0.924
61	98.877	0.924
62	98.926	0.916
63	98.976	0.916
64	99.026	0.931
65	99.075	0.916
66	99.125	0.916
67	99.174	0.916
68	99.223	0.916
69	99.273	0.916
70	99.322	0.916
71	99.371	0.916
72	99.421	0.916
73	99.470	0.916
74	99.519	0.916
75	99.569	0.916
76	99.618	0.916
77	99.667	0.916
78	99.717	0.916
79	99.766	0.916
80	99.815	0.916
81	99.865	0.916
82	99.914	0.916
83	99.963	0.916
84	100.000	0.682

```
TOTAL SOIL-LOSS VOLUME(ACRE-FEET) =      25.7137
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) =       1.6577
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============================================================================

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

============================================================================
               HYDROGRAPH IN  ONE-MINUTE UNIT INTERVALS(CFS)
        (Notes: Time indicated is at END of Each Unit Intervals.
                Peak 5-minute rainfall intensity is modeled as
                a constant value for entire 5-minute period.)
----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.       12.5      25.0      37.5      50.0
----------------------------------------------------------------------------
  14.000      0.1339      0.16  Q  V      .         .         .         .
  14.017      0.1342      0.17  Q  V      .         .         .         .
  14.033      0.1344      0.17  Q  V      .         .         .         .
  14.050      0.1346      0.17  Q  V      .         .         .         .
  14.067      0.1349      0.17  Q  V      .         .         .         .
  14.083      0.1351      0.17  Q  V      .         .         .         .
  14.100      0.1353      0.17  Q  V      .         .         .         .
  14.117      0.1356      0.17  Q  V      .         .         .         .
  14.133      0.1358      0.17  Q  V      .         .         .         .
  14.150      0.1360      0.17  Q  V      .         .         .         .
  14.167      0.1363      0.17  Q  V      .         .         .         .
  14.183      0.1365      0.17  Q  V      .         .         .         .
  14.200      0.1367      0.17  Q  V      .         .         .         .
  14.217      0.1370      0.17  Q  V      .         .         .         .
  14.233      0.1372      0.17  Q  V      .         .         .         .
  14.250      0.1374      0.17  Q  V      .         .         .         .
  14.267      0.1377      0.17  Q  V      .         .         .         .
  14.283      0.1379      0.17  Q  V      .         .         .         .
  14.300      0.1382      0.18  Q  V      .         .         .         .
  14.317      0.1384      0.18  Q  V      .         .         .         .
  14.333      0.1386      0.18  Q  V      .         .         .         .
  14.350      0.1389      0.18  Q  V      .         .         .         .
  14.367      0.1391      0.18  Q  V      .         .         .         .
  14.383      0.1394      0.18  Q  V      .         .         .         .
  14.400      0.1396      0.18  Q  V      .         .         .         .
  14.417      0.1399      0.18  Q  V      .         .         .         .
  14.433      0.1401      0.18  Q  V      .         .         .         .
  14.450      0.1404      0.18  Q  V      .         .         .         .
  14.467      0.1406      0.18  Q  V      .         .         .         .
  14.483      0.1409      0.18  Q  V      .         .         .         .
  14.500      0.1411      0.18  Q  V      .         .         .         .
  14.517      0.1414      0.18  Q  V      .         .         .         .
  14.533      0.1416      0.18  Q  V      .         .         .         .
  14.550      0.1419      0.18  Q  V      .         .         .         .
  14.567      0.1421      0.19  Q  V      .         .         .         .
  14.583      0.1424      0.19  Q  V      .         .         .         .
  14.600      0.1426      0.19  Q  V      .         .         .         .
  14.617      0.1429      0.19  Q  V      .         .         .         .
  14.633      0.1432      0.19  Q  V      .         .         .         .
  14.650      0.1434      0.19  Q  V      .         .         .         .
  14.667      0.1437      0.19  Q  V      .         .         .         .
  14.683      0.1440      0.19  Q  V      .         .         .         .
  14.700      0.1442      0.19  Q  V      .         .         .         .
  14.717      0.1445      0.19  Q  V      .         .         .         .
  14.733      0.1447      0.19  Q  V      .         .         .         .
  14.750      0.1450      0.19  Q  V      .         .         .         .
  14.767      0.1453      0.19  Q  V      .         .         .         .
  14.783      0.1455      0.20  Q  V      .         .         .         .
  14.800      0.1458      0.20  Q  V      .         .         .         .
  14.817      0.1461      0.20  Q  V      .         .         .         .
  14.833      0.1464      0.20  Q  V      .         .         .         .
  14.850      0.1466      0.20  Q  V      .         .         .         .
  14.867      0.1469      0.20  Q  V      .         .         .         .
  14.883      0.1472      0.20  Q  V      .         .         .         .
  14.900      0.1475      0.20  Q  V      .         .         .         .
  14.917      0.1477      0.20  Q  V      .         .         .         .
  14.933      0.1480      0.20  Q  V      .         .         .         .
  14.950      0.1483      0.20  Q  V      .         .         .         .
  14.967      0.1486      0.20  Q  V      .         .         .         .
  14.983      0.1489      0.21  Q  V      .         .         .         .
  15.000      0.1491      0.21  Q  V      .         .         .         .
  15.017      0.1494      0.21  Q  V      .         .         .         .
  15.033      0.1497      0.21  Q  V      .         .         .         .
  15.050      0.1500      0.21  Q  V      .         .         .         .
  15.067      0.1503      0.21  Q  V      .         .         .         .
  15.083      0.1506      0.21  Q  V      .         .         .         .
  15.100      0.1509      0.21  Q  V      .         .         .         .
  15.117      0.1512      0.21  Q  V      .         .         .         .
  15.133      0.1515      0.22  Q  V      .         .         .         .
  15.150      0.1518      0.22  Q  V      .         .         .         .
  15.167      0.1521      0.22  Q  V      .         .         .         .
  15.183      0.1524      0.22  Q  V      .         .         .         .
  15.200      0.1527      0.22  Q  V      .         .         .         .
  15.217      0.1530      0.22  Q  V      .         .         .         .
  15.233      0.1533      0.23  Q  V      .         .         .         .
  15.250      0.1536      0.24  Q  V      .         .         .         .
  15.267      0.1540      0.25  Q  V      .         .         .         .
  15.283      0.1544      0.27  Q  V      .         .         .         .
  15.300      0.1548      0.29  Q  V      .         .         .         .
  15.317      0.1552      0.33  Q  V      .         .         .         .
  15.333      0.1557      0.37  Q  V      .         .         .         .
  15.350      0.1563      0.44  Q  V      .         .         .         .
  15.367      0.1571      0.54  Q  V      .         .         .         .
  15.383      0.1580      0.68  Q  V      .         .         .         .
  15.400      0.1592      0.84  Q  V      .         .         .         .
  15.417      0.1606      1.03  Q  V      .         .         .         .
  15.433      0.1623      1.22  Q  V      .         .         .         .
  15.450      0.1642      1.45  .Q V      .         .         .         .
  15.467      0.1666      1.70  .Q  V     .         .         .         .
  15.483      0.1694      2.01  .Q  V     .         .         .         .
  15.500      0.1727      2.40  .Q  V     .         .         .         .
  15.517      0.1766      2.85  . Q V     .         .         .         .
  15.533      0.1810      3.18  . Q V     .         .         .         .
  15.550      0.1858      3.48  . Q V     .         .         .         .
  15.567      0.1910      3.76  .  QV     .         .         .         .
  15.583      0.1965      4.05  .  QV     .         .         .         .
  15.600      0.2025      4.33  .  QV     .         .         .         .
  15.617      0.2088      4.62  .  Q V    .         .         .         .
  15.633      0.2156      4.92  .  Q V    .         .         .         .
  15.650      0.2228      5.22  .   QV    .         .         .         .
  15.667      0.2304      5.52  .   QV    .         .         .         .
  15.683      0.2384      5.83  .   QV    .         .         .         .
  15.700      0.2469      6.11  .   QV    .         .         .         .
  15.717      0.2557      6.40  .    QV   .         .         .         .
  15.733      0.2649      6.69  .    QV   .         .         .         .
  15.750      0.2745      6.98  .    QV   .         .         .         .
  15.767      0.2845      7.28  .    QV   .         .         .         .
  15.783      0.2950      7.57  .     QV  .         .         .         .
  15.800      0.3058      7.85  .     QV  .         .         .         .
  15.817      0.3169      8.11  .     QV  .         .         .         .
  15.833      0.3283      8.26  .     QV  .         .         .         .
  15.850      0.3399      8.38  .     Q V .         .         .         .
  15.867      0.3519      8.74  .     Q V .         .         .         .
  15.883      0.3646      9.23  .      QV .         .         .         .
  15.900      0.3781      9.81  .      Q V.         .         .         .
  15.917      0.3926     10.50  .       QV.         .         .         .
  15.933      0.4081     11.27  .        Q.         .         .         .
  15.950      0.4249     12.18  .        QV         .         .         .
  15.967      0.4434     13.43  .         Q         .         .         .
  15.983      0.4642     15.08  .         .VQ       .         .         .
  16.000      0.4875     16.97  .         .V Q      .         .         .
  16.017      0.5139     19.15  .         . V  Q    .         .         .
  16.033      0.5437     21.64  .         .  V   Q  .         .         .
  16.050      0.5768     24.02  .         .  V     Q.         .         .
  16.067      0.6134     26.57  .         .   V     .Q        .         .
  16.083      0.6538     29.34  .         .    V    .  Q      .         .
  16.100      0.6986     32.53  .         .     V   .     Q   .         .
  16.117      0.7494     36.83  .         .       V .        Q.         .
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 16.133      0.8064     41.42  .          .        V.         .  Q      .
 16.150      0.8653     42.73  .          .         V         .   Q     .
 16.167      0.9241     42.68  .          .         . V       .   Q     .
 16.183      0.9807     41.11  .          .         .  V      . Q       .
 16.200      1.0321     37.30  .          .         .   V    Q.         .
 16.217      1.0758     31.78  .          .         .    Q    .         .
 16.233      1.1149     28.35  .          .         . Q   V   .         .
 16.250      1.1503     25.68  .          .         Q      V  .         .
 16.267      1.1827     23.54  .          .       Q .       V .         .
 16.283      1.2126     21.69  .          .      Q  .        V.         .
 16.300      1.2404     20.17  .          .     Q   .        V.         .
 16.317      1.2663     18.86  .          .    Q    .         V         .
 16.333      1.2907     17.69  .          .   Q     .         .V        .
 16.350      1.3139     16.86  .          .  Q      .         .V        .
 16.367      1.3358     15.91  .          . Q       .         . V       .
 16.383      1.3563     14.90  .          .Q        .         . V       .
 16.400      1.3754     13.87  .          .Q        .         .  V      .
 16.417      1.3933     12.97  .          Q         .         .  V      .
 16.433      1.4099     12.06  .         Q.         .         .   V     .
 16.450      1.4254     11.21  .       Q .          .         .   V     .
 16.467      1.4396     10.37  .       Q .          .         .   V     .
 16.483      1.4528      9.56  .      Q  .          .         .    V    .
 16.500      1.4648      8.68  .     Q   .          .         .    V    .
 16.517      1.4755      7.77  .    Q    .          .         .    V    .
 16.533      1.4851      7.00  .   Q     .          .         .    V    .
 16.550      1.4938      6.34  .   Q     .          .         .     V   .
 16.567      1.5017      5.73  .  Q      .          .         .     V   .
 16.583      1.5088      5.14  .  Q      .          .         .     V   .
 16.600      1.5152      4.65  . Q       .          .         .     V   .
 16.617      1.5210      4.23  . Q       .          .         .     V   .
 16.633      1.5263      3.84  . Q       .          .         .     V   .
 16.650      1.5311      3.49  .Q        .          .         .     V   .
 16.667      1.5356      3.22  .Q        .          .         .      V  .
 16.683      1.5396      2.90  .Q        .          .         .      V  .
 16.700      1.5431      2.58  .Q        .          .         .      V  .
 16.717      1.5463      2.28 .Q         .          .         .      V  .
 16.733      1.5490      1.99 .Q         .          .         .      V  .
 16.750      1.5514      1.72 .Q         .          .         .      V  .
 16.767      1.5535      1.53 .Q         .          .         .      V  .
 16.783      1.5554      1.40 .Q         .          .         .      V  .
 16.800      1.5572      1.29 .Q         .          .         .      V  .
 16.817      1.5588      1.20 Q          .          .         .      V  .
 16.833      1.5604      1.12 Q          .          .         .      V  .
 16.850      1.5618      1.05 Q          .          .         .      V  .
 16.867      1.5632      0.99 Q          .          .         .      V  .
 16.883      1.5645      0.94 Q          .          .         .      V  .
 16.900      1.5657      0.90 Q          .          .         .      V  .
 16.917      1.5669      0.85 Q          .          .         .      V  .
 16.933      1.5680      0.81 Q          .          .         .      V  .
 16.950      1.5691      0.78 Q          .          .         .      V  .
 16.967      1.5701      0.75 Q          .          .         .      V  .
 16.983      1.5711      0.72 Q          .          .         .      V  .
 17.000      1.5721      0.70 Q          .          .         .      V  .

****************************************************************************
  FLOW PROCESS FROM NODE    138.00 TO NODE    138.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    403.10 TO NODE    138.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
============================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #4)

         WATERSHED AREA =      17.500 ACRES

         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.184 HOURS
         VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.860
         LOW LOSS FRACTION = 0.990
         *HYDROGRAPH MODEL #7 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.27
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.82
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.32
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  2.65
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  4.10
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) = 10.70

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
           5-MINUTE FACTOR = 0.999
          30-MINUTE FACTOR = 0.999
           1-HOUR FACTOR = 0.999
           3-HOUR FACTOR = 1.000
           6-HOUR FACTOR = 1.000
          24-HOUR FACTOR = 1.000

         UNIT HYDROGRAPH TIME UNIT =   1.000 MINUTES
         UNIT INTERVAL PERCENTAGE OF LAG-TIME =   9.058


         RUNOFF HYDROGRAPH LISTING LIMITS:
         MODEL TIME(HOURS) FOR BEGINNING OF RESULTS =  14.00
         MODEL TIME(HOURS) FOR END OF RESULTS =  17.00
```

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	0.755	7.988
2	2.351	16.893
3	4.441	22.111
4	7.287	30.117
5	10.735	36.487
6	15.205	47.301
7	20.588	56.972
8	26.678	64.444
9	33.220	69.228
10	39.994	71.674
11	46.561	69.496
12	52.479	62.628
13	57.070	48.583
14	60.815	39.621
15	63.818	31.786
16	66.708	30.579
17	69.088	25.186
18	70.903	19.204
19	72.926	21.414
20	74.513	16.791
21	75.940	15.102
22	77.249	13.854
23	78.507	13.306
24	79.704	12.672
25	80.695	10.482
26	81.734	11.000
27	82.621	9.379
28	83.447	8.739
29	84.336	9.410
30	85.069	7.762
31	85.791	7.637
32	86.452	6.992
33	87.099	6.849

34	87.690	6.254
35	88.206	5.460
36	88.739	5.638
37	89.272	5.636
38	89.803	5.629
39	90.267	4.901
40	90.688	4.459
41	91.109	4.458
42	91.531	4.459
43	91.946	4.390
44	92.297	3.722
45	92.633	3.550
46	92.968	3.550
47	93.304	3.548
48	93.639	3.553
49	93.968	3.482
50	94.246	2.941
51	94.513	2.820
52	94.779	2.818
53	95.045	2.818
54	95.312	2.825
55	95.578	2.816
56	95.844	2.816
57	96.073	2.419
58	96.249	1.867
59	96.425	1.857
60	96.601	1.867
61	96.777	1.857
62	96.953	1.867
63	97.129	1.857
64	97.305	1.862
65	97.480	1.857
66	97.657	1.867
67	97.832	1.857
68	97.992	1.688
69	98.068	0.812
70	98.133	0.685
71	98.198	0.689
72	98.263	0.685
73	98.328	0.694
74	98.393	0.684
75	98.458	0.685
76	98.523	0.694
77	98.588	0.685
78	98.653	0.689
79	98.718	0.689
80	98.783	0.689
81	98.848	0.685
82	98.913	0.689
83	98.978	0.689
84	99.044	0.694
85	99.109	0.689
86	99.174	0.689
87	99.239	0.689
88	99.304	0.689
89	99.369	0.689
90	99.435	0.689
91	99.500	0.689
92	99.565	0.689
93	99.630	0.689
94	99.695	0.689
95	99.760	0.689
96	99.825	0.689
97	99.890	0.689
98	99.956	0.689
99	100.000	0.471

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 14.7975
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 0.8056

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

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

=============================================================================
               HYDROGRAPH IN  ONE-MINUTE UNIT INTERVALS(CFS)
        (Notes: Time indicated is at END of Each Unit Intervals.
                Peak 5-minute rainfall intensity is modeled as
                a constant value for entire 5-minute period.)
-----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.        5.0      10.0      15.0      20.0
-----------------------------------------------------------------------------
  14.000      0.0760      0.09  Q  V      .         .         .         .
  14.017      0.0762      0.09  Q  V      .         .         .         .
  14.033      0.0763      0.09  Q  V      .         .         .         .
  14.050      0.0764      0.09  Q  V      .         .         .         .
  14.067      0.0766      0.09  Q  V      .         .         .         .
  14.083      0.0767      0.09  Q  V      .         .         .         .
  14.100      0.0768      0.10  Q  V      .         .         .         .
  14.117      0.0769      0.10  Q  V      .         .         .         .
  14.133      0.0771      0.10  Q  V      .         .         .         .
  14.150      0.0772      0.10  Q  V      .         .         .         .
  14.167      0.0773      0.10  Q  V      .         .         .         .
  14.183      0.0775      0.10  Q  V      .         .         .         .
  14.200      0.0776      0.10  Q  V      .         .         .         .
  14.217      0.0777      0.10  Q  V      .         .         .         .
  14.233      0.0779      0.10  Q  V      .         .         .         .
  14.250      0.0780      0.10  Q  V      .         .         .         .
  14.267      0.0781      0.10  Q  V      .         .         .         .
  14.283      0.0783      0.10  Q  V      .         .         .         .
  14.300      0.0784      0.10  Q  V      .         .         .         .
  14.317      0.0786      0.10  Q  V      .         .         .         .
  14.333      0.0787      0.10  Q  V      .         .         .         .
  14.350      0.0788      0.10  Q  V      .         .         .         .
  14.367      0.0790      0.10  Q  V      .         .         .         .
  14.383      0.0791      0.10  Q  V      .         .         .         .
  14.400      0.0793      0.10  Q  V      .         .         .         .
  14.417      0.0794      0.10  Q  V      .         .         .         .
  14.433      0.0795      0.10  Q  V      .         .         .         .
  14.450      0.0797      0.10  Q  V      .         .         .         .
  14.467      0.0798      0.10  Q  V      .         .         .         .
  14.483      0.0800      0.10  Q  V      .         .         .         .
  14.500      0.0801      0.10  Q  V      .         .         .         .
  14.517      0.0802      0.10  Q  V      .         .         .         .
  14.533      0.0804      0.10  Q  V      .         .         .         .
  14.550      0.0805      0.10  Q  V      .         .         .         .
  14.567      0.0807      0.10  Q   V     .         .         .         .
  14.583      0.0808      0.11  Q   V     .         .         .         .
  14.600      0.0810      0.11  Q   V     .         .         .         .
  14.617      0.0811      0.11  Q   V     .         .         .         .
  14.633      0.0813      0.11  Q   V     .         .         .         .
  14.650      0.0814      0.11  Q   V     .         .         .         .
  14.667      0.0815      0.11  Q   V     .         .         .         .
  14.683      0.0817      0.11  Q   V     .         .         .         .
  14.700      0.0818      0.11  Q   V     .         .         .         .
  14.717      0.0820      0.11  Q   V     .         .         .         .
  14.733      0.0821      0.11  Q   V     .         .         .         .
  14.750      0.0823      0.11  Q   V     .         .         .         .
  14.767      0.0824      0.11  Q   V     .         .         .         .
  14.783      0.0826      0.11  Q   V     .         .         .         .
  14.800      0.0828      0.11  Q   V     .         .         .         .
  14.817      0.0829      0.11  Q   V     .         .         .         .
  14.833      0.0831      0.11  Q   V     .         .         .         .
  14.850      0.0832      0.11  Q   V     .         .         .         .
  14.867      0.0834      0.11  Q   V     .         .         .         .
  14.883      0.0835      0.11  Q   V     .         .         .         .
  14.900      0.0837      0.11  Q   V     .         .         .         .
  14.917      0.0838      0.11  Q   V     .         .         .         .
  14.933      0.0840      0.11  Q   V     .         .         .         .
  14.950      0.0842      0.12  Q   V     .         .         .         .
  14.967      0.0843      0.12  Q   V     .         .         .         .
  14.983      0.0845      0.12  Q   V     .         .         .         .
  15.000      0.0846      0.12  Q   V     .         .         .         .
  15.017      0.0848      0.12  Q   V     .         .         .         .
  15.033      0.0850      0.12  Q   V     .         .         .         .
  15.050      0.0851      0.12  Q   V     .         .         .         .
  15.067      0.0853      0.12  Q   V     .         .         .         .
  15.083      0.0855      0.12  Q   V     .         .         .         .
  15.100      0.0856      0.12  Q   V     .         .         .         .
  15.117      0.0858      0.12  Q   V     .         .         .         .
  15.133      0.0860      0.12  Q   V     .         .         .         .
  15.150      0.0861      0.12  Q   V     .         .         .         .
  15.167      0.0863      0.12  Q   V     .         .         .         .
  15.183      0.0865      0.12  Q   V     .         .         .         .
  15.200      0.0866      0.12  Q   V     .         .         .         .
  15.217      0.0868      0.13  Q   V     .         .         .         .
  15.233      0.0870      0.13  Q   V     .         .         .         .
  15.250      0.0872      0.13  Q   V     .         .         .         .
  15.267      0.0873      0.13  Q   V     .         .         .         .
  15.283      0.0875      0.13  Q   V     .         .         .         .
  15.300      0.0877      0.13  Q   V     .         .         .         .
  15.317      0.0879      0.13  Q   V     .         .         .         .
  15.333      0.0880      0.13  Q   V     .         .         .         .
  15.350      0.0882      0.14  Q   V     .         .         .         .
  15.367      0.0884      0.15  Q   V     .         .         .         .
  15.383      0.0887      0.17  Q   V     .         .         .         .
  15.400      0.0889      0.19  Q   V     .         .         .         .
  15.417      0.0893      0.23  Q   V     .         .         .         .
  15.433      0.0896      0.27  Q   V     .         .         .         .
  15.450      0.0901      0.33  Q   V     .         .         .         .
  15.467      0.0907      0.40  Q   V     .         .         .         .
  15.483      0.0913      0.49  Q   V     .         .         .         .
  15.500      0.0921      0.58  .Q  V     .         .         .         .
  15.517      0.0931      0.68  .Q  V     .         .         .         .
  15.533      0.0942      0.79  .Q  V     .         .         .         .
  15.550      0.0954      0.90  .Q  V     .         .         .         .
  15.567      0.0968      1.01  . Q V     .         .         .         .
  15.583      0.0983      1.13  . Q V     .         .         .         .
  15.600      0.1001      1.25  . Q V     .         .         .         .
  15.617      0.1020      1.38  . Q  V    .         .         .         .
  15.633      0.1041      1.51  .  Q V    .         .         .         .
  15.650      0.1063      1.65  .  Q V    .         .         .         .
  15.667      0.1088      1.80  .  Q V    .         .         .         .
  15.683      0.1115      1.94  .  Q V    .         .         .         .
  15.700      0.1143      2.07  .   QV    .         .         .         .
  15.717      0.1173      2.20  .   QV    .         .         .         .
  15.733      0.1205      2.32  .   QV    .         .         .         .
  15.750      0.1239      2.45  .   Q V   .         .         .         .
  15.767      0.1275      2.57  .    QV   .         .         .         .
  15.783      0.1312      2.68  .    QV   .         .         .         .
  15.800      0.1350      2.80  .    QV   .         .         .         .
  15.817      0.1390      2.93  .    QV   .         .         .         .
  15.833      0.1433      3.07  .     QV  .         .         .         .
  15.850      0.1477      3.24  .     QV  .         .         .         .
  15.867      0.1525      3.45  .     QV  .         .         .         .
  15.883      0.1576      3.72  .      Q  .         .         .         .
  15.900      0.1632      4.05  .       Q .         .         .         .
  15.917      0.1693      4.43  .       Q .         .         .         .
  15.933      0.1760      4.86  .       VQ.         .         .         .
  15.950      0.1834      5.38  .        VQ         .         .         .
  15.967      0.1919      6.15  .        V. Q       .         .         .
  15.983      0.2017      7.16  .         V   Q     .         .         .
  16.000      0.2132      8.35  .         V     Q   .         .         .
  16.017      0.2267      9.75  .         .V      Q.         .         .
  16.033      0.2423     11.33  .         . V      . Q       .         .
  16.050      0.2601     12.97  .         . V      .    Q    .         .
  16.067      0.2802     14.57  .         .  V     .        Q.         .
  16.083      0.3024     16.13  .         .    V   .         . Q       .
  16.100      0.3265     17.48  .         .     V  .         .   Q     .
  16.117      0.3521     18.58  .         .      V .         .      Q  .
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 16.133      0.3786     19.22  .          .       V .         .       Q .
 16.150      0.4051     19.28  .          .         V         .       Q .
 16.167      0.4309     18.69  .          .         .V        .      Q  .
 16.183      0.4552     17.64  .          .         . V       .    Q    .
 16.200      0.4775     16.24  .          .         .  V      . Q       .
 16.217      0.4978     14.75  .          .         .   V    Q.         .
 16.233      0.5161     13.24  .          .         .    VQ   .         .
 16.250      0.5325     11.90  .          .         .  Q  V   .         .
 16.267      0.5474     10.85  .          .         .Q     V  .         .
 16.283      0.5611      9.94  .          .        Q.      V  .         .
 16.300      0.5736      9.08  .          .       Q .       V .         .
 16.317      0.5852      8.36  .          .     Q   .        V.         .
 16.333      0.5959      7.82  .          .    Q    .        V.         .
 16.350      0.6059      7.24  .          .   Q     .         V         .
 16.367      0.6152      6.74  .          .  Q      .         V         .
 16.383      0.6238      6.29  .          . Q       .         V         .
 16.400      0.6319      5.84  .          .Q        .         .V        .
 16.417      0.6393      5.42  .          Q         .         .V        .
 16.433      0.6463      5.03  .          Q         .         . V       .
 16.450      0.6527      4.67  .         Q.         .         . V       .
 16.467      0.6587      4.32  .        Q .         .         . V       .
 16.483      0.6642      4.01  .        Q .         .         . V       .
 16.500      0.6693      3.73  .       Q  .         .         .  V      .
 16.517      0.6741      3.45  .      Q   .         .         .  V      .
 16.533      0.6785      3.21  .      Q   .         .         .  V      .
 16.550      0.6826      3.00  .      Q   .         .         .  V      .
 16.567      0.6865      2.84  .    Q     .         .         .   V     .
 16.583      0.6902      2.68  .    Q     .         .         .   V     .
 16.600      0.6937      2.54  .    Q     .         .         .   V     .
 16.617      0.6970      2.42  .   Q      .         .         .   V     .
 16.633      0.7002      2.30  .   Q      .         .         .   V     .
 16.650      0.7032      2.20  .   Q      .         .         .   V     .
 16.667      0.7061      2.09  .   Q      .         .         .    V    .
 16.683      0.7089      1.99  .  Q       .         .         .    V    .
 16.700      0.7115      1.90  .  Q       .         .         .    V    .
 16.717      0.7140      1.82  .  Q       .         .         .    V    .
 16.733      0.7164      1.74  .  Q       .         .         .    V    .
 16.750      0.7187      1.67  .  Q       .         .         .    V    .
 16.767      0.7209      1.61  .  Q       .         .         .    V    .
 16.783      0.7231      1.55  .  Q       .         .         .    V    .
 16.800      0.7251      1.49  . Q        .         .         .     V   .
 16.817      0.7271      1.43  . Q        .         .         .     V   .
 16.833      0.7290      1.37  . Q        .         .         .     V   .
 16.850      0.7308      1.32  . Q        .         .         .     V   .
 16.867      0.7325      1.28  . Q        .         .         .     V   .
 16.883      0.7343      1.24  . Q        .         .         .     V   .
 16.900      0.7359      1.20  . Q        .         .         .     V   .
 16.917      0.7375      1.14  . Q        .         .         .     V   .
 16.933      0.7390      1.09  . Q        .         .         .     V   .
 16.950      0.7404      1.03  . Q        .         .         .     V   .
 16.967      0.7417      0.98  .Q        .         .         .     V   .
 16.983      0.7430      0.94  .Q        .         .         .     V   .
 17.000      0.7443      0.91  .Q        .         .         .     V   .

****************************************************************************
  FLOW PROCESS FROM NODE    138.00 TO NODE    138.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 4 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    140.10 TO NODE    144.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
============================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #5)

         WATERSHED AREA =      19.400 ACRES

         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.138 HOURS
         FOOTHILL S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.820
         LOW LOSS FRACTION = 0.990
         *HYDROGRAPH MODEL #7 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.27
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.82
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.32
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  2.65
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  4.10
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) = 10.70

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
           5-MINUTE FACTOR = 0.999
          30-MINUTE FACTOR = 0.999
           1-HOUR FACTOR = 0.999
           3-HOUR FACTOR = 1.000
           6-HOUR FACTOR = 1.000
          24-HOUR FACTOR = 1.000

         UNIT HYDROGRAPH TIME UNIT =   1.000 MINUTES
         UNIT INTERVAL PERCENTAGE OF LAG-TIME =  12.077


         RUNOFF HYDROGRAPH LISTING LIMITS:
         MODEL TIME(HOURS) FOR BEGINNING OF RESULTS =  14.00
         MODEL TIME(HOURS) FOR END OF RESULTS =  17.00

============================================================================
                      UNIT HYDROGRAPH DETERMINATION

----------------------------------------------------------------------------
    INTERVAL          "S" GRAPH          UNIT HYDROGRAPH
     NUMBER          MEAN VALUES          ORDINATES(CFS)
----------------------------------------------------------------------------
        1                0.785                 9.209
        2                2.546                20.657
        3                4.942                28.113
        4                8.239                38.675
        5               11.857                42.436
        6               17.213                62.837
        7               24.302                83.161
        8               36.543               143.592
        9               51.540               175.928
       10               59.024                87.797
       11               64.385                62.894
       12               68.326                46.227
       13               71.841                41.239
       14               75.001                37.061
       15               77.689                31.544
       16               79.854                25.394
       17               82.099                26.328
       18               83.932                21.504
       19               85.676                20.461
       20               87.213                18.033
       21               88.558                15.781
       22               89.761                14.108
       23               90.885                13.192
       24               91.959                12.599
       25               92.881                10.810
       26               93.768                10.409
       27               94.489                 8.457
       28               95.142                 7.657
       29               95.790                 7.606
       30               96.267                 5.597
       31               96.657                 4.568
       32               97.046                 4.570
       33               97.436                 4.572
```

34	97.825	4.563
35	98.035	2.459
36	98.097	0.732
37	98.160	0.734
38	98.222	0.732
39	98.284	0.730
40	98.347	0.736
41	98.409	0.728
42	98.472	0.736
43	98.535	0.736
44	98.596	0.725
45	98.659	0.736
46	98.722	0.732
47	98.784	0.729
48	98.846	0.736
49	98.909	0.732
50	98.972	0.736
51	99.034	0.728
52	99.096	0.728
53	99.158	0.728
54	99.220	0.728
55	99.282	0.728
56	99.344	0.728
57	99.406	0.728
58	99.468	0.728
59	99.530	0.728
60	99.593	0.728
61	99.655	0.728
62	99.717	0.728
63	99.779	0.728
64	99.841	0.728
65	99.903	0.728
66	99.965	0.728
67	100.000	0.410

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 16.3393
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 0.9578

==========

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

==========

HYDROGRAPH IN ONE-MINUTE UNIT INTERVALS(CFS)
(Notes: Time indicated is at END of Each Unit Intervals.
Peak 5-minute rainfall intensity is modeled as
a constant value for entire 5-minute period.)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	7.5	15.0	22.5	30.0
14.000	0.0851	0.11	Q V	.	.	.	.
14.017	0.0852	0.11	Q V	.	.	.	.
14.033	0.0853	0.11	Q V	.	.	.	.
14.050	0.0855	0.11	Q V	.	.	.	.
14.067	0.0856	0.11	Q V	.	.	.	.
14.083	0.0858	0.11	Q V	.	.	.	.
14.100	0.0859	0.11	Q V	.	.	.	.
14.117	0.0861	0.11	Q V	.	.	.	.
14.133	0.0862	0.11	Q V	.	.	.	.
14.150	0.0864	0.11	Q V	.	.	.	.
14.167	0.0865	0.11	Q V	.	.	.	.
14.183	0.0867	0.11	Q V	.	.	.	.
14.200	0.0868	0.11	Q V	.	.	.	.
14.217	0.0870	0.11	Q V	.	.	.	.
14.233	0.0871	0.11	Q V	.	.	.	.
14.250	0.0873	0.11	Q V	.	.	.	.
14.267	0.0874	0.11	Q V	.	.	.	.
14.283	0.0876	0.11	Q V	.	.	.	.
14.300	0.0877	0.11	Q V	.	.	.	.
14.317	0.0879	0.11	Q V	.	.	.	.
14.333	0.0881	0.11	Q V	.	.	.	.
14.350	0.0882	0.11	Q V	.	.	.	.
14.367	0.0884	0.11	Q V	.	.	.	.
14.383	0.0885	0.11	Q V	.	.	.	.
14.400	0.0887	0.11	Q V	.	.	.	.
14.417	0.0888	0.11	Q V	.	.	.	.
14.433	0.0890	0.11	Q V	.	.	.	.
14.450	0.0892	0.12	Q V	.	.	.	.
14.467	0.0893	0.12	Q V	.	.	.	.
14.483	0.0895	0.12	Q V	.	.	.	.
14.500	0.0896	0.12	Q V	.	.	.	.
14.517	0.0898	0.12	Q V	.	.	.	.
14.533	0.0900	0.12	Q V	.	.	.	.
14.550	0.0901	0.12	Q V	.	.	.	.
14.567	0.0903	0.12	Q V	.	.	.	.
14.583	0.0904	0.12	Q V	.	.	.	.
14.600	0.0906	0.12	Q V	.	.	.	.
14.617	0.0908	0.12	Q V	.	.	.	.
14.633	0.0909	0.12	Q V	.	.	.	.
14.650	0.0911	0.12	Q V	.	.	.	.
14.667	0.0913	0.12	Q V	.	.	.	.
14.683	0.0914	0.12	Q V	.	.	.	.
14.700	0.0916	0.12	Q V	.	.	.	.
14.717	0.0918	0.12	Q V	.	.	.	.
14.733	0.0919	0.12	Q V	.	.	.	.
14.750	0.0921	0.12	Q V	.	.	.	.
14.767	0.0923	0.12	Q V	.	.	.	.
14.783	0.0925	0.12	Q V	.	.	.	.
14.800	0.0926	0.13	Q V	.	.	.	.
14.817	0.0928	0.13	Q V	.	.	.	.
14.833	0.0930	0.13	Q V	.	.	.	.
14.850	0.0932	0.13	Q V	.	.	.	.
14.867	0.0933	0.13	Q V	.	.	.	.
14.883	0.0935	0.13	Q V	.	.	.	.
14.900	0.0937	0.13	Q V	.	.	.	.
14.917	0.0939	0.13	Q V	.	.	.	.
14.933	0.0940	0.13	Q V	.	.	.	.

```
14.950      0.0942      0.13  Q  V      .         .         .         .
14.967      0.0944      0.13  Q  V      .         .         .         .
14.983      0.0946      0.13  Q  V      .         .         .         .
15.000      0.0948      0.13  Q  V      .         .         .         .
15.017      0.0949      0.13  Q  V      .         .         .         .
15.033      0.0951      0.13  Q  V      .         .         .         .
15.050      0.0953      0.13  Q  V      .         .         .         .
15.067      0.0955      0.14  Q  V      .         .         .         .
15.083      0.0957      0.14  Q  V      .         .         .         .
15.100      0.0959      0.14  Q   V     .         .         .         .
15.117      0.0961      0.14  Q   V     .         .         .         .
15.133      0.0963      0.14  Q   V     .         .         .         .
15.150      0.0964      0.14  Q   V     .         .         .         .
15.167      0.0966      0.14  Q   V     .         .         .         .
15.183      0.0968      0.14  Q   V     .         .         .         .
15.200      0.0970      0.14  Q   V     .         .         .         .
15.217      0.0972      0.14  Q   V     .         .         .         .
15.233      0.0974      0.14  Q   V     .         .         .         .
15.250      0.0976      0.14  Q   V     .         .         .         .
15.267      0.0978      0.15  Q   V     .         .         .         .
15.283      0.0980      0.15  Q   V     .         .         .         .
15.300      0.0982      0.15  Q   V     .         .         .         .
15.317      0.0984      0.15  Q   V     .         .         .         .
15.333      0.0986      0.15  Q   V     .         .         .         .
15.350      0.0989      0.16  Q   V     .         .         .         .
15.367      0.0991      0.19  Q   V     .         .         .         .
15.383      0.0995      0.24  Q   V     .         .         .         .
15.400      0.0999      0.29  Q   V     .         .         .         .
15.417      0.1004      0.36  Q   V     .         .         .         .
15.433      0.1010      0.47  Q   V     .         .         .         .
15.450      0.1018      0.60  Q   V     .         .         .         .
15.467      0.1030      0.83  .Q  V     .         .         .         .
15.483      0.1045      1.12  .Q  V     .         .         .         .
15.500      0.1063      1.31  .Q  V     .         .         .         .
15.517      0.1084      1.48  .Q  V     .         .         .         .
15.533      0.1106      1.65  . Q V     .         .         .         .
15.550      0.1131      1.82  . Q V     .         .         .         .
15.567      0.1159      1.99  . Q V     .         .         .         .
15.583      0.1188      2.16  . Q V     .         .         .         .
15.600      0.1221      2.33  .  Q V    .         .         .         .
15.617      0.1255      2.52  .  Q V    .         .         .         .
15.633      0.1292      2.71  .  Q V    .         .         .         .
15.650      0.1332      2.90  .  Q V    .         .         .         .
15.667      0.1375      3.10  .   QV    .         .         .         .
15.683      0.1421      3.30  .   QV    .         .         .         .
15.700      0.1469      3.48  .   Q V   .         .         .         .
15.717      0.1519      3.67  .   Q V   .         .         .         .
15.733      0.1572      3.84  .    QV   .         .         .         .
15.750      0.1627      4.02  .    QV   .         .         .         .
15.767      0.1685      4.18  .    Q V  .         .         .         .
15.783      0.1745      4.32  .    Q V  .         .         .         .
15.800      0.1805      4.37  .    Q V  .         .         .         .
15.817      0.1865      4.39  .    Q V  .         .         .         .
15.833      0.1929      4.60  .     Q V .         .         .         .
15.850      0.1996      4.88  .     Q V .         .         .         .
15.867      0.2068      5.23  .     Q V .         .         .         .
15.883      0.2145      5.63  .      QV .         .         .         .
15.900      0.2229      6.09  .       QV.         .         .         .
15.917      0.2321      6.62  .       QV.         .         .         .
15.933      0.2420      7.22  .        QV         .         .         .
15.950      0.2529      7.92  .         Q         .         .         .
15.967      0.2652      8.92  .         .Q        .         .         .
15.983      0.2793     10.26  .         .V Q      .         .         .
16.000      0.2956     11.83  .         . V  Q    .         .         .
16.017      0.3145     13.72  .         .  V    Q .         .         .
16.033      0.3362     15.76  .         .   V     .Q        .         .
16.050      0.3612     18.11  .         .    V     .    Q    .         .
16.067      0.3896     20.60  .         .     V   .     Q   .         .
16.083      0.4227     24.06  .         .      V  .         . Q       .
16.100      0.4606     27.48  .         .        V.         .     Q   .
16.117      0.5000     28.66  .         .         V         .       Q .
16.133      0.5395     28.64  .         .         . V       .       Q .
16.150      0.5775     27.57  .         .         .   V     .     Q   .
16.167      0.6115     24.74  .         .         .    V    . Q       .
16.183      0.6400     20.65  .         .         .     VQ  .         .
16.200      0.6649     18.11  .         .         .   Q  V  .         .
16.217      0.6871     16.11  .         .         .Q      V .         .
16.233      0.7073     14.63  .         .       Q.        V.         .
16.250      0.7256     13.28  .         .      Q  .         V         .
16.267      0.7423     12.12  .         .    Q    .         .V        .
16.283      0.7576     11.13  .         .   Q     .         .V        .
16.300      0.7719     10.41  .         .  Q      .         . V       .
16.317      0.7854      9.75  .         . Q       .         . V       .
16.333      0.7978      9.06  .         . Q       .         .  V      .
16.350      0.8094      8.37  .         .Q        .         .  V      .
16.367      0.8199      7.68  .         Q         .         .   V     .
16.383      0.8297      7.05  .        Q.         .         .   V     .
16.400      0.8385      6.44  .       Q .         .         .    V    .
16.417      0.8466      5.84  .      Q  .         .         .    V    .
16.433      0.8538      5.26  .      Q  .         .         .    V    .
16.450      0.8603      4.68  .     Q   .         .         .    V    .
16.467      0.8658      4.04  .    Q    .         .         .     V   .
16.483      0.8706      3.45  .   Q     .         .         .     V   .
16.500      0.8748      3.03  .   Q     .         .         .     V   .
16.517      0.8784      2.67  .  Q      .         .         .     V   .
16.533      0.8817      2.35  .  Q      .         .         .     V   .
16.550      0.8845      2.05  . Q       .         .         .     V   .
16.567      0.8869      1.77  . Q       .         .         .      V  .
16.583      0.8890      1.52  . Q       .         .         .      V  .
16.600      0.8908      1.29  .Q        .         .         .      V  .
16.617      0.8923      1.11  .Q        .         .         .      V  .
16.633      0.8937      1.00  .Q        .         .         .      V  .
16.650      0.8950      0.91  .Q        .         .         .      V  .
16.667      0.8961      0.84  .Q        .         .         .      V  .
16.683      0.8972      0.77  .Q        .         .         .      V  .
16.700      0.8982      0.72  Q         .         .         .      V  .
16.717      0.8991      0.67  Q         .         .         .      V  .
16.733      0.9000      0.63  Q         .         .         .      V  .
16.750      0.9008      0.60  Q         .         .         .      V  .
16.767      0.9016      0.56  Q         .         .         .      V  .
16.783      0.9023      0.53  Q         .         .         .      V  .
16.800      0.9030      0.51  Q         .         .         .      V  .
16.817      0.9037      0.49  Q         .         .         .      V  .
16.833      0.9043      0.47  Q         .         .         .      V  .
16.850      0.9050      0.46  Q         .         .         .      V  .
16.867      0.9056      0.45  Q         .         .         .      V  .
16.883      0.9062      0.43  Q         .         .         .      V  .
16.900      0.9068      0.42  Q         .         .         .      V  .
16.917      0.9073      0.41  Q         .         .         .      V  .
16.933      0.9079      0.41  Q         .         .         .      V  .
16.950      0.9084      0.40  Q         .         .         .      V  .
16.967      0.9090      0.39  Q         .         .         .      V  .
16.983      0.9095      0.38  Q         .         .         .      V  .
17.000      0.9100      0.38  Q         .         .         .       V .
```

```
*************************************************************************
  FLOW PROCESS FROM NODE    144.00 TO NODE    144.00 IS CODE =   7
-------------------------------------------------------------------------
  >>>>>STREAM NUMBER 5 ADDED TO STREAM NUMBER 1<<<<<
=========================================================================


*************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE    144.00 IS CODE =   6
-------------------------------------------------------------------------
  >>>>>STREAM NUMBER 4 CLEARED AND SET TO ZERO<<<<<
=========================================================================


*************************************************************************
  FLOW PROCESS FROM NODE    401.10 TO NODE    144.00 IS CODE =   1
```

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

      (UNIT-HYDROGRAPH ADDED TO STREAM #4)

         WATERSHED AREA =      44.400 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.210 HOURS
         FOOTHILL S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.830
         LOW LOSS FRACTION = 0.990
         *HYDROGRAPH MODEL #7 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.27
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.82
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.32
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  2.65
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  4.10
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) = 10.70

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
           5-MINUTE FACTOR = 0.998
          30-MINUTE FACTOR = 0.998
           1-HOUR FACTOR = 0.998
           3-HOUR FACTOR = 1.000
           6-HOUR FACTOR = 1.000
          24-HOUR FACTOR = 1.000

         UNIT HYDROGRAPH TIME UNIT =   1.000 MINUTES
         UNIT INTERVAL PERCENTAGE OF LAG-TIME =   7.937


         RUNOFF HYDROGRAPH LISTING LIMITS:
         MODEL TIME(HOURS) FOR BEGINNING OF RESULTS =  14.00
         MODEL TIME(HOURS) FOR END OF RESULTS =  17.00


=========================================================================
                       UNIT HYDROGRAPH DETERMINATION

-------------------------------------------------------------------------
    INTERVAL          "S" GRAPH          UNIT HYDROGRAPH
     NUMBER          MEAN VALUES          ORDINATES(CFS)
-------------------------------------------------------------------------
        1                0.516                13.850
        2                1.550                27.771
        3                2.846                34.778
        4                4.403                41.816
        5                6.312                51.256
        6                8.654                62.861
        7               10.861                59.269
        8               13.886                81.221
        9               17.730               103.199
       10               22.047               115.894
       11               28.094               162.357
       12               37.270               246.349
       13               48.680               306.356
       14               54.786               163.923
       15               59.114               116.191
       16               63.110               107.289
       17               65.704                69.639
       18               68.390                72.116
       19               70.733                62.904
       20               72.811                55.792
       21               74.924                56.751
       22               76.818                50.829
       23               78.314                40.175
       24               79.729                37.981
       25               81.172                38.741
       26               82.680                40.495
       27               83.781                29.551
       28               84.926                30.763
       29               86.066                30.581
       30               87.046                26.316
       31               87.986                25.246
       32               88.800                21.853
       33               89.594                21.311
       34               90.352                20.367
       35               91.074                19.369
       36               91.792                19.290
       37               92.421                16.888
       38               93.009                15.785
       39               93.597                15.778
       40               94.132                14.371
       41               94.564                11.596
       42               94.993                11.516
       43               95.422                11.516
       44               95.849                11.463
       45               96.167                 8.543
       46               96.423                 6.878
       47               96.679                 6.871
       48               96.935                 6.872
       49               97.191                 6.878
       50               97.447                 6.871
       51               97.703                 6.872
       52               97.947                 6.541
       53               98.035                 2.359
       54               98.076                 1.103
       55               98.117                 1.103
       56               98.158                 1.103
       57               98.199                 1.097
       58               98.240                 1.103
       59               98.281                 1.103
       60               98.322                 1.110
       61               98.363                 1.097
       62               98.405                 1.110
       63               98.445                 1.084
       64               98.486                 1.110
       65               98.527                 1.097
       66               98.568                 1.110
       67               98.610                 1.110
       68               98.650                 1.084
       69               98.691                 1.110
       70               98.733                 1.110
       71               98.773                 1.084
       72               98.815                 1.123
       73               98.855                 1.084
       74               98.897                 1.123
       75               98.938                 1.084
       76               98.979                 1.110
       77               99.020                 1.097
       78               99.061                 1.097
       79               99.101                 1.097
       80               99.142                 1.097
       81               99.183                 1.097
       82               99.224                 1.097
       83               99.265                 1.097
       84               99.306                 1.097
       85               99.347                 1.097
       86               99.387                 1.097
       87               99.428                 1.097
       88               99.469                 1.097
       89               99.510                 1.097
       90               99.551                 1.097
       91               99.592                 1.097
       92               99.632                 1.097
       93               99.673                 1.097
       94               99.714                 1.097
       95               99.755                 1.097
       96               99.796                 1.097
       97               99.837                 1.097
```

98	99.878	1.097
99	99.918	1.097
100	99.959	1.097
101	100.000	1.094

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 37.4361
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 2.1491

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

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HYDROGRAPH IN ONE-MINUTE UNIT INTERVALS(CFS)
(Notes: Time indicated is at END of Each Unit Intervals.
Peak 5-minute rainfall intensity is modeled as
a constant value for entire 5-minute period.)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	15.0	30.0	45.0	60.0
14.000	0.1928	0.24	Q V	.	.	.	.
14.017	0.1931	0.24	Q V	.	.	.	.
14.033	0.1934	0.24	Q V	.	.	.	.
14.050	0.1938	0.24	Q V	.	.	.	.
14.067	0.1941	0.24	Q V	.	.	.	.
14.083	0.1944	0.24	Q V	.	.	.	.
14.100	0.1948	0.24	Q V	.	.	.	.
14.117	0.1951	0.24	Q V	.	.	.	.
14.133	0.1954	0.24	Q V	.	.	.	.
14.150	0.1958	0.24	Q V	.	.	.	.
14.167	0.1961	0.24	Q V	.	.	.	.
14.183	0.1964	0.25	Q V	.	.	.	.
14.200	0.1968	0.25	Q V	.	.	.	.
14.217	0.1971	0.25	Q V	.	.	.	.
14.233	0.1974	0.25	Q V	.	.	.	.
14.250	0.1978	0.25	Q V	.	.	.	.
14.267	0.1981	0.25	Q V	.	.	.	.
14.283	0.1985	0.25	Q V	.	.	.	.
14.300	0.1988	0.25	Q V	.	.	.	.
14.317	0.1992	0.25	Q V	.	.	.	.
14.333	0.1995	0.25	Q V	.	.	.	.
14.350	0.1999	0.25	Q V	.	.	.	.
14.367	0.2002	0.25	Q V	.	.	.	.
14.383	0.2006	0.26	Q V	.	.	.	.
14.400	0.2009	0.26	Q V	.	.	.	.
14.417	0.2013	0.26	Q V	.	.	.	.
14.433	0.2016	0.26	Q V	.	.	.	.
14.450	0.2020	0.26	Q V	.	.	.	.
14.467	0.2024	0.26	Q V	.	.	.	.
14.483	0.2027	0.26	Q V	.	.	.	.
14.500	0.2031	0.26	Q V	.	.	.	.
14.517	0.2034	0.26	Q V	.	.	.	.
14.533	0.2038	0.26	Q V	.	.	.	.
14.550	0.2042	0.26	Q V	.	.	.	.
14.567	0.2045	0.27	Q V	.	.	.	.
14.583	0.2049	0.27	Q V	.	.	.	.
14.600	0.2053	0.27	Q V	.	.	.	.
14.617	0.2056	0.27	Q V	.	.	.	.
14.633	0.2060	0.27	Q V	.	.	.	.
14.650	0.2064	0.27	Q V	.	.	.	.
14.667	0.2067	0.27	Q V	.	.	.	.
14.683	0.2071	0.27	Q V	.	.	.	.
14.700	0.2075	0.27	Q V	.	.	.	.
14.717	0.2079	0.27	Q V	.	.	.	.
14.733	0.2083	0.28	Q V	.	.	.	.
14.750	0.2086	0.28	Q V	.	.	.	.
14.767	0.2090	0.28	Q V	.	.	.	.
14.783	0.2094	0.28	Q V	.	.	.	.
14.800	0.2098	0.28	Q V	.	.	.	.
14.817	0.2102	0.28	Q V	.	.	.	.
14.833	0.2106	0.28	Q V	.	.	.	.
14.850	0.2110	0.28	Q V	.	.	.	.
14.867	0.2114	0.29	Q V	.	.	.	.
14.883	0.2117	0.29	Q V	.	.	.	.
14.900	0.2121	0.29	Q V	.	.	.	.
14.917	0.2125	0.29	Q V	.	.	.	.
14.933	0.2129	0.29	Q V	.	.	.	.

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14.950      0.2133      0.29  Q  V      .          .          .          .
14.967      0.2137      0.29  Q  V      .          .          .          .
14.983      0.2142      0.29  Q  V      .          .          .          .
15.000      0.2146      0.30  Q  V      .          .          .          .
15.017      0.2150      0.30  Q   V     .          .          .          .
15.033      0.2154      0.30  Q   V     .          .          .          .
15.050      0.2158      0.30  Q   V     .          .          .          .
15.067      0.2162      0.30  Q   V     .          .          .          .
15.083      0.2166      0.30  Q   V     .          .          .          .
15.100      0.2170      0.30  Q   V     .          .          .          .
15.117      0.2175      0.31  Q   V     .          .          .          .
15.133      0.2179      0.31  Q   V     .          .          .          .
15.150      0.2183      0.31  Q   V     .          .          .          .
15.167      0.2187      0.31  Q   V     .          .          .          .
15.183      0.2192      0.31  Q   V     .          .          .          .
15.200      0.2196      0.31  Q   V     .          .          .          .
15.217      0.2201      0.32  Q   V     .          .          .          .
15.233      0.2205      0.32  Q   V     .          .          .          .
15.250      0.2209      0.32  Q   V     .          .          .          .
15.267      0.2214      0.32  Q   V     .          .          .          .
15.283      0.2218      0.32  Q   V     .          .          .          .
15.300      0.2223      0.33  Q   V     .          .          .          .
15.317      0.2227      0.33  Q   V     .          .          .          .
15.333      0.2232      0.33  Q   V     .          .          .          .
15.350      0.2237      0.35  Q   V     .          .          .          .
15.367      0.2242      0.38  Q   V     .          .          .          .
15.383      0.2248      0.43  Q   V     .          .          .          .
15.400      0.2255      0.49  Q   V     .          .          .          .
15.417      0.2262      0.56  Q   V     .          .          .          .
15.433      0.2271      0.66  Q   V     .          .          .          .
15.450      0.2282      0.76  Q   V     .          .          .          .
15.467      0.2294      0.89  Q   V     .          .          .          .
15.483      0.2309      1.06  Q   V     .          .          .          .
15.500      0.2326      1.26  Q   V     .          .          .          .
15.517      0.2347      1.52  .Q  V     .          .          .          .
15.533      0.2373      1.90  .Q  V     .          .          .          .
15.550      0.2406      2.39  .Q  V     .          .          .          .
15.567      0.2444      2.75  .Q  V     .          .          .          .
15.583      0.2487      3.09  . Q V     .          .          .          .
15.600      0.2534      3.44  . Q V     .          .          .          .
15.617      0.2586      3.77  . Q V     .          .          .          .
15.633      0.2642      4.11  . Q V     .          .          .          .
15.650      0.2704      4.48  . Q  V    .          .          .          .
15.667      0.2771      4.85  .  Q V    .          .          .          .
15.683      0.2843      5.21  .  Q V    .          .          .          .
15.700      0.2919      5.57  .  Q V    .          .          .          .
15.717      0.3001      5.93  .  Q V    .          .          .          .
15.733      0.3088      6.29  .   QV    .          .          .          .
15.750      0.3180      6.67  .   QV    .          .          .          .
15.767      0.3277      7.05  .   Q V   .          .          .          .
15.783      0.3380      7.47  .   Q V   .          .          .          .
15.800      0.3488      7.87  .    QV   .          .          .          .
15.817      0.3602      8.28  .    QV   .          .          .          .
15.833      0.3722      8.70  .    QV   .          .          .          .
15.850      0.3847      9.08  .     QV  .          .          .          .
15.867      0.3976      9.36  .     QV  .          .          .          .
15.883      0.4108      9.61  .     QV  .          .          .          .
15.900      0.4248     10.18  .     QV  .          .          .          .
15.917      0.4399     10.94  .      QV .          .          .          .
15.933      0.4562     11.80  .      QV .          .          .          .
15.950      0.4739     12.88  .       Q .          .          .          .
15.967      0.4937     14.37  .        Q.          .          .          .
15.983      0.5161     16.29  .        VQ          .          .          .
16.000      0.5416     18.46  .         V Q        .          .          .
16.017      0.5704     20.90  .         V  Q       .          .          .
16.033      0.6029     23.65  .         .V   Q     .          .          .
16.050      0.6394     26.45  .         .V     Q  .          .          .
16.067      0.6792     28.91  .         . V      Q.          .          .
16.083      0.7229     31.74  .         .  V      .Q         .          .
16.100      0.7709     34.85  .         .   V     .  Q       .          .
16.117      0.8234     38.07  .         .    V    .    Q     .          .
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16.133      0.8811     41.90  .         .     V   .      Q  .          .
16.150      0.9463     47.35  .         .      V  .         .Q         .
16.167      1.0191     52.86  .         .       V .          .    Q    .
16.183      1.0939     54.34  .         .         V          .     Q   .
16.200      1.1686     54.21  .         .         .V         .     Q   .
16.217      1.2408     52.42  .         .          .  V      .   Q     .
16.233      1.3062     47.47  .         .          .   V     .Q        .
16.250      1.3620     40.53  .         .          .    V Q  .          .
16.267      1.4117     36.08  .         .          .   Q V   .          .
16.283      1.4567     32.68  .         .         .Q     V  .          .
16.300      1.4977     29.71  .         .        Q.      V  .          .
16.317      1.5357     27.63  .         .       Q .       V .          .
16.333      1.5709     25.50  .         .      Q  .        V.          .
16.350      1.6035     23.72  .         .    Q    .        V.          .
16.367      1.6344     22.38  .         .   Q     .         V          .
16.383      1.6636     21.23  .         .   Q     .         V          .
16.400      1.6909     19.79  .         .  Q      .         .V         .
16.417      1.7165     18.60  .         . Q       .         .V         .
16.433      1.7406     17.52  .         .Q        .         . V        .
16.450      1.7631     16.33  .         Q         .         . V        .
16.467      1.7839     15.10  .         Q         .         .  V       .
16.483      1.8033     14.05  .        Q.         .         .  V       .
16.500      1.8212     13.01  .       Q .         .         .  V       .
16.517      1.8376     11.96  .      Q  .         .         .   V      .
16.533      1.8527     10.94  .      Q  .         .         .   V      .
16.550      1.8664      9.95  .     Q   .         .         .   V      .
16.567      1.8791      9.22  .     Q   .         .         .   V      .
16.583      1.8909      8.59  .    Q    .         .         .    V     .
16.600      1.9020      8.02  .    Q    .         .         .    V     .
16.617      1.9123      7.49  .   Q     .         .         .    V     .
16.633      1.9219      6.93  .   Q     .         .         .    V     .
16.650      1.9308      6.45  .   Q     .         .         .    V     .
16.667      1.9391      6.02  .   Q     .         .         .     V    .
16.683      1.9468      5.59  .  Q      .         .         .     V    .
16.700      1.9538      5.15  .  Q      .         .         .     V    .
16.717      1.9604      4.76  .  Q      .         .         .     V    .
16.733      1.9665      4.40  . Q       .         .         .     V    .
16.750      1.9720      4.05  . Q       .         .         .     V    .
16.767      1.9772      3.71  . Q       .         .         .     V    .
16.783      1.9819      3.45  . Q       .         .         .     V    .
16.800      1.9864      3.24  . Q       .         .         .     V    .
16.817      1.9906      3.03  . Q       .         .         .      V   .
16.833      1.9943      2.75  .Q        .         .         .      V   .
16.850      1.9977      2.44  .Q        .         .         .      V   .
16.867      2.0007      2.15  .Q        .         .         .      V   .
16.883      2.0032      1.87  .Q        .         .         .      V   .
16.900      2.0055      1.61  .Q        .         .         .      V   .
16.917      2.0075      1.45  Q         .         .         .      V   .
16.933      2.0093      1.33  Q         .         .         .      V   .
16.950      2.0110      1.25  Q         .         .         .      V   .
16.967      2.0126      1.17  Q         .         .         .      V   .
16.983      2.0142      1.11  Q         .         .         .      V   .
17.000      2.0156      1.06  Q         .         .         .      V   .
```

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*****************************************************************************
  FLOW PROCESS FROM NODE    144.00 TO NODE    144.00 IS CODE =   7
-----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 4 ADDED TO STREAM NUMBER 1<<<<<
=============================================================================


*****************************************************************************
  FLOW PROCESS FROM NODE    144.00 TO NODE    144.00 IS CODE =  11
-----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
=============================================================================

            STREAM HYDROGRAPH IN  ONE-MINUTE UNIT INTERVALS(CFS)
         (Notes: Time indicated is at END of Each Unit Intervals.
                 Peak 5-minute rainfall intensity is modeled as
```

a constant value for entire 5-minute period.)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	800.0	1600.0	2400.0	3200.0
14.000	342.2296	579.33	.	Q .	V .	.	.
14.017	343.0322	582.70	.	Q .	V .	.	.
14.033	343.8405	586.81	.	Q .	V .	.	.
14.050	344.6551	591.42	.	Q .	V .	.	.
14.067	345.4766	596.41	.	Q .	V .	.	.
14.083	346.3060	602.14	.	Q .	V .	.	.
14.100	347.1446	608.80	.	Q .	V .	.	.
14.117	347.9941	616.78	.	Q .	V .	.	.
14.133	348.8555	625.38	.	Q .	V .	.	.
14.150	349.7272	632.87	.	Q .	V .	.	.
14.167	350.6081	639.48	.	Q .	V .	.	.
14.183	351.4971	645.41	.	Q .	V .	.	.
14.200	352.3937	650.97	.	Q .	V .	.	.
14.217	353.2977	656.27	.	Q .	V .	.	.
14.233	354.2085	661.25	.	Q .	V .	.	.
14.250	355.1256	665.82	.	Q .	V .	.	.
14.267	356.0489	670.32	.	Q .	V .	.	.
14.283	356.9782	674.66	.	Q .	V .	.	.
14.300	357.9134	678.98	.	Q .	V .	.	.
14.317	358.8546	683.32	.	Q .	V .	.	.
14.333	359.8016	687.54	.	Q .	V .	.	.
14.350	360.7544	691.72	.	Q .	V .	.	.
14.367	361.7129	695.85	.	Q .	V .	.	.
14.383	362.6771	700.01	.	Q .	V .	.	.
14.400	363.6470	704.15	.	Q .	V .	.	.
14.417	364.6225	708.24	.	Q .	V .	.	.
14.433	365.6037	712.34	.	Q .	V .	.	.
14.450	366.5906	716.48	.	Q .	V .	.	.
14.467	367.5832	720.65	.	Q.	V .	.	.
14.483	368.5815	724.74	.	Q.	V .	.	.
14.500	369.5854	728.84	.	Q.	V .	.	.
14.517	370.5950	732.98	.	Q.	V .	.	.
14.533	371.6103	737.13	.	Q.	V .	.	.
14.550	372.6314	741.32	.	Q.	V .	.	.
14.567	373.6583	745.53	.	Q.	V .	.	.
14.583	374.6911	749.78	.	Q.	V .	.	.
14.600	375.7297	754.07	.	Q.	V .	.	.
14.617	376.7743	758.37	.	Q.	V .	.	.
14.633	377.8249	762.69	.	Q.	V .	.	.
14.650	378.8814	767.07	.	Q.	V .	.	.
14.667	379.9441	771.49	.	Q.	V .	.	.
14.683	381.0129	775.96	.	Q.	V .	.	.
14.700	382.0880	780.47	.	Q.	V .	.	.
14.717	383.1693	785.05	.	Q.	V .	.	.
14.733	384.2570	789.64	.	Q.	V .	.	.
14.750	385.3510	794.27	.	Q.	V .	.	.
14.767	386.4515	798.95	.	Q.	V .	.	.
14.783	387.5585	803.71	.	Q	V .	.	.
14.800	388.6721	808.52	.	Q	V .	.	.
14.817	389.7925	813.36	.	Q	V .	.	.
14.833	390.9196	818.26	.	Q	V .	.	.
14.850	392.0535	823.24	.	Q	V .	.	.
14.867	393.1944	828.28	.	Q	V .	.	.
14.883	394.3423	833.41	.	Q	V .	.	.
14.900	395.4974	838.60	.	Q	V .	.	.
14.917	396.6598	843.87	.	Q	V .	.	.
14.933	397.8295	849.20	.	Q	V .	.	.
14.950	399.0067	854.63	.	Q	V .	.	.
14.967	400.1914	860.14	.	Q	V .	.	.
14.983	401.3839	865.76	.	Q	V .	.	.
15.000	402.5843	871.45	.	Q	V .	.	.
15.017	403.7926	877.24	.	Q	V .	.	.
15.033	405.0090	883.12	.	.Q	V .	.	.
15.050	406.2337	889.11	.	.Q	V.	.	.
15.067	407.4668	895.20	.	.Q	V.	.	.
15.083	408.7084	901.42	.	.Q	V.	.	.
15.100	409.9587	907.74	.	.Q	V.	.	.
15.117	411.2180	914.19	.	.Q	V.	.	.
15.133	412.4862	920.74	.	.Q	V.	.	.
15.150	413.7637	927.43	.	.Q	V.	.	.
15.167	415.0505	934.24	.	.Q	V.	.	.
15.183	416.3470	941.21	.	.Q	V.	.	.
15.200	417.6532	948.31	.	.Q	V.	.	.
15.217	418.9694	955.58	.	.Q	V.	.	.
15.233	420.2958	962.99	.	. Q	V.	.	.
15.250	421.6327	970.59	.	. Q	V.	.	.
15.267	422.9803	978.32	.	. Q	V.	.	.
15.283	424.3387	986.25	.	. Q	V.	.	.
15.300	425.7083	994.36	.	. Q	V.	.	.
15.317	427.0894	1002.68	.	. Q	V.	.	.
15.333	428.4823	1011.21	.	. Q	V	.	.
15.350	429.8875	1020.14	.	. Q	V	.	.
15.367	431.3055	1029.54	.	. Q	V	.	.
15.383	432.7372	1039.42	.	. Q	V	.	.
15.400	434.1831	1049.69	.	. Q	V	.	.
15.417	435.6440	1060.58	.	. Q	V	.	.
15.433	437.1208	1072.19	.	. Q	V	.	.
15.450	438.6161	1085.56	.	. Q	V	.	.
15.467	440.1295	1098.80	.	. Q	V	.	.
15.483	441.6604	1111.38	.	. Q	V	.	.
15.500	443.2085	1123.91	.	. Q	V	.	.
15.517	444.7744	1136.88	.	. Q	V	.	.
15.533	446.3586	1150.12	.	. Q	V	.	.
15.550	447.9615	1163.74	.	. Q	V	.	.
15.567	449.5836	1177.60	.	. Q	.V	.	.
15.583	451.2253	1191.92	.	. Q	.V	.	.
15.600	452.8874	1206.66	.	. Q	.V	.	.
15.617	454.5705	1221.94	.	. Q	.V	.	.
15.633	456.2753	1237.69	.	. Q	.V	.	.
15.650	458.0027	1254.11	.	. Q	.V	.	.
15.667	459.7536	1271.14	.	. Q	.V	.	.
15.683	461.5265	1287.11	.	. Q	.V	.	.
15.700	463.3196	1301.81	.	. Q	.V	.	.
15.717	465.1324	1316.11	.	. Q	.V	.	.
15.733	466.9648	1330.33	.	. Q	.V	.	.
15.750	468.8157	1343.70	.	. Q	.V	.	.
15.767	470.6827	1355.50	.	. Q	. V	.	.
15.783	472.5613	1363.84	.	. Q	. V	.	.
15.800	474.4526	1373.09	.	. Q	. V	.	.
15.817	476.3654	1388.70	.	. Q	. V	.	.
15.833	478.3063	1409.09	.	. Q	. V	.	.
15.850	480.2813	1433.86	.	. Q	. V	.	.
15.867	482.2958	1462.55	.	. Q	. V	.	.
15.883	484.3562	1495.81	.	. Q	. V	.	.
15.900	486.4693	1534.11	.	. Q.	V	.	.
15.917	488.6441	1578.95	.	. Q.	V	.	.
15.933	490.8892	1629.90	.	. Q	V	.	.
15.950	493.2173	1690.17	.	. .Q	V	.	.
15.967	495.6696	1780.44	.	. .	QV	.	.
15.983	498.2881	1901.03	.	. .	Q	.	.
16.000	501.1026	2043.31	.	. .	V Q	.	.
16.017	504.1387	2204.16	.	. .	V Q	.	.
16.033	507.4359	2393.77	.	. .	V Q.	.	.
16.050	511.0085	2593.76	.	. .	V . Q	.	.
16.067	514.8876	2816.20	.	. .	V . Q	.	.
16.083	519.0310	3008.09	.	. .	V . Q	.	.
16.100	523.3268	3118.76	.	. .	V . Q	.	.
16.117	527.6724	3154.89	.	. .	V . Q	.	.
16.133	531.9685	3118.98	.	. .	V . Q	.	.
16.150	536.0795	2984.54	.	. .	V . Q	.	.
16.167	539.9418	2804.07	.	. .	V . Q	.	.
16.183	543.5844	2644.50	.	. .	V . Q	.	.
16.200	547.0312	2502.38	.	. .	V .Q	.	.
16.217	550.3072	2378.39	.	. .	V Q.	.	.
16.233	553.4271	2265.02	.	. .	V Q .	.	.
16.250	556.4087	2164.67	.	. .	VQ	.	.
16.267	559.2784	2083.40	.	. .	Q	.	.
16.283	562.0632	2021.80	.	. .	QV	.	.

```
 16.300    564.7725   1966.90  .          .          .   Q V   .          .
 16.317    567.4127   1916.80  .          .          .  Q  V   .          .
 16.333    569.9864   1868.55  .          .          .  Q  V   .          .
 16.350    572.4943   1820.71  .          .          . Q   V   .          .
 16.367    574.9396   1775.35  .          .          . Q   V   .          .
 16.383    577.3269   1733.17  .          .          .Q     V  .          .
 16.400    579.6598   1693.69  .          .          .Q     V  .          .
 16.417    581.9401   1655.53  .          .          Q      V  .          .
 16.433    584.1664   1616.32  .          .          Q      V  .          .
 16.450    586.3394   1577.57  .          .         Q.      V  .          .
 16.467    588.4622   1541.17  .          .         Q.      V  .          .
 16.483    590.5377   1506.75  .          .        Q .      V  .          .
 16.500    592.5676   1473.78  .          .        Q .      V  .          .
 16.517    594.5568   1444.17  .          .        Q .      V  .          .
 16.533    596.5095   1417.67  .          .      Q  .      V  .          .
 16.550    598.4285   1393.19  .          .      Q  .       V .          .
 16.567    600.3151   1369.61  .          .      Q  .       V .          .
 16.583    602.1697   1346.44  .          .     Q   .       V .          .
 16.600    603.9947   1324.97  .          .     Q   .       V .          .
 16.617    605.7916   1304.55  .          .     Q   .       V .          .
 16.633    607.5607   1284.37  .          .     Q   .       V .          .
 16.650    609.3043   1265.83  .          .    Q    .       V .          .
 16.667    611.0238   1248.37  .          .    Q    .       V .          .
 16.683    612.7185   1230.34  .          .    Q    .       V .          .
 16.700    614.3880   1212.05  .          .    Q    .       V .          .
 16.717    616.0338   1194.83  .          .   Q     .       V .          .
 16.733    617.6563   1178.00  .          .   Q     .       V .          .
 16.750    619.2559   1161.26  .          .   Q     .       V .          .
 16.767    620.8329   1144.99  .          .   Q     .        V.          .
 16.783    622.3894   1129.99  .          .   Q     .        V.          .
 16.800    623.9260   1115.57  .          .  Q      .        V.          .
 16.817    625.4433   1101.55  .          .  Q      .        V.          .
 16.833    626.9418   1087.93  .          .  Q      .        V.          .
 16.850    628.4231   1075.40  .          .  Q      .        V.          .
 16.867    629.8874   1063.09  .          .  Q      .        V.          .
 16.883    631.3351   1051.01  .          .  Q      .        V.          .
 16.900    632.7662   1039.00  .          . Q       .        V.          .
 16.917    634.1812   1027.25  .          . Q       .        V.          .
 16.933    635.5807   1016.12  .          . Q       .        V.          .
 16.950    636.9660   1005.69  .          . Q       .        V.          .
 16.967    638.3369    995.29  .          . Q       .        V.          .
 16.983    639.6940    985.22  .          . Q       .        V.          .
 17.000    641.0375    975.41  .          . Q       .         V          .
=====================================================================

 END OF FLOODSCx ROUTING ANALYSIS
```

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

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                          Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* SPRING TRAILS              JUNE, 2011                  J - 13565-C       *
* BASIN 1 - PRE PROJECT              25 YR PRECIPITATION WITH AMC-II       *
* FOR DETENTION BASIN SIZING (100-YEAR)                                    *
 ***************************************************************************

  FILE NAME: ST1_H_E.DAT
  TIME/DATE OF STUDY: 13:19 06/07/2011


                         ** INPUT SUMMARY **


****************************************************************************
  FLOW PROCESS FROM NODE    117.10 TO NODE    113.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #1<<<<<
============================================================================
  WATERSHED AREA =     359.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.115 HOURS
  FOOTHILL S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.380; LOW LOSS FRACTION = 0.990
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.27; 30-MINUTE =  0.82;  1-HOUR =  1.32
    3-HOUR =  2.65;    6-HOUR =  4.10; 24-HOUR = 10.70
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.984; 30-MINUTE = 0.984;  1-HOUR = 0.984
    3-HOUR = 0.998;    6-HOUR = 0.999; 24-HOUR = 0.999


****************************************************************************
  FLOW PROCESS FROM NODE    101.10 TO NODE    113.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERSHED AREA =    1558.900 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.207 HOURS
  MOUNTAIN S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.190; LOW LOSS FRACTION = 0.990
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.27; 30-MINUTE =  0.82;  1-HOUR =  1.32
    3-HOUR =  2.65;    6-HOUR =  4.10; 24-HOUR = 10.70
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.930; 30-MINUTE = 0.930;  1-HOUR = 0.930
    3-HOUR = 0.990;    6-HOUR = 0.995; 24-HOUR = 0.997


****************************************************************************
  FLOW PROCESS FROM NODE    113.00 TO NODE    113.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    113.00 TO NODE    113.00 IS CODE =  11
```

```
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    135.10 TO NODE    138.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #3<<<<<
============================================================================
  WATERSHED AREA =      30.700 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.174 HOURS
  FOOTHILL S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.770; LOW LOSS FRACTION = 0.990
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.27; 30-MINUTE =  0.82;  1-HOUR =  1.32
    3-HOUR =  2.65;    6-HOUR =  4.10; 24-HOUR = 10.70
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.999; 30-MINUTE = 0.999;  1-HOUR = 0.999
    3-HOUR = 1.000;    6-HOUR = 1.000; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE    138.00 TO NODE    138.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    403.10 TO NODE    138.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #4<<<<<
============================================================================
  WATERSHED AREA =      17.500 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.184 HOURS
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.860; LOW LOSS FRACTION = 0.990
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.27; 30-MINUTE =  0.82;  1-HOUR =  1.32
    3-HOUR =  2.65;    6-HOUR =  4.10; 24-HOUR = 10.70
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.999; 30-MINUTE = 0.999;  1-HOUR = 0.999
    3-HOUR = 1.000;    6-HOUR = 1.000; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE    138.00 TO NODE    138.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 4 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    140.10 TO NODE    144.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #5<<<<<
============================================================================
  WATERSHED AREA =      19.400 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.138 HOURS
  FOOTHILL S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.820; LOW LOSS FRACTION = 0.990
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.27; 30-MINUTE =  0.82;  1-HOUR =  1.32
    3-HOUR =  2.65;    6-HOUR =  4.10; 24-HOUR = 10.70
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.999; 30-MINUTE = 0.999;  1-HOUR = 0.999
    3-HOUR = 1.000;    6-HOUR = 1.000; 24-HOUR = 1.000


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

```
  FLOW PROCESS FROM NODE    144.00 TO NODE    144.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 5 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE    144.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 4 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    401.10 TO NODE    144.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #4<<<<<
============================================================================
  WATERSHED AREA =      44.400 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.210 HOURS
  FOOTHILL S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.830; LOW LOSS FRACTION = 0.990
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.27; 30-MINUTE =  0.82;  1-HOUR =  1.32
    3-HOUR =  2.65;    6-HOUR =  4.10; 24-HOUR = 10.70
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.998; 30-MINUTE = 0.998;  1-HOUR = 0.998
    3-HOUR = 1.000;    6-HOUR = 1.000; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE    144.00 TO NODE    144.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 4 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    144.00 TO NODE    144.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================
============================================================================
```

```
+-----------------------------------------------------------------------------------------------------------------------+
|                                    * AES FLOODSCx PROGRAM RESULTS SUMMARY *                                           |
|INPUT FILENAME: [ST1_H_E.DAT    ]                                                                   Page:   1 of    |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|UPSTREAM  DOWNSTREAM|                               | UPSTREAM   DOWNSTREAM| TIME(2) TO | MAX. STORAGE|           |
| NODE #     NODE #  | HYDROLOGIC/HYDRAULIC PROCESS  |PEAK (CFS)  PEAK (CFS)| PEAK (HR)  | MODELED (AF)| FOOTNOTES |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|   117.10     113.00| Subarea (UH) Added to Stream #1|       0.0       716.4|     16.100 |             |           |
|   101.10     113.00| Subarea (UH) Added to Stream #2|       0.0      2321.6|     16.117 |             |           |
|   113.00     113.00| Stream #2 Added to:   Stream #1|     716.4      3032.7|     16.117 |             |           |
|   113.00     113.00| View:                 Stream #1|                3032.7|     16.117 |       848.65|     3     |
|   135.10     138.00| Subarea (UH) Added to Stream #3|       0.0        42.7|     16.150 |             |           |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|   138.00     138.00| Stream #3 Added to:   Stream #1|    3032.7      3069.6|     16.117 |             |           |
|   403.10     138.00| Subarea (UH) Added to Stream #4|       0.0        19.3|     16.150 |             |           |
|   138.00     138.00| Stream #4 Added to:   Stream #1|    3069.6      3088.2|     16.117 |             |           |
|   140.10     144.00| Subarea (UH) Added to Stream #5|       0.0        28.7|     16.117 |             |           |
|   144.00     144.00| Stream #5 Added to:   Stream #1|    3088.2      3116.8|     16.117 |             |           |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|     0.00     144.00| Zero Out:             Stream #4|      19.3         0.0|            |             |           |
|   401.10     144.00| Subarea (UH) Added to Stream #4|       0.0        54.3|     16.183 |             |           |
|   144.00     144.00| Stream #4 Added to:   Stream #1|    3116.8      3154.9|     16.117 |             |           |
|   144.00     144.00| View:                 Stream #1|                3154.9|     16.117 |       854.22|     3     |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|Notes: 1 = BASIN MODEL VOLUME EXCEEDED; 2 = TIME IS AT END OF 1-MINUTE UNIT INTERVAL                                   |
|       3 = RUNOFF ESTIMATES DO NOT EXTEND PAST 2 DAYS AFTER THE PEAK DAY OF THE DESIGN STORM                           |
+-----------------------------------------------------------------------------------------------------------------------+

  END OF FLOODSCx ROUTING ANALYSIS
```

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

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                           Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* SPRING TRAILS                  JUNE, 2011                  J - 13565-C    *
* BASIN 1 - POST PROJECT           100 YR PRECIPITATION WITH AMC-III       *
* FOR DETENTION BASIN SIZING (100-YEAR)                                    *
 ***************************************************************************

  FILE NAME: ST1_H_P.DAT
  TIME/DATE OF STUDY: 10:37 06/10/2011


****************************************************************************
  FLOW PROCESS FROM NODE    100.10 TO NODE    106.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
============================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERSHED AREA =     357.100 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.118 HOURS
         FOOTHILL S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.370
         LOW LOSS FRACTION = 0.970
         *HYDROGRAPH MODEL #7 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.27
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.82
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.32
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  2.65
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  4.10
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) = 10.70

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
           5-MINUTE FACTOR = 0.984
          30-MINUTE FACTOR = 0.984
           1-HOUR FACTOR = 0.984
           3-HOUR FACTOR = 0.998
           6-HOUR FACTOR = 0.999
          24-HOUR FACTOR = 0.999

         UNIT HYDROGRAPH TIME UNIT =   1.000 MINUTES
         UNIT INTERVAL PERCENTAGE OF LAG-TIME =  14.124


         RUNOFF HYDROGRAPH LISTING LIMITS:
         MODEL TIME(HOURS) FOR BEGINNING OF RESULTS =  14.00
         MODEL TIME(HOURS) FOR END OF RESULTS =  17.00


============================================================================
                       UNIT HYDROGRAPH DETERMINATION

----------------------------------------------------------------------------
    INTERVAL          "S" GRAPH          UNIT HYDROGRAPH
     NUMBER          MEAN VALUES          ORDINATES(CFS)
```

1	0.918	198.244
2	3.106	472.353
3	6.277	684.886
4	10.273	862.759
5	15.823	1198.501
6	23.781	1718.424
7	38.373	3150.899
8	53.902	3353.250
9	61.605	1663.369
10	66.801	1121.841
11	71.104	929.235
12	74.835	805.694
13	77.948	672.139
14	80.487	548.245
15	83.004	543.632
16	85.026	436.532
17	86.915	407.957
18	88.515	345.402
19	89.917	302.761
20	91.220	281.443
21	92.409	256.777
22	93.457	226.245
23	94.367	196.537
24	95.131	164.855
25	95.874	160.525
26	96.393	111.913
27	96.848	98.418
28	97.304	98.357
29	97.759	98.387
30	98.034	59.361
31	98.108	15.825
32	98.181	15.736
33	98.254	15.796
34	98.327	15.796
35	98.400	15.766
36	98.473	15.707
37	98.546	15.825
38	98.619	15.766
39	98.692	15.766
40	98.765	15.766
41	98.838	15.764
42	98.911	15.766
43	98.984	15.766
44	99.057	15.825
45	99.130	15.766
46	99.203	15.766
47	99.276	15.766
48	99.349	15.766
49	99.422	15.766
50	99.495	15.766
51	99.568	15.766
52	99.641	15.766
53	99.714	15.766
54	99.787	15.766
55	99.860	15.766
56	99.933	15.766
57	100.000	14.385

```
----------------------------------------------------------------------------
    TOTAL SOIL-LOSS VOLUME(ACRE-FEET) =     249.7570
    TOTAL STORM RUNOFF VOLUME(ACRE-FEET) =      68.3881
----------------------------------------------------------------------------
```

```
===========================================================================

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

===========================================================================
               HYDROGRAPH IN  ONE-MINUTE UNIT INTERVALS(CFS)
        (Notes: Time indicated is at END of Each Unit Intervals.
                Peak 5-minute rainfall intensity is modeled as
                a constant value for entire 5-minute period.)
---------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.      200.0     400.0     600.0     800.0
---------------------------------------------------------------------------
  14.000     14.3213     61.17  .  Q    V .         .         .         .
  14.017     14.4063     61.76  .  Q    V .         .         .         .
  14.033     14.4923     62.43  .  Q    V .         .         .         .
  14.050     14.5793     63.15  .  Q    V .         .         .         .
  14.067     14.6674     63.92  .  Q    V .         .         .         .
  14.083     14.7566     64.77  .  Q    V .         .         .         .
  14.100     14.8471     65.74  .  Q    V .         .         .         .
  14.117     14.9395     67.05  .  Q    V .         .         .         .
  14.133     15.0337     68.40  .  Q    V .         .         .         .
  14.150     15.1293     69.38  .  Q    V .         .         .         .
  14.167     15.2260     70.24  .  Q    V .         .         .         .
  14.183     15.3239     71.06  .  Q    V .         .         .         .
  14.200     15.4229     71.86  .  Q     V.         .         .         .
  14.217     15.5229     72.64  .  Q     V.         .         .         .
  14.233     15.6240     73.39  .  Q     V.         .         .         .
  14.250     15.7261     74.15  .  Q     V.         .         .         .
  14.267     15.8293     74.90  .  Q     V.         .         .         .
  14.283     15.9335     75.64  .  Q     V.         .         .         .
  14.300     16.0387     76.38  .  Q     V.         .         .         .
  14.317     16.1449     77.12  .  Q     V.         .         .         .
  14.333     16.2522     77.86  .  Q     V.         .         .         .
  14.350     16.3605     78.60  .  Q     V.         .         .         .
  14.367     16.4698     79.35  .  Q     V.         .         .         .
  14.383     16.5801     80.10  .   Q    V.         .         .         .
  14.400     16.6914     80.84  .   Q    V.         .         .         .
  14.417     16.8038     81.60  .   Q    V.         .         .         .
  14.433     16.9173     82.36  .   Q    V.         .         .         .
  14.450     17.0318     83.12  .   Q    V.         .         .         .
  14.467     17.1473     83.89  .   Q     V         .         .         .
  14.483     17.2639     84.67  .   Q     V         .         .         .
  14.500     17.3816     85.45  .   Q     V         .         .         .
  14.517     17.5004     86.23  .   Q     V         .         .         .
  14.533     17.6203     87.03  .   Q     V         .         .         .
  14.550     17.7413     87.83  .   Q     V         .         .         .
  14.567     17.8634     88.65  .   Q     V         .         .         .
  14.583     17.9866     89.48  .   Q     V         .         .         .
  14.600     18.1110     90.32  .   Q     V         .         .         .
  14.617     18.2366     91.17  .   Q     V         .         .         .
  14.633     18.3634     92.03  .   Q     V         .         .         .
  14.650     18.4913     92.91  .   Q     V         .         .         .
  14.667     18.6205     93.80  .   Q     V         .         .         .
  14.683     18.7510     94.70  .   Q     V         .         .         .
  14.700     18.8827     95.62  .   Q     .V        .         .         .
  14.717     19.0157     96.55  .   Q     .V        .         .         .
  14.733     19.1500     97.50  .   Q     .V        .         .         .
  14.750     19.2856     98.46  .   Q     .V        .         .         .
  14.767     19.4226     99.44  .   Q     .V        .         .         .
  14.783     19.5609    100.43  .    Q    .V        .         .         .
  14.800     19.7007    101.44  .    Q    .V        .         .         .
  14.817     19.8418    102.47  .    Q    .V        .         .         .
  14.833     19.9844    103.52  .    Q    .V        .         .         .
  14.850     20.1284    104.58  .    Q    .V        .         .         .
  14.867     20.2740    105.66  .    Q    .V        .         .         .
  14.883     20.4210    106.76  .    Q    .V        .         .         .
  14.900     20.5696    107.88  .    Q    . V       .         .         .
  14.917     20.7198    109.02  .    Q    . V       .         .         .
  14.933     20.8715    110.18  .    Q    . V       .         .         .
  14.950     21.0249    111.36  .    Q    .V        .         .         .
  14.967     21.1799    112.56  .    Q    .V        .         .         .
  14.983     21.3367    113.78  .    Q    .V        .         .         .
  15.000     21.4951    115.03  .    Q    .V        .         .         .
  15.017     21.6553    116.30  .    Q    .V        .         .         .
  15.033     21.8173    117.60  .    Q    .V        .         .         .
  15.050     21.9811    118.92  .    Q    .V        .         .         .
  15.067     22.1468    120.27  .     Q   .V        .         .         .
  15.083     22.3143    121.65  .     Q   . V       .         .         .
  15.100     22.4838    123.06  .     Q   . V       .         .         .
  15.117     22.6553    124.50  .     Q   . V       .         .         .
  15.133     22.8289    125.98  .     Q   . V       .         .         .
  15.150     23.0044    127.48  .     Q   . V       .         .         .
  15.167     23.1822    129.02  .     Q   . V       .         .         .
  15.183     23.3620    130.60  .     Q   . V       .         .         .
  15.200     23.5442    132.21  .     Q   . V       .         .         .
  15.217     23.7285    133.86  .     Q   . V       .         .         .
  15.233     23.9152    135.55  .     Q   . V       .         .         .
  15.250     24.1043    137.28  .     Q   .  V      .         .         .
  15.267     24.2959    139.06  .     Q   .  V      .         .         .
  15.283     24.4899    140.89  .      Q  .  V      .         .         .
  15.300     24.6866    142.76  .      Q  .  V      .         .         .
  15.317     24.8859    144.68  .      Q  .  V      .         .         .
  15.333     25.0879    146.66  .      Q  .  V      .         .         .
  15.350     25.2929    148.86  .      Q  .  V      .         .         .
  15.367     25.5014    151.36  .      Q  .  V      .         .         .
  15.383     25.7137    154.10  .      Q  .   V     .         .         .
  15.400     25.9300    157.05  .      Q  .   V     .         .         .
  15.417     26.1509    160.36  .       Q .   V     .         .         .
  15.433     26.3770    164.17  .       Q .   V     .         .         .
  15.450     26.6102    169.29  .       Q .   V     .         .         .
  15.467     26.8507    174.64  .       Q .   V     .         .         .
  15.483     27.0967    178.58  .       Q .   V     .         .         .
  15.500     27.3476    182.13  .        Q.   V     .         .         .
  15.517     27.6032    185.59  .        Q.    V    .         .         .
  15.533     27.8636    189.03  .        Q.    V    .         .         .
  15.550     28.1287    192.45  .        Q.    V    .         .         .
  15.567     28.3985    195.87  .        Q.    V    .         .         .
  15.583     28.6731    199.40  .        Q.    V    .         .         .
  15.600     28.9527    202.95  .         Q    V    .         .         .
  15.617     29.2372    206.61  .         Q     V   .         .         .
  15.633     29.5270    210.35  .         Q     V   .         .         .
  15.650     29.8220    214.21  .         Q     V   .         .         .
  15.667     30.1226    218.21  .         Q     V   .         .         .
  15.683     30.4284    222.01  .         .Q    V   .         .         .
  15.700     30.7390    225.50  .         .Q    V   .         .         .
  15.717     31.0542    228.80  .         .Q     V  .         .         .
  15.733     31.3737    232.02  .         .Q     V  .         .         .
  15.750     31.6973    234.92  .         .Q     V  .         .         .
  15.767     32.0240    237.17  .         .Q     V  .         .         .
  15.783     32.3508    237.23  .         .Q     V  .         .         .
  15.800     32.6778    237.39  .         .Q      V.         .         .
  15.817     33.0099    241.14  .         . Q     V.         .         .
  15.833     33.3493    246.39  .         . Q     V.         .         .
  15.850     33.6972    252.60  .         . Q     V.         .         .
  15.867     34.0550    259.75  .         . Q     V.         .         .
  15.883     34.4242    268.02  .         .  Q      V         .         .
  15.900     34.8065    277.52  .         .  Q      V         .         .
  15.917     35.2036    288.31  .         .   Q     V         .         .
  15.933     35.6179    300.79  .         .    Q    V         .         .
  15.950     36.0523    315.40  .         .    Q    .V        .         .
  15.967     36.5157    336.43  .         .     Q   .V        .         .
  15.983     37.0187    365.18  .         .       Q .V        .         .
  16.000     37.5698    400.06  .         .         QV        .         .
  16.017     38.1765    440.51  .         .         . Q       .         .
  16.033     38.8508    489.53  .         .         . V Q     .         .
  16.050     39.6025    545.71  .         .         .  V   Q  .         .
  16.067     40.4591    621.92  .         .         .  V      .Q        .
  16.083     41.4070    688.20  .         .         .   V     .    Q    .
  16.100     42.3842    709.43  .         .         .   V     .     Q   .
  16.117     43.3591    707.77  .         .         .    V    .     Q   .
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 16.133     44.3038    685.83  .          .          .    V     .   Q     .
 16.150     45.1617    622.85  .          .          .     V   .Q         .
 16.167     45.9094    542.83  .          .          .    VQ  .          .
 16.183     46.5883    492.88  .          .          .   Q  V  .          .
 16.200     47.2179    457.11  .          .         . Q    V  .          .
 16.217     47.8050    426.20  .          .         .Q     V  .          .
 16.233     48.3553    399.56  .          .        Q.       V .          .
 16.250     48.8742    376.69  .          .       Q .       V .          .
 16.267     49.3674    358.07  .          .      Q  .       V .          .
 16.283     49.8399    343.01  .          .      Q  .        V.          .
 16.300     50.2959    331.12  .          .     Q   .        V.          .
 16.317     50.7329    317.22  .          .    Q    .        V.          .
 16.333     51.1514    303.85  .          .    Q    .        V.          .
 16.350     51.5523    291.04  .          .   Q     .         V          .
 16.367     51.9362    278.75  .          .  Q      .         V          .
 16.383     52.3028    266.13  .          .  Q      .         V          .
 16.400     52.6528    254.08  .          . Q       .         V          .
 16.417     52.9873    242.87  .          . Q       .         V          .
 16.433     53.3071    232.14  .          .Q        .         .V         .
 16.450     53.6098    219.79  .          Q         .         .V         .
 16.467     53.8960    207.77  .          Q         .         .V         .
 16.483     54.1687    197.98  .         Q.         .         .V         .
 16.500     54.4291    189.09  .         Q.         .         .V         .
 16.517     54.6781    180.71  .         Q.         .         .V         .
 16.533     54.9172    173.59  .        Q .         .         . V        .
 16.550     55.1485    167.98  .        Q .         .         . V        .
 16.567     55.3729    162.91  .        Q .         .         . V        .
 16.583     55.5909    158.23  .       Q  .         .         . V        .
 16.600     55.8028    153.85  .       Q  .         .         . V        .
 16.617     56.0091    149.74  .       Q  .         .         . V        .
 16.633     56.2101    145.93  .       Q  .         .         . V        .
 16.650     56.4061    142.35  .       Q  .         .         . V        .
 16.667     56.5975    138.90  .      Q   .         .         .  V       .
 16.683     56.7841    135.53  .      Q   .         .         .  V       .
 16.700     56.9664    132.33  .      Q   .         .         .  V       .
 16.717     57.1445    129.28  .      Q   .         .         .  V       .
 16.733     57.3185    126.36  .      Q   .         .         .  V       .
 16.750     57.4887    123.55  .      Q   .         .         .  V       .
 16.767     57.6552    120.87  .      Q   .         .         .  V       .
 16.783     57.8181    118.28  .     Q    .         .         .  V       .
 16.800     57.9776    115.77  .     Q    .         .         .  V       .
 16.817     58.1337    113.33  .     Q    .         .         .   V      .
 16.833     58.2866    110.98  .     Q    .         .         .   V      .
 16.850     58.4363    108.73  .     Q    .         .         .   V      .
 16.867     58.5830    106.51  .     Q    .         .         .   V      .
 16.883     58.7267    104.33  .     Q    .         .         .   V      .
 16.900     58.8674    102.13  .     Q    .         .         .   V      .
 16.917     59.0047     99.68  .    Q     .         .         .   V      .
 16.933     59.1387     97.28  .    Q     .         .         .   V      .
 16.950     59.2695     94.94  .    Q     .         .         .   V      .
 16.967     59.3971     92.64  .    Q     .         .         .   V      .
 16.983     59.5216     90.42  .    Q     .         .         .   V      .
 17.000     59.6437     88.59  .    Q     .         .         .   V      .

****************************************************************************
  FLOW PROCESS FROM NODE    106.11 TO NODE    106.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
============================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #2)

         WATERSHED AREA =    1556.600 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.207 HOURS
         MOUNTAIN S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.190
         LOW LOSS FRACTION = 0.990
         *HYDROGRAPH MODEL #7 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.27
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.82
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.32
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  2.65
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  4.10
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) = 10.70

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
           5-MINUTE FACTOR = 0.931
          30-MINUTE FACTOR = 0.931
           1-HOUR FACTOR = 0.931
           3-HOUR FACTOR = 0.990
           6-HOUR FACTOR = 0.995
          24-HOUR FACTOR = 0.997

         UNIT HYDROGRAPH TIME UNIT =   1.000 MINUTES
         UNIT INTERVAL PERCENTAGE OF LAG-TIME =   8.052


         RUNOFF HYDROGRAPH LISTING LIMITS:
         MODEL TIME(HOURS) FOR BEGINNING OF RESULTS =  14.00
         MODEL TIME(HOURS) FOR END OF RESULTS =  17.00
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UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	0.895	842.062
2	2.677	1677.222
3	5.043	2227.934
4	7.844	2636.200
5	11.495	3436.480
6	16.209	4436.890
7	22.176	5616.827
8	29.149	6563.057
9	35.017	5523.545
10	39.816	4517.155
11	43.715	3669.875
12	47.106	3192.030
13	50.167	2881.090
14	52.765	2444.968
15	54.788	1903.999
16	56.702	1802.051
17	58.365	1565.193
18	59.980	1520.321
19	61.583	1508.052
20	63.001	1334.978
21	64.304	1227.037
22	65.526	1149.519
23	66.737	1140.212
24	67.876	1071.775
25	68.908	971.475
26	69.914	947.224
27	70.921	947.447
28	71.909	929.982
29	72.747	788.756
30	73.552	757.942
31	74.325	727.220
32	75.057	689.210
33	75.787	687.609
34	76.477	649.484
35	77.148	631.437
36	77.817	629.046
37	78.420	568.200
38	78.995	541.363
39	79.570	541.248
40	80.135	531.209

41	80.673	506.434
42	81.209	505.062
43	81.746	505.292
44	82.229	454.830
45	82.665	409.617
46	83.100	409.854
47	83.535	409.617
48	83.963	402.543
49	84.333	348.655
50	84.691	337.015
51	85.049	337.015
52	85.407	336.555
53	85.765	337.015
54	86.108	322.623
55	86.424	297.740
56	86.740	297.058
57	87.055	297.281
58	87.371	297.281
59	87.687	297.288
60	87.999	293.173
61	88.285	269.655
62	88.567	265.777
63	88.850	265.999
64	89.132	265.317
65	89.415	266.229
66	89.698	266.229
67	89.977	262.581
68	90.231	239.745
69	90.481	235.178
70	90.731	235.178
71	90.981	235.178
72	91.230	234.718
73	91.480	235.185
74	91.729	234.718
75	91.976	231.982
76	92.190	201.842
77	92.398	195.904
78	92.606	195.451
79	92.814	195.451
80	93.021	195.444
81	93.230	195.904
82	93.437	195.451
83	93.645	195.451
84	93.853	195.904
85	94.046	181.297
86	94.206	150.691
87	94.365	150.245
88	94.524	149.779
89	94.685	150.698
90	94.844	149.786
91	95.003	149.779
92	95.162	150.245
93	95.322	150.238
94	95.481	149.786
95	95.641	150.238
96	95.800	150.238
97	95.958	147.955
98	96.087	121.470
99	96.203	109.140
100	96.318	108.688
101	96.434	109.140
102	96.549	108.688
103	96.666	109.593
104	96.781	108.688
105	96.898	109.593
106	97.013	108.688
107	97.129	109.140
108	97.245	108.688
109	97.361	109.593
110	97.477	108.688
111	97.592	108.681
112	97.709	109.600
113	97.824	108.688
114	97.940	109.593
115	98.015	70.326
116	98.046	29.228
117	98.079	31.052
118	98.110	29.228
119	98.141	29.228
120	98.174	31.052
121	98.205	29.228
122	98.236	29.220
123	98.267	29.228
124	98.300	31.052
125	98.331	29.228
126	98.363	29.228
127	98.395	30.140
128	98.426	29.228
129	98.458	30.140
130	98.490	30.140
131	98.522	30.140
132	98.552	28.308
133	98.585	31.052
134	98.616	29.228
135	98.648	30.140
136	98.679	29.228
137	98.710	29.228
138	98.743	31.052
139	98.774	29.228
140	98.805	29.220
141	98.837	30.140
142	98.868	29.228
143	98.900	30.140
144	98.931	29.228
145	98.963	30.140
146	98.995	30.140
147	99.027	30.140
148	99.059	30.140
149	99.091	30.140
150	99.123	30.140

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--------------------------------------------------------------------------
    TOTAL SOIL-LOSS VOLUME(ACRE-FEET) =     591.5095
    TOTAL STORM RUNOFF VOLUME(ACRE-FEET) =     784.7606
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                        2 4 - H O U R    S T O R M
                    R U N O F F    H Y D R O G R A P H

=============================================================================
               HYDROGRAPH IN  ONE-MINUTE UNIT INTERVALS(CFS)
        (Notes: Time indicated is at END of Each Unit Intervals.
                Peak 5-minute rainfall intensity is modeled as
                a constant value for entire 5-minute period.)
-----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.      600.0    1200.0    1800.0    2400.0
-----------------------------------------------------------------------------
  14.000    330.2052    519.96  .       Q .     V   .         .         .
  14.017    330.9252    522.71  .       Q .     V   .         .         .
  14.033    331.6499    526.14  .       Q .     V   .         .         .
  14.050    332.3799    530.00  .       Q .     V   .         .         .
  14.067    333.1157    534.21  .       Q .     V   .         .         .
  14.083    333.8582    539.04  .       Q .      V  .         .         .
  14.100    334.6085    544.67  .        Q.      V  .         .         .
  14.117    335.3677    551.22  .        Q.      V  .         .         .
  14.133    336.1370    558.53  .        Q.      V  .         .         .
  14.150    336.9153    565.03  .        Q.      V  .         .         .
  14.167    337.7015    570.77  .        Q.      V  .         .         .
  14.183    338.4947    575.86  .        Q.      V  .         .         .
  14.200    339.2944    580.61  .        Q.      V  .         .         .
  14.217    340.1004    585.12  .        Q.      V  .         .         .
  14.233    340.9121    589.32  .        Q.      V  .         .         .
  14.250    341.7291    593.12  .        Q.      V  .         .         .
  14.267    342.5512    596.87  .        Q.      V  .         .         .
  14.283    343.3783    600.44  .         Q      V  .         .         .
  14.300    344.2102    604.02  .         Q      V  .         .         .
  14.317    345.0471    607.60  .         Q      V  .         .         .
  14.333    345.8889    611.08  .         Q      V  .         .         .
  14.350    346.7353    614.49  .         Q      V  .         .         .
  14.367    347.5863    617.87  .         Q      V  .         .         .
  14.383    348.4421    621.27  .         Q      V  .         .         .
  14.400    349.3025    624.65  .         Q      V  .         .         .
  14.417    350.1675    627.97  .         Q      V  .         .         .
  14.433    351.0370    631.31  .         Q      V  .         .         .
  14.450    351.9113    634.67  .         Q      V  .         .         .
  14.467    352.7901    638.06  .         Q      V  .         .         .
  14.483    353.6736    641.36  .         Q       V .         .         .
  14.500    354.5615    644.67  .         Q       V .         .         .
  14.517    355.4541    648.00  .         Q       V .         .         .
  14.533    356.3513    651.35  .         Q       V .         .         .
  14.550    357.2531    654.72  .         Q       V .         .         .
  14.567    358.1596    658.11  .         Q       V .         .         .
  14.583    359.0708    661.51  .         .Q      V .         .         .
  14.600    359.9867    664.95  .         .Q      V .         .         .
  14.617    360.9073    668.37  .         .Q      V .         .         .
  14.633    361.8327    671.82  .         .Q      V .         .         .
  14.650    362.7628    675.30  .         .Q      V .         .         .
  14.667    363.6979    678.83  .         .Q      V .         .         .
  14.683    364.6378    682.36  .         .Q      V .         .         .
  14.700    365.5826    685.95  .         .Q      V .         .         .
  14.717    366.5324    689.57  .         .Q      V .         .         .
  14.733    367.4872    693.21  .         .Q      V .         .         .
  14.750    368.4471    696.85  .         .Q      V .         .         .
  14.767    369.4120    700.55  .         .Q      V .         .         .
  14.783    370.3821    704.28  .         .Q      V .         .         .
  14.800    371.3574    708.07  .         .Q      V .         .         .
  14.817    372.3380    711.87  .         .Q      V .         .         .
  14.833    373.3238    715.71  .         .Q       V.         .         .
  14.850    374.3150    719.60  .         .Q       V.         .         .
  14.867    375.3116    723.55  .         . Q      V.         .         .
  14.883    376.3138    727.56  .         . Q      V.         .         .
  14.900    377.3215    731.62  .         . Q      V.         .         .
  14.917    378.3349    735.72  .         . Q      V.         .         .
  14.933    379.3540    739.88  .         . Q      V.         .         .
  14.950    380.3789    744.11  .         . Q      V.         .         .
  14.967    381.4098    748.41  .         . Q      V.         .         .
  14.983    382.4467    752.76  .         . Q      V.         .         .
  15.000    383.4896    757.20  .         . Q      V.         .         .
  15.017    384.5388    761.69  .         . Q      V.         .         .
  15.033    385.5942    766.25  .         . Q      V.         .         .
  15.050    386.6561    770.89  .         . Q      V.         .         .
  15.067    387.7244    775.62  .         . Q      V.         .         .
  15.083    388.7993    780.42  .         .  Q     V.         .         .
  15.100    389.8810    785.32  .         .  Q     V.         .         .
  15.117    390.9696    790.29  .         .  Q     V.         .         .
  15.133    392.0651    795.36  .         .  Q     V.         .         .
  15.150    393.1678    800.50  .         .  Q      V         .         .
  15.167    394.2776    805.76  .         .  Q      V         .         .
  15.183    395.3949    811.11  .         .  Q      V         .         .
  15.200    396.5197    816.59  .         .  Q      V         .         .
  15.217    397.6521    822.16  .         .  Q      V         .         .
  15.233    398.7924    827.86  .         .  Q      V         .         .
  15.250    399.9407    833.67  .         .  Q      V         .         .
  15.267    401.0972    839.60  .         .  Q      V         .         .
  15.283    402.2620    845.64  .         .   Q     V         .         .
  15.300    403.4353    851.83  .         .   Q     V         .         .
  15.317    404.6173    858.16  .         .   Q     V         .         .
  15.333    405.8083    864.65  .         .   Q     V         .         .
  15.350    407.0083    871.22  .         .   Q     V         .         .
  15.367    408.2175    877.91  .         .   Q     V         .         .
  15.383    409.4362    884.72  .         .   Q     V         .         .
  15.400    410.6644    891.70  .         .   Q     V         .         .
  15.417    411.9024    898.79  .         .   Q     V         .         .
  15.433    413.1504    906.01  .         .    Q    .V        .         .
  15.450    414.4084    913.34  .         .    Q    .V        .         .
  15.467    415.6768    920.84  .         .    Q    .V        .         .
  15.483    416.9559    928.64  .         .    Q    .V        .         .
  15.500    418.2462    936.79  .         .    Q    .V        .         .
  15.517    419.5482    945.25  .         .    Q    .V        .         .
  15.533    420.8623    954.05  .         .    Q    .V        .         .
  15.550    422.1890    963.15  .         .     Q   .V        .         .
  15.567    423.5287    972.63  .         .     Q   .V        .         .
  15.583    424.8820    982.47  .         .     Q   .V        .         .
  15.600    426.2493    992.70  .         .     Q   .V        .         .
  15.617    427.6313   1003.31  .         .     Q   .V        .         .
  15.633    429.0285   1014.35  .         .     Q   .V        .         .
  15.650    430.4415   1025.82  .         .      Q  .V        .         .
  15.667    431.8709   1037.80  .         .      Q  . V       .         .
  15.683    433.3157   1048.87  .         .      Q  . V       .         .
  15.700    434.7745   1059.14  .         .      Q  . V       .         .
  15.717    436.2472   1069.14  .         .      Q  . V       .         .
  15.733    437.7337   1079.22  .         .      Q  . V       .         .
  15.750    439.2334   1088.77  .         .       Q . V       .         .
  15.767    440.7452   1097.60  .         .       Q . V       .         .
  15.783    442.2680   1105.50  .         .       Q . V       .         .
  15.800    443.8011   1113.05  .         .       Q . V       .         .
  15.817    445.3490   1123.81  .         .       Q . V       .         .
  15.833    446.9164   1137.89  .         .       Q . V       .         .
  15.850    448.5076   1155.23  .         .        Q. V       .         .
  15.867    450.1267   1175.44  .         .        Q. V       .         .
  15.883    451.7777   1198.63  .         .        Q.  V      .         .
  15.900    453.4655   1225.40  .         .         Q  V      .         .
  15.917    455.1964   1256.62  .         .         Q  V      .         .
  15.933    456.9763   1292.21  .         .         .Q V      .         .
  15.950    458.8139   1334.05  .         .         . QV      .         .
  15.967    460.7398   1398.23  .         .         .  Q      .         .
  15.983    462.7823   1482.88  .         .         .  VQ     .         .
  16.000    464.9617   1582.24  .         .         .  V  Q   .         .
  16.017    467.2935   1692.85  .         .         .  V    Q .         .
  16.033    469.8034   1822.19  .         .         .  V      Q         .
  16.050    472.4930   1952.66  .         .         .   V     . Q       .
  16.067    475.3617   2082.69  .         .         .   V     .   Q     .
  16.083    478.4004   2206.08  .         .         .   V     .     Q   .
  16.100    481.5504   2286.87  .         .         .   V     .       Q .
  16.117    484.7439   2318.47  .         .         .   V     .       Q .
```

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  16.133    487.9119   2299.98  .         .         .   V     .       Q .
  16.150    490.9887   2233.80  .         .         .    V    .      Q  .
  16.167    493.9181   2126.71  .         .         .    V    .    Q    .
  16.183    496.7018   2020.97  .         .         .    V    .  Q      .
  16.200    499.3497   1922.37  .         .         .    V    . Q       .
  16.217    501.8838   1839.76  .         .         .    V    Q         .
  16.233    504.3148   1764.92  .         .         .    V   Q.         .
  16.250    506.6552   1699.14  .         .         .    V  Q .         .
  16.267    508.9221   1645.71  .         .         .    V Q  .         .
  16.283    511.1328   1605.01  .         .         .     Q   .         .
  16.300    513.2944   1569.31  .         .         .     Q   .         .
  16.317    515.4127   1537.87  .         .         .    QV   .         .
  16.333    517.4895   1507.78  .         .         .    QV   .         .
  16.350    519.5234   1476.65  .         .         .   Q V   .         .
  16.367    521.5175   1447.69  .         .         .   Q V   .         .
  16.383    523.4754   1421.44  .         .         .  Q  V   .         .
  16.400    525.4003   1397.47  .         .         .  Q  V   .         .
  16.417    527.2919   1373.33  .         .         . Q   V   .         .
  16.433    529.1494   1348.51  .         .         . Q   V   .         .
  16.450    530.9755   1325.76  .         .         . Q    V  .         .
  16.467    532.7714   1303.82  .         .         .Q     V  .         .
  16.483    534.5370   1281.85  .         .         .Q     V  .         .
  16.500    536.2731   1260.35  .         .         .Q     V  .         .
  16.517    537.9828   1241.30  .         .         Q      V  .         .
  16.533    539.6678   1223.25  .         .         Q      V  .         .
  16.550    541.3294   1206.33  .         .         Q      V  .         .
  16.567    542.9678   1189.49  .         .        Q.      V  .         .
  16.583    544.5829   1172.56  .         .        Q.      V  .         .
  16.600    546.1764   1156.84  .         .        Q.      V  .         .
  16.617    547.7490   1141.70  .         .        Q.      V  .         .
  16.633    549.3005   1126.46  .         .       Q .      V  .         .
  16.650    550.8329   1112.54  .         .       Q .       V .         .
  16.667    552.3474   1099.48  .         .       Q .       V .         .
  16.683    553.8429   1085.71  .         .       Q .       V .         .
  16.700    555.3188   1071.53  .         .      Q  .       V .         .
  16.717    556.7764   1058.17  .         .      Q  .       V .         .
  16.733    558.2158   1045.04  .         .      Q  .       V .         .
  16.750    559.6371   1031.85  .         .      Q  .       V .         .
  16.767    561.0405   1018.89  .         .     Q   .       V .         .
  16.783    562.4276   1006.98  .         .     Q   .       V .         .
  16.800    563.7988    995.50  .         .     Q   .       V .         .
  16.817    565.1546    984.32  .         .     Q   .       V .         .
  16.833    566.4955    973.49  .         .     Q   .       V .         .
  16.850    567.8229    963.70  .         .     Q   .       V .         .
  16.867    569.1370    954.07  .         .    Q    .        V.         .
  16.883    570.4384    944.78  .         .    Q    .        V.         .
  16.900    571.7272    935.67  .         .    Q    .        V.         .
  16.917    573.0036    926.67  .         .    Q    .        V.         .
  16.933    574.2683    918.17  .         .    Q    .        V.         .
  16.950    575.5222    910.29  .         .    Q    .        V.         .
  16.967    576.7648    902.19  .         .    Q    .        V.         .
  16.983    577.9964    894.13  .         .   Q     .        V.         .
  17.000    579.2170    886.20  .         .   Q     .        V.         .


****************************************************************************
  FLOW PROCESS FROM NODE    106.00 TO NODE    106.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


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  FLOW PROCESS FROM NODE    107.11 TO NODE    108.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
============================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #3)

         WATERSHED AREA =      33.500 ACRES
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         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.174 HOURS
         FOOTHILL S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.720
         LOW LOSS FRACTION = 0.990
         *HYDROGRAPH MODEL #7 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.27
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.82
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.32
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  2.65
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  4.10
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) = 10.70

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
           5-MINUTE FACTOR = 0.999
          30-MINUTE FACTOR = 0.999
           1-HOUR FACTOR = 0.999
           3-HOUR FACTOR = 1.000
           6-HOUR FACTOR = 1.000
          24-HOUR FACTOR = 1.000

         UNIT HYDROGRAPH TIME UNIT =   1.000 MINUTES
         UNIT INTERVAL PERCENTAGE OF LAG-TIME =   9.579


         RUNOFF HYDROGRAPH LISTING LIMITS:
         MODEL TIME(HOURS) FOR BEGINNING OF RESULTS =  14.00
         MODEL TIME(HOURS) FOR END OF RESULTS =  17.00
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UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	0.623	12.612
2	1.917	26.229
3	3.625	34.584
4	5.736	42.767
5	8.494	55.881
6	11.243	55.686
7	15.164	79.411
8	19.972	97.395
9	26.489	132.029
10	37.008	213.070
11	49.884	260.828
12	56.545	134.944
13	61.552	101.428
14	65.200	73.890
15	68.365	64.114
16	71.171	56.841
17	73.700	51.235
18	76.118	48.979
19	78.083	39.810
20	79.778	34.341
21	81.554	35.976
22	83.192	33.170
23	84.522	26.952
24	85.913	28.174
25	87.112	24.285
26	88.218	22.406
27	89.183	19.550
28	90.123	19.031
29	90.999	17.751
30	91.860	17.437
31	92.604	15.064
32	93.313	14.372
33	93.995	13.821

34	94.534	10.917
35	95.052	10.487
36	95.570	10.488
37	96.041	9.546
38	96.361	6.489
39	96.670	6.262
40	96.979	6.254
41	97.288	6.262
42	97.597	6.262
43	97.901	6.154
44	98.035	2.706
45	98.084	1.000
46	98.134	1.008
47	98.183	1.004
48	98.233	0.999
49	98.282	1.004
50	98.332	1.004
51	98.382	1.008
52	98.431	0.999
53	98.481	1.008
54	98.530	0.999
55	98.580	1.008
56	98.629	0.999
57	98.679	1.008
58	98.728	1.000
59	98.777	0.999
60	98.827	1.008
61	98.877	1.008
62	98.926	1.000
63	98.976	0.999
64	99.026	1.016
65	99.075	0.999
66	99.125	0.999
67	99.174	0.999
68	99.223	0.999
69	99.273	0.999
70	99.322	0.999
71	99.371	0.999
72	99.421	0.999
73	99.470	0.999
74	99.519	0.999
75	99.569	0.999
76	99.618	0.999
77	99.667	0.999
78	99.717	0.999
79	99.766	0.999
80	99.815	0.999
81	99.865	0.999
82	99.914	0.999
83	99.963	0.999
84	100.000	0.744

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 27.8716
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 1.9960

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

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HYDROGRAPH IN ONE-MINUTE UNIT INTERVALS(CFS)
(Notes: Time indicated is at END of Each Unit Intervals.
Peak 5-minute rainfall intensity is modeled as
a constant value for entire 5-minute period.)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	12.5	25.0	37.5	50.0
14.000	0.1462	0.18	Q V	.	.	.	.
14.017	0.1464	0.18	Q V	.	.	.	.
14.033	0.1467	0.18	Q V	.	.	.	.
14.050	0.1469	0.18	Q V	.	.	.	.
14.067	0.1472	0.18	Q V	.	.	.	.
14.083	0.1474	0.18	Q V	.	.	.	.
14.100	0.1477	0.18	Q V	.	.	.	.
14.117	0.1479	0.18	Q V	.	.	.	.
14.133	0.1482	0.18	Q V	.	.	.	.
14.150	0.1484	0.19	Q V	.	.	.	.
14.167	0.1487	0.19	Q V	.	.	.	.
14.183	0.1489	0.19	Q V	.	.	.	.
14.200	0.1492	0.19	Q V	.	.	.	.
14.217	0.1495	0.19	Q V	.	.	.	.
14.233	0.1497	0.19	Q V	.	.	.	.
14.250	0.1500	0.19	Q V	.	.	.	.
14.267	0.1502	0.19	Q V	.	.	.	.
14.283	0.1505	0.19	Q V	.	.	.	.
14.300	0.1508	0.19	Q V	.	.	.	.
14.317	0.1510	0.19	Q V	.	.	.	.
14.333	0.1513	0.19	Q V	.	.	.	.
14.350	0.1516	0.19	Q V	.	.	.	.
14.367	0.1518	0.19	Q V	.	.	.	.
14.383	0.1521	0.19	Q V	.	.	.	.
14.400	0.1524	0.20	Q V	.	.	.	.
14.417	0.1526	0.20	Q V	.	.	.	.
14.433	0.1529	0.20	Q V	.	.	.	.
14.450	0.1532	0.20	Q V	.	.	.	.
14.467	0.1534	0.20	Q V	.	.	.	.
14.483	0.1537	0.20	Q V	.	.	.	.
14.500	0.1540	0.20	Q V	.	.	.	.
14.517	0.1543	0.20	Q V	.	.	.	.
14.533	0.1545	0.20	Q V	.	.	.	.
14.550	0.1548	0.20	Q V	.	.	.	.
14.567	0.1551	0.20	Q V	.	.	.	.
14.583	0.1554	0.20	Q V	.	.	.	.
14.600	0.1557	0.20	Q V	.	.	.	.
14.617	0.1559	0.20	Q V	.	.	.	.
14.633	0.1562	0.21	Q V	.	.	.	.
14.650	0.1565	0.21	Q V	.	.	.	.
14.667	0.1568	0.21	Q V	.	.	.	.
14.683	0.1571	0.21	Q V	.	.	.	.
14.700	0.1574	0.21	Q V	.	.	.	.
14.717	0.1577	0.21	Q V	.	.	.	.
14.733	0.1579	0.21	Q V	.	.	.	.
14.750	0.1582	0.21	Q V	.	.	.	.
14.767	0.1585	0.21	Q V	.	.	.	.
14.783	0.1588	0.21	Q V	.	.	.	.
14.800	0.1591	0.21	Q V	.	.	.	.
14.817	0.1594	0.21	Q V	.	.	.	.
14.833	0.1597	0.22	Q V	.	.	.	.
14.850	0.1600	0.22	Q V	.	.	.	.
14.867	0.1603	0.22	Q V	.	.	.	.
14.883	0.1606	0.22	Q V	.	.	.	.
14.900	0.1609	0.22	Q V	.	.	.	.
14.917	0.1612	0.22	Q V	.	.	.	.
14.933	0.1615	0.22	Q V	.	.	.	.

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14.950      0.1618      0.22  Q  V      .         .         .         .
14.967      0.1621      0.22  Q  V      .         .         .         .
14.983      0.1624      0.22  Q  V      .         .         .         .
15.000      0.1628      0.23  Q  V      .         .         .         .
15.017      0.1631      0.23  Q  V      .         .         .         .
15.033      0.1634      0.23  Q  V      .         .         .         .
15.050      0.1637      0.23  Q  V      .         .         .         .
15.067      0.1640      0.23  Q  V      .         .         .         .
15.083      0.1644      0.24  Q  V      .         .         .         .
15.100      0.1647      0.25  Q  V      .         .         .         .
15.117      0.1651      0.27  Q  V      .         .         .         .
15.133      0.1655      0.29  Q  V      .         .         .         .
15.150      0.1659      0.31  Q  V      .         .         .         .
15.167      0.1664      0.35  Q  V      .         .         .         .
15.183      0.1669      0.39  Q  V      .         .         .         .
15.200      0.1676      0.46  Q  V      .         .         .         .
15.217      0.1683      0.54  Q  V      .         .         .         .
15.233      0.1692      0.64  Q  V      .         .         .         .
15.250      0.1702      0.74  Q  V      .         .         .         .
15.267      0.1714      0.86  Q  V      .         .         .         .
15.283      0.1727      0.98  Q  V      .         .         .         .
15.300      0.1743      1.11  Q  V      .         .         .         .
15.317      0.1760      1.25  Q  V      .         .         .         .
15.333      0.1779      1.39  .Q V      .         .         .         .
15.350      0.1800      1.55  .Q V      .         .         .         .
15.367      0.1824      1.74  .Q V      .         .         .         .
15.383      0.1851      1.94  .Q V      .         .         .         .
15.400      0.1881      2.16  .Q V      .         .         .         .
15.417      0.1914      2.40  .Q V      .         .         .         .
15.433      0.1950      2.65  . QV      .         .         .         .
15.450      0.1991      2.93  . QV      .         .         .         .
15.467      0.2035      3.24  . Q V     .         .         .         .
15.483      0.2085      3.60  . Q V     .         .         .         .
15.500      0.2141      4.05  .  QV     .         .         .         .
15.517      0.2204      4.56  .  QV     .         .         .         .
15.533      0.2272      4.94  .  QV     .         .         .         .
15.550      0.2344      5.29  .   Q     .         .         .         .
15.567      0.2422      5.61  .   Q     .         .         .         .
15.583      0.2504      5.94  .   QV    .         .         .         .
15.600      0.2590      6.26  .    Q    .         .         .         .
15.617      0.2681      6.59  .    Q    .         .         .         .
15.633      0.2776      6.93  .    Q    .         .         .         .
15.650      0.2876      7.27  .    Q    .         .         .         .
15.667      0.2981      7.61  .    VQ   .         .         .         .
15.683      0.3090      7.95  .     Q   .         .         .         .
15.700      0.3204      8.27  .     Q   .         .         .         .
15.717      0.3323      8.60  .     Q   .         .         .         .
15.733      0.3446      8.92  .     VQ  .         .         .         .
15.750      0.3573      9.24  .      Q  .         .         .         .
15.767      0.3705      9.57  .      Q  .         .         .         .
15.783      0.3841      9.90  .      Q  .         .         .         .
15.800      0.3982     10.20  .      VQ .         .         .         .
15.817      0.4126     10.49  .       Q .         .         .         .
15.833      0.4273     10.66  .       Q .         .         .         .
15.850      0.4421     10.79  .       Q .         .         .         .
15.867      0.4576     11.19  .       QV.         .         .         .
15.883      0.4737     11.73  .        Q.         .         .         .
15.900      0.4907     12.36  .        Q.         .         .         .
15.917      0.5088     13.11  .         Q         .         .         .
15.933      0.5280     13.95  .         VQ        .         .         .
15.950      0.5486     14.94  .         VQ        .         .         .
15.967      0.5710     16.31  .         .V Q      .         .         .
15.983      0.5960     18.11  .         .V  Q     .         .         .
16.000      0.6238     20.18  .         . V   Q   .         .         .
16.017      0.6549     22.56  .         .  V    Q .         .         .
16.033      0.6897     25.27  .         .  V      Q         .         .
16.050      0.7281     27.86  .         .   V     . Q       .         .
16.067      0.7703     30.65  .         .    V    .   Q     .         .
16.083      0.8167     33.68  .         .     V   .     Q   .         .
16.100      0.8678     37.16  .         .      V  .       Q.         .
16.117      0.9255     41.85  .         .       V .         .  Q      .
```

```
16.133      0.9900     46.86  .         .        V.         .      Q  .
16.150      1.0566     48.29  .         .         .V        .       Q .
16.167      1.1230     48.24  .         .         . V       .       Q .
16.183      1.1871     46.52  .         .         .  V      .      Q  .
16.200      1.2454     42.37  .         .         .   V     .  Q      .
16.217      1.2955     36.35  .         .         .    V   Q.         .
16.233      1.3404     32.61  .         .         .     Q   .         .
16.250      1.3813     29.69  .         .         .  Q   V  .         .
16.267      1.4190     27.35  .         .         .Q     V .         .
16.283      1.4539     25.34  .         .         Q       V.         .
16.300      1.4865     23.68  .         .       Q .       V.         .
16.317      1.5172     22.25  .         .      Q  .        V         .
16.333      1.5461     20.97  .         .     Q   .        V         .
16.350      1.5737     20.07  .         .     Q   .        .V        .
16.367      1.5999     19.04  .         .    Q    .        . V       .
16.383      1.6246     17.93  .         .   Q     .        . V       .
16.400      1.6478     16.81  .         .  Q      .        .  V      .
16.417      1.6696     15.83  .         . Q       .        .  V      .
16.433      1.6900     14.83  .         .Q        .        .  V      .
16.450      1.7092     13.90  .         .Q        .        .   V     .
16.467      1.7270     12.98  .         Q         .        .   V     .
16.483      1.7437     12.08  .        Q.         .        .   V     .
16.500      1.7590     11.10  .       Q .         .        .    V    .
16.517      1.7728     10.06  .       Q .         .        .    V    .
16.533      1.7855      9.18  .      Q  .         .        .    V    .
16.550      1.7971      8.41  .     Q   .         .        .     V   .
16.567      1.8076      7.68  .     Q   .         .        .     V   .
16.583      1.8172      6.94  .    Q    .         .        .     V   .
16.600      1.8259      6.29  .    Q    .         .        .     V   .
16.617      1.8337      5.69  .   Q     .         .        .     V   .
16.633      1.8408      5.12  .   Q     .         .        .     V   .
16.650      1.8471      4.61  .  Q      .         .        .      V  .
16.667      1.8529      4.21  .  Q      .         .        .      V  .
16.683      1.8581      3.78  .  Q      .         .        .      V  .
16.700      1.8628      3.37  . Q       .         .        .      V  .
16.717      1.8669      2.99  . Q       .         .        .      V  .
16.733      1.8705      2.63  . Q       .         .        .      V  .
16.750      1.8737      2.29  .Q        .         .        .      V  .
16.767      1.8765      2.05  .Q        .         .        .      V  .
16.783      1.8791      1.88  .Q        .         .        .      V  .
16.800      1.8814      1.73  .Q        .         .        .      V  .
16.817      1.8837      1.60  .Q        .         .        .      V  .
16.833      1.8857      1.49  .Q        .         .        .      V  .
16.850      1.8876      1.39  .Q        .         .        .      V  .
16.867      1.8894      1.31  .Q        .         .        .      V  .
16.883      1.8911      1.23  Q         .         .        .      V  .
16.900      1.8927      1.16  Q         .         .        .      V  .
16.917      1.8942      1.10  Q         .         .        .      V  .
16.933      1.8957      1.04  Q         .         .        .      V  .
16.950      1.8970      0.99  Q         .         .        .       V .
16.967      1.8983      0.94  Q         .         .        .       V .
16.983      1.8996      0.90  Q         .         .        .       V .
17.000      1.9008      0.87  Q         .         .        .       V .

****************************************************************************
  FLOW PROCESS FROM NODE    108.00 TO NODE    108.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    110.10 TO NODE   1116.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
============================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #4)

         WATERSHED AREA =      40.000 ACRES
```

```
BASEFLOW =   0.000 CFS/SQUARE-MILE
*USER ENTERED "LAG" TIME =    0.168 HOURS
VALLEY(DEVELOPED) S-GRAPH SELECTED
MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.245
LOW LOSS FRACTION = 0.540
*HYDROGRAPH MODEL #7 SPECIFIED*

SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.32
SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  1.04
SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.60
SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  3.25
SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  5.00
SPECIFIED PEAK 24-HOUR RAINFALL(INCH) = 14.00

PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE FACTOR = 0.998
 30-MINUTE FACTOR = 0.998
  1-HOUR FACTOR = 0.998
  3-HOUR FACTOR = 1.000
  6-HOUR FACTOR = 1.000
 24-HOUR FACTOR = 1.000

UNIT HYDROGRAPH TIME UNIT =   1.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME =   9.921


RUNOFF HYDROGRAPH LISTING LIMITS:
MODEL TIME(HOURS) FOR BEGINNING OF RESULTS =  14.00
MODEL TIME(HOURS) FOR END OF RESULTS =  17.00
```

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	0.567	13.712
2	1.717	27.822
3	3.274	37.659
4	5.931	64.268
5	10.419	108.554
6	15.947	133.696
7	21.949	145.173
8	28.344	154.685
9	35.723	178.484
10	44.125	203.217
11	52.977	214.110
12	60.922	192.175
13	68.598	185.653
14	74.915	152.791
15	79.735	116.599
16	84.058	104.566
17	87.478	82.711
18	89.938	59.511
19	92.032	50.630
20	93.874	44.557
21	95.222	32.612
22	96.294	25.933
23	97.076	18.902
24	97.825	18.121
25	98.151	7.888
26	98.337	4.500
27	98.523	4.495
28	98.709	4.500
29	98.895	4.500
30	99.081	4.500
31	99.267	4.500
32	99.453	4.500
33	99.639	4.500
34	99.825	4.500
35	100.000	4.227

```
TOTAL SOIL-LOSS VOLUME(ACRE-FEET) =      19.5245
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) =      27.1240
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============================================================================

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

============================================================================
               HYDROGRAPH IN  ONE-MINUTE UNIT INTERVALS(CFS)
        (Notes: Time indicated is at END of Each Unit Intervals.
                Peak 5-minute rainfall intensity is modeled as
                a constant value for entire 5-minute period.)
----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.       25.0      50.0      75.0     100.0
----------------------------------------------------------------------------
  14.000     12.2463     16.35  .     Q   .       V .         .         .
  14.017     12.2689     16.43  .     Q   .       V .         .         .
  14.033     12.2917     16.52  .     Q   .       V .         .         .
  14.050     12.3146     16.62  .     Q   .       V .         .         .
  14.067     12.3376     16.72  .     Q   .       V .         .         .
  14.083     12.3608     16.85  .     Q   .       V .         .         .
  14.100     12.3842     16.99  .     Q   .       V .         .         .
  14.117     12.4078     17.14  .     Q   .       V .         .         .
  14.133     12.4317     17.29  .     Q   .       V .         .         .
  14.150     12.4557     17.45  .     Q   .       V .         .         .
  14.167     12.4800     17.62  .      Q  .       V .         .         .
  14.183     12.5045     17.80  .      Q  .       V .         .         .
  14.200     12.5292     17.97  .      Q  .       V .         .         .
  14.217     12.5542     18.14  .      Q  .       V .         .         .
  14.233     12.5794     18.29  .      Q  .       V .         .         .
  14.250     12.6048     18.43  .      Q  .       V .         .         .
  14.267     12.6304     18.57  .      Q  .       V .         .         .
  14.283     12.6561     18.69  .      Q  .       V .         .         .
  14.300     12.6820     18.81  .      Q  .       V .         .         .
  14.317     12.7081     18.92  .      Q  .       V .         .         .
  14.333     12.7343     19.03  .      Q  .       V .         .         .
  14.350     12.7607     19.14  .      Q  .       V .         .         .
  14.367     12.7872     19.25  .      Q  .       V .         .         .
  14.383     12.8138     19.35  .      Q  .       V .         .         .
  14.400     12.8406     19.45  .      Q  .       V .         .         .
  14.417     12.8676     19.56  .      Q  .       V .         .         .
  14.433     12.8947     19.66  .      Q  .        V.         .         .
  14.450     12.9219     19.76  .      Q  .        V.         .         .
  14.467     12.9492     19.86  .      Q  .        V.         .         .
  14.483     12.9767     19.97  .      Q  .        V.         .         .
  14.500     13.0044     20.07  .       Q .        V.         .         .
  14.517     13.0322     20.18  .       Q .        V.         .         .
  14.533     13.0601     20.29  .       Q .        V.         .         .
  14.550     13.0882     20.40  .       Q .        V.         .         .
  14.567     13.1165     20.51  .       Q .        V.         .         .
  14.583     13.1449     20.62  .       Q .        V.         .         .
  14.600     13.1734     20.74  .       Q .        V.         .         .
  14.617     13.2022     20.85  .       Q .        V.         .         .
  14.633     13.2310     20.97  .       Q .        V.         .         .
  14.650     13.2601     21.09  .       Q .        V.         .         .
  14.667     13.2893     21.21  .       Q .        V.         .         .
  14.683     13.3187     21.33  .       Q .        V.         .         .
  14.700     13.3482     21.45  .       Q .        V.         .         .
  14.717     13.3779     21.58  .       Q .        V.         .         .
  14.733     13.4078     21.70  .       Q .        V.         .         .
  14.750     13.4379     21.83  .       Q .        V.         .         .
  14.767     13.4682     21.96  .       Q .        V.         .         .
  14.783     13.4986     22.10  .       Q .        V.         .         .
  14.800     13.5292     22.23  .       Q .        V.         .         .
  14.817     13.5600     22.37  .       Q .        V.         .         .
  14.833     13.5910     22.51  .        Q.         V         .         .
  14.850     13.6222     22.65  .        Q.         V         .         .
  14.867     13.6536     22.80  .        Q.         V         .         .
  14.883     13.6852     22.94  .        Q.         V         .         .
  14.900     13.7171     23.09  .        Q.         V         .         .
  14.917     13.7491     23.25  .        Q.         V         .         .
  14.933     13.7813     23.40  .        Q.         V         .         .
  14.950     13.8138     23.56  .        Q.         V         .         .
  14.967     13.8464     23.72  .        Q.         V         .         .
  14.983     13.8793     23.89  .        Q.         V         .         .
  15.000     13.9125     24.05  .        Q.         V         .         .
  15.017     13.9458     24.22  .        Q.         V         .         .
  15.033     13.9795     24.40  .        Q.         V         .         .
  15.050     14.0133     24.58  .        Q.         V         .         .
  15.067     14.0474     24.76  .        Q.         V         .         .
  15.083     14.0818     24.94  .        Q.         V         .         .
  15.100     14.1164     25.13  .         Q         V         .         .
  15.117     14.1512     25.32  .         Q         V         .         .
  15.133     14.1864     25.52  .         Q         V         .         .
  15.150     14.2218     25.72  .         Q         V         .         .
  15.167     14.2575     25.92  .         Q         .V        .         .
  15.183     14.2935     26.14  .         Q         .V        .         .
  15.200     14.3298     26.35  .         Q         .V        .         .
  15.217     14.3664     26.57  .         Q         .V        .         .
  15.233     14.4033     26.79  .         Q         .V        .         .
  15.250     14.4406     27.03  .         Q         .V        .         .
  15.267     14.4781     27.26  .         Q         .V        .         .
  15.283     14.5160     27.50  .         .Q        .V        .         .
  15.300     14.5542     27.75  .         .Q        .V        .         .
  15.317     14.5928     28.01  .         .Q        .V        .         .
  15.333     14.6317     28.27  .         .Q        .V        .         .
  15.350     14.6710     28.53  .         .Q        .V        .         .
  15.367     14.7107     28.79  .         .Q        .V        .         .
  15.383     14.7507     29.05  .         .Q        .V        .         .
  15.400     14.7910     29.30  .         .Q        .V        .         .
  15.417     14.8317     29.53  .         .Q        .V        .         .
  15.433     14.8727     29.75  .         .Q        .V        .         .
  15.450     14.9140     29.98  .         .Q        .V        .         .
  15.467     14.9556     30.21  .         . Q       . V       .         .
  15.483     14.9975     30.43  .         . Q       . V       .         .
  15.500     15.0397     30.65  .         . Q       . V       .         .
  15.517     15.0823     30.88  .         . Q       . V       .         .
  15.533     15.1252     31.14  .         . Q       . V       .         .
  15.550     15.1684     31.42  .         . Q       . V       .         .
  15.567     15.2121     31.73  .         . Q       . V       .         .
  15.583     15.2563     32.09  .         . Q       . V       .         .
  15.600     15.3011     32.47  .         . Q       . V       .         .
  15.617     15.3464     32.88  .         .  Q      . V       .         .
  15.633     15.3923     33.33  .         .  Q      . V       .         .
  15.650     15.4388     33.81  .         .  Q      . V       .         .
  15.667     15.4861     34.32  .         .  Q      . V       .         .
  15.683     15.5342     34.88  .         .  Q      . V       .         .
  15.700     15.5830     35.48  .         .   Q     . V       .         .
  15.717     15.6328     36.14  .         .   Q     .  V      .         .
  15.733     15.6836     36.86  .         .   Q     .  V      .         .
  15.750     15.7355     37.67  .         .    Q    .  V      .         .
  15.767     15.7886     38.56  .         .    Q    .  V      .         .
  15.783     15.8430     39.51  .         .    Q    .  V      .         .
  15.800     15.8988     40.51  .         .     Q   .  V      .         .
  15.817     15.9561     41.60  .         .     Q   .  V      .         .
  15.833     16.0150     42.77  .         .      Q  .  V      .         .
  15.850     16.0756     44.02  .         .      Q  .  V      .         .
  15.867     16.1381     45.32  .         .       Q .  V      .         .
  15.883     16.2024     46.70  .         .       Q .  V      .         .
  15.900     16.2687     48.14  .         .        Q.  V      .         .
  15.917     16.3371     49.66  .         .        Q.   V     .         .
  15.933     16.4078     51.31  .         .         Q   V     .         .
  15.950     16.4809     53.14  .         .         .Q  V     .         .
  15.967     16.5573     55.44  .         .         . Q V     .         .
  15.983     16.6376     58.27  .         .         .  QV     .         .
  16.000     16.7223     61.52  .         .         .   Q     .         .
  16.017     16.8127     65.60  .         .         .   V Q   .         .
  16.033     16.9102     70.77  .         .         .   V   Q .         .
  16.050     17.0151     76.20  .         .         .    V    Q         .
  16.067     17.1273     81.45  .         .         .    V    . Q       .
  16.083     17.2465     86.53  .         .         .    V    .   Q     .
  16.100     17.3722     91.27  .         .         .    V    .     Q   .
  16.117     17.5031     95.07  .         .         .    V    .       Q .
```

16.133	17.6379	97.80	. . . V . Q.
16.150	17.7744	99.11	. . . V . Q.
16.167	17.9113	99.38	. . . V . Q.
16.183	18.0458	97.69	. . . V . Q.
16.200	18.1753	94.00	. . . V . Q .
16.217	18.2981	89.17	. . . V . Q .
16.233	18.4136	83.87	. . . V . Q .
16.250	18.5209	77.88	. . . V .Q .
16.267	18.6205	72.29	. . . VQ . .
16.283	18.7133	67.41	. . . QV . .
16.300	18.7996	62.66	. . . Q V . .
16.317	18.8800	58.36	. . . Q V . .
16.333	18.9552	54.61	. . .Q V . .
16.350	19.0258	51.24	. . Q V . .
16.367	19.0919	47.99	. . Q. V . .
16.383	19.1541	45.15	. . Q . V . .
16.400	19.2129	42.70	. . Q . V . .
16.417	19.2689	40.66	. . Q . V . .
16.433	19.3224	38.82	. . Q . V . .
16.450	19.3739	37.39	. . Q . V . .
16.467	19.4238	36.22	. . Q . V . .
16.483	19.4723	35.19	. . Q . V . .
16.500	19.5195	34.27	. . Q . V . .
16.517	19.5655	33.45	. . Q . V . .
16.533	19.6105	32.66	. . Q . V . .
16.550	19.6544	31.84	. . Q . V . .
16.567	19.6971	31.05	. . Q . V. .
16.583	19.7389	30.29	. . Q . V. .
16.600	19.7796	29.56	. .Q . V. .
16.617	19.8193	28.86	. .Q . V. .
16.633	19.8583	28.28	. .Q . V. .
16.650	19.8965	27.75	. .Q . V. .
16.667	19.9340	27.25	. Q . V. .
16.683	19.9709	26.77	. Q . V. .
16.700	20.0072	26.32	. Q . V. .
16.717	20.0428	25.88	. Q . V. .
16.733	20.0779	25.47	. Q . V. .
16.750	20.1124	25.07	. Q . V. .
16.767	20.1464	24.69	. Q. . V. .
16.783	20.1799	24.33	. Q. . V. .
16.800	20.2130	23.98	. Q. . V. .
16.817	20.2455	23.65	. Q. . V. .
16.833	20.2777	23.33	. Q. . V. .
16.850	20.3094	23.02	. Q. . V. .
16.867	20.3407	22.72	. Q. . V. .
16.883	20.3716	22.44	. Q . . V .
16.900	20.4021	22.16	. Q . . V .
16.917	20.4323	21.89	. Q . . V .
16.933	20.4621	21.63	. Q . . V .
16.950	20.4915	21.38	. Q . . V .
16.967	20.5206	21.13	. Q . . V .
16.983	20.5494	20.90	. Q . . V .
17.000	20.5779	20.66	. Q . . V .

```
****************************************************************************
  FLOW PROCESS FROM NODE   1116.00 TO NODE   1117.00 IS CODE = 3.2
----------------------------------------------------------------------------
  >>>>>FLOW-THROUGH DETENTION BASIN ROUTING MODEL APPLIED TO STREAM #4<<<<<
============================================================================

                    INFLOW
                  (STREAM 4)
                       |
                       |
                       V                __effective depth
                 -----------            |   (and volume)
                |           |    |    |
                |           |    |....V........
                | detention |<-->|           outflow
                |   basin   |    |.........______
```

```
                 -----------     |    ^    |  \
                     |           |  dead   |   basin outlet
                     V           | storage |
                 OUTFLOW          ---------
               (STREAM 4)


          ROUTE RUNOFF HYDROGRAPH FROM STREAM NUMBER 4
          THROUGH A FLOW-THROUGH DETENTION BASIN
          SPECIFIED BASIN CONDITIONS ARE AS FOLLOWS:
            DEAD STORAGE(AF) =       0.000
            SPECIFIED DEAD STORAGE(AF) FILLED =      0.000
            SPECIFIED EFFECTIVE VOLUME(AF) FILLED ABOVE OUTLET =      0.000
            DETENTION BASIN CONSTANT LOSS RATE(CFS) =    0.00


          BASIN DEPTH VERSUS OUTFLOW AND STORAGE INFORMATION:
```

INTERVAL NUMBER	DEPTH (FT)	OUTFLOW (CFS)	STORAGE (AF)
1	0.00	0.00	0.000
2	1.00	1.52	3.010
3	2.00	28.00	9.420
4	3.00	100.00	20.000

```
=========================================================================
 MODIFIED-PULS BASIN ROUTING MODEL RESULTS(1-MINUTE COMPUTATION INTERVALS):
 (Note: Computed EFFECTIVE DEPTH and VOLUME are estimated at the clock time;
        MEAN OUTFLOW is the average value during the unit interval.)
```

CLOCK TIME (HRS)	DEAD-STORAGE FILLED(AF)	INFLOW (CFS)	LOSS (CFS)	EFFECTIVE DEPTH(FT)	MEAN OUTFLOW (CFS)	EFFECTIVE VOLUME(AF)
14.017	0.000	16.43	0.00	1.42	12.6	5.692
14.033	0.000	16.52	0.00	1.42	12.6	5.698
14.050	0.000	16.62	0.00	1.42	12.6	5.703
14.067	0.000	16.72	0.00	1.42	12.7	5.709
14.083	0.000	16.85	0.00	1.42	12.7	5.714
14.100	0.000	16.99	0.00	1.42	12.7	5.720
14.117	0.000	17.14	0.00	1.42	12.7	5.726
14.133	0.000	17.29	0.00	1.42	12.8	5.733
14.150	0.000	17.45	0.00	1.43	12.8	5.739
14.167	0.000	17.62	0.00	1.43	12.8	5.746
14.183	0.000	17.80	0.00	1.43	12.8	5.753
14.200	0.000	17.97	0.00	1.43	12.9	5.760
14.217	0.000	18.14	0.00	1.43	12.9	5.767
14.233	0.000	18.29	0.00	1.43	12.9	5.774
14.250	0.000	18.43	0.00	1.43	13.0	5.782
14.267	0.000	18.57	0.00	1.43	13.0	5.789
14.283	0.000	18.69	0.00	1.43	13.0	5.797
14.300	0.000	18.81	0.00	1.44	13.1	5.805
14.317	0.000	18.92	0.00	1.44	13.1	5.813
14.333	0.000	19.03	0.00	1.44	13.1	5.821
14.350	0.000	19.14	0.00	1.44	13.2	5.830
14.367	0.000	19.25	0.00	1.44	13.2	5.838
14.383	0.000	19.35	0.00	1.44	13.2	5.846
14.400	0.000	19.45	0.00	1.44	13.3	5.855
14.417	0.000	19.56	0.00	1.45	13.3	5.864
14.433	0.000	19.66	0.00	1.45	13.3	5.872
14.450	0.000	19.76	0.00	1.45	13.4	5.881
14.467	0.000	19.86	0.00	1.45	13.4	5.890
14.483	0.000	19.97	0.00	1.45	13.4	5.899
14.500	0.000	20.07	0.00	1.45	13.5	5.908
14.517	0.000	20.18	0.00	1.45	13.5	5.917
14.533	0.000	20.29	0.00	1.46	13.5	5.927
14.550	0.000	20.40	0.00	1.46	13.6	5.936
14.567	0.000	20.51	0.00	1.46	13.6	5.945
14.583	0.000	20.62	0.00	1.46	13.7	5.955

14.600	0.000	20.74	0.00	1.46	13.7	5.965
14.617	0.000	20.85	0.00	1.46	13.7	5.975
14.633	0.000	20.97	0.00	1.46	13.8	5.984
14.650	0.000	21.09	0.00	1.47	13.8	5.994
14.667	0.000	21.21	0.00	1.47	13.9	6.005
14.683	0.000	21.33	0.00	1.47	13.9	6.015
14.700	0.000	21.45	0.00	1.47	14.0	6.025
14.717	0.000	21.58	0.00	1.47	14.0	6.036
14.733	0.000	21.70	0.00	1.47	14.0	6.046
14.750	0.000	21.83	0.00	1.48	14.1	6.057
14.767	0.000	21.96	0.00	1.48	14.1	6.068
14.783	0.000	22.10	0.00	1.48	14.2	6.078
14.800	0.000	22.23	0.00	1.48	14.2	6.089
14.817	0.000	22.37	0.00	1.48	14.3	6.101
14.833	0.000	22.51	0.00	1.48	14.3	6.112
14.850	0.000	22.65	0.00	1.49	14.4	6.123
14.867	0.000	22.80	0.00	1.49	14.4	6.135
14.883	0.000	22.94	0.00	1.49	14.5	6.147
14.900	0.000	23.09	0.00	1.49	14.5	6.158
14.917	0.000	23.25	0.00	1.49	14.6	6.170
14.933	0.000	23.40	0.00	1.49	14.6	6.183
14.950	0.000	23.56	0.00	1.50	14.7	6.195
14.967	0.000	23.72	0.00	1.50	14.7	6.207
14.983	0.000	23.89	0.00	1.50	14.8	6.220
15.000	0.000	24.05	0.00	1.50	14.8	6.233
15.017	0.000	24.22	0.00	1.50	14.9	6.245
15.033	0.000	24.40	0.00	1.51	14.9	6.259
15.050	0.000	24.58	0.00	1.51	15.0	6.272
15.067	0.000	24.76	0.00	1.51	15.0	6.285
15.083	0.000	24.94	0.00	1.51	15.1	6.299
15.100	0.000	25.13	0.00	1.52	15.1	6.313
15.117	0.000	25.32	0.00	1.52	15.2	6.326
15.133	0.000	25.52	0.00	1.52	15.2	6.341
15.150	0.000	25.72	0.00	1.52	15.3	6.355
15.167	0.000	25.92	0.00	1.52	15.4	6.370
15.183	0.000	26.14	0.00	1.53	15.4	6.384
15.200	0.000	26.35	0.00	1.53	15.5	6.399
15.217	0.000	26.57	0.00	1.53	15.6	6.414
15.233	0.000	26.79	0.00	1.53	15.6	6.430
15.250	0.000	27.03	0.00	1.54	15.7	6.445
15.267	0.000	27.26	0.00	1.54	15.7	6.461
15.283	0.000	27.50	0.00	1.54	15.8	6.477
15.300	0.000	27.75	0.00	1.54	15.9	6.494
15.317	0.000	28.01	0.00	1.55	15.9	6.510
15.333	0.000	28.27	0.00	1.55	16.0	6.527
15.350	0.000	28.53	0.00	1.55	16.1	6.544
15.367	0.000	28.79	0.00	1.55	16.2	6.562
15.383	0.000	29.05	0.00	1.56	16.2	6.579
15.400	0.000	29.30	0.00	1.56	16.3	6.597
15.417	0.000	29.53	0.00	1.56	16.4	6.615
15.433	0.000	29.75	0.00	1.57	16.5	6.634
15.450	0.000	29.98	0.00	1.57	16.5	6.652
15.467	0.000	30.21	0.00	1.57	16.6	6.671
15.483	0.000	30.43	0.00	1.57	16.7	6.690
15.500	0.000	30.65	0.00	1.58	16.8	6.709
15.517	0.000	30.88	0.00	1.58	16.8	6.728
15.533	0.000	31.14	0.00	1.58	16.9	6.748
15.550	0.000	31.42	0.00	1.59	17.0	6.768
15.567	0.000	31.73	0.00	1.59	17.1	6.788
15.583	0.000	32.09	0.00	1.59	17.2	6.809
15.600	0.000	32.47	0.00	1.60	17.3	6.830
15.617	0.000	32.88	0.00	1.60	17.3	6.851
15.633	0.000	33.33	0.00	1.60	17.4	6.873
15.650	0.000	33.81	0.00	1.61	17.5	6.895
15.667	0.000	34.32	0.00	1.61	17.6	6.918
15.683	0.000	34.88	0.00	1.61	17.7	6.942
15.700	0.000	35.48	0.00	1.62	17.8	6.966
15.717	0.000	36.14	0.00	1.62	17.9	6.991
15.733	0.000	36.86	0.00	1.63	18.0	7.017
15.750	0.000	37.67	0.00	1.63	18.1	7.044
15.767	0.000	38.56	0.00	1.63	18.2	7.072
15.783	0.000	39.51	0.00	1.64	18.4	7.101
15.800	0.000	40.51	0.00	1.64	18.5	7.132
15.817	0.000	41.60	0.00	1.65	18.6	7.163
15.833	0.000	42.77	0.00	1.65	18.7	7.196
15.850	0.000	44.02	0.00	1.66	18.9	7.231
15.867	0.000	45.32	0.00	1.66	19.0	7.267
15.883	0.000	46.70	0.00	1.67	19.2	7.305
15.900	0.000	48.14	0.00	1.68	19.3	7.345
15.917	0.000	49.66	0.00	1.68	19.5	7.386
15.933	0.000	51.31	0.00	1.69	19.7	7.430
15.950	0.000	53.14	0.00	1.70	19.9	7.476
15.967	0.000	55.44	0.00	1.70	20.1	7.524
15.983	0.000	58.27	0.00	1.71	20.3	7.577
16.000	0.000	61.52	0.00	1.72	20.5	7.633
16.017	0.000	65.60	0.00	1.73	20.7	7.695
16.033	0.000	70.77	0.00	1.74	21.0	7.764
16.050	0.000	76.20	0.00	1.75	21.3	7.839
16.067	0.000	81.45	0.00	1.77	21.6	7.922
16.083	0.000	86.53	0.00	1.78	22.0	8.010
16.100	0.000	91.27	0.00	1.79	22.4	8.105
16.117	0.000	95.07	0.00	1.81	22.8	8.205
16.133	0.000	97.80	0.00	1.83	23.2	8.308
16.150	0.000	99.11	0.00	1.84	23.6	8.412
16.167	0.000	99.38	0.00	1.86	24.0	8.515
16.183	0.000	97.69	0.00	1.87	24.5	8.616
16.200	0.000	94.00	0.00	1.89	24.9	8.712
16.217	0.000	89.17	0.00	1.90	25.3	8.800
16.233	0.000	83.87	0.00	1.92	25.6	8.880
16.250	0.000	77.88	0.00	1.93	25.9	8.951
16.267	0.000	72.29	0.00	1.94	26.2	9.015
16.283	0.000	67.41	0.00	1.95	26.4	9.071
16.300	0.000	62.66	0.00	1.95	26.7	9.121
16.317	0.000	58.36	0.00	1.96	26.9	9.164
16.333	0.000	54.61	0.00	1.97	27.0	9.202
16.350	0.000	51.24	0.00	1.97	27.2	9.235
16.367	0.000	47.99	0.00	1.98	27.3	9.264
16.383	0.000	45.15	0.00	1.98	27.4	9.288
16.400	0.000	42.70	0.00	1.98	27.5	9.309
16.417	0.000	40.66	0.00	1.99	27.6	9.327
16.433	0.000	38.82	0.00	1.99	27.6	9.343
16.450	0.000	37.39	0.00	1.99	27.7	9.356
16.467	0.000	36.22	0.00	1.99	27.8	9.368
16.483	0.000	35.19	0.00	1.99	27.8	9.378
16.500	0.000	34.27	0.00	1.99	27.8	9.387
16.517	0.000	33.45	0.00	2.00	27.9	9.394
16.533	0.000	32.66	0.00	2.00	27.9	9.401
16.550	0.000	31.84	0.00	2.00	27.9	9.406
16.567	0.000	31.05	0.00	2.00	28.0	9.411
16.583	0.000	30.29	0.00	2.00	28.0	9.414
16.600	0.000	29.56	0.00	2.00	28.0	9.416
16.617	0.000	28.86	0.00	2.00	28.0	9.417
16.633	0.000	28.28	0.00	2.00	28.0	9.418
16.650	0.000	27.75	0.00	2.00	28.0	9.417
16.667	0.000	27.25	0.00	2.00	28.0	9.416
16.683	0.000	26.77	0.00	2.00	28.0	9.415
16.700	0.000	26.32	0.00	2.00	28.0	9.412
16.717	0.000	25.88	0.00	2.00	28.0	9.409
16.733	0.000	25.47	0.00	2.00	27.9	9.406
16.750	0.000	25.07	0.00	2.00	27.9	9.402
16.767	0.000	24.69	0.00	2.00	27.9	9.398
16.783	0.000	24.33	0.00	2.00	27.9	9.393
16.800	0.000	23.98	0.00	1.99	27.9	9.387
16.817	0.000	23.65	0.00	1.99	27.9	9.382
16.833	0.000	23.33	0.00	1.99	27.8	9.375
16.850	0.000	23.02	0.00	1.99	27.8	9.369
16.867	0.000	22.72	0.00	1.99	27.8	9.362
16.883	0.000	22.44	0.00	1.99	27.7	9.354
16.900	0.000	22.16	0.00	1.99	27.7	9.347
16.917	0.000	21.89	0.00	1.99	27.7	9.339
16.933	0.000	21.63	0.00	1.99	27.6	9.331
16.950	0.000	21.38	0.00	1.98	27.6	9.322

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          16.967        0.000    21.13     0.00      1.98     27.6      9.313
          16.983        0.000    20.90     0.00      1.98     27.5      9.304
          17.000        0.000    20.66     0.00      1.98     27.5      9.295
----------------------------------------------------------------------------
  PROCESS SUMMARY OF STORAGE:
    INFLOW  VOLUME =     27.124 AF
    BASIN  STORAGE =      0.009 AF (WITH      0.000 AF INITIALLY FILLED)
    OUTFLOW VOLUME =     27.115 AF
    LOSS    VOLUME =      0.000 AF


****************************************************************************
  FLOW PROCESS FROM NODE   1117.00 TO NODE    108.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 4 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    130.10 TO NODE    133.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
============================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #5)

         WATERSHED AREA =      19.400 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.138 HOURS
         FOOTHILL S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.770
         LOW LOSS FRACTION = 0.990
         *HYDROGRAPH MODEL #7 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.27
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.82
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.32
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  2.65
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  4.10
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) = 10.70

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
           5-MINUTE FACTOR = 0.999
          30-MINUTE FACTOR = 0.999
           1-HOUR FACTOR = 0.999
           3-HOUR FACTOR = 1.000
           6-HOUR FACTOR = 1.000
          24-HOUR FACTOR = 1.000

         UNIT HYDROGRAPH TIME UNIT =   1.000 MINUTES
         UNIT INTERVAL PERCENTAGE OF LAG-TIME =  12.077


         RUNOFF HYDROGRAPH LISTING LIMITS:
         MODEL TIME(HOURS) FOR BEGINNING OF RESULTS =  14.00
         MODEL TIME(HOURS) FOR END OF RESULTS =  17.00


============================================================================
                       UNIT HYDROGRAPH DETERMINATION

----------------------------------------------------------------------------
    INTERVAL          "S" GRAPH          UNIT HYDROGRAPH
     NUMBER          MEAN VALUES          ORDINATES(CFS)
----------------------------------------------------------------------------
        1                0.785                 9.209
        2                2.546                20.657
        3                4.942                28.113
        4                8.239                38.675
        5               11.857                42.436
        6               17.213                62.837
        7               24.302                83.161
        8               36.543               143.592
        9               51.540               175.928
       10               59.024                87.797
       11               64.385                62.894
       12               68.326                46.227
       13               71.841                41.239
       14               75.001                37.061
       15               77.689                31.544
       16               79.854                25.394
       17               82.099                26.328
       18               83.932                21.504
       19               85.676                20.461
       20               87.213                18.033
       21               88.558                15.781
       22               89.761                14.108
       23               90.885                13.192
       24               91.959                12.599
       25               92.881                10.810
       26               93.768                10.409
       27               94.489                 8.457
       28               95.142                 7.657
       29               95.790                 7.606
       30               96.267                 5.597
       31               96.657                 4.568
       32               97.046                 4.570
       33               97.436                 4.572
       34               97.825                 4.563
       35               98.035                 2.459
       36               98.097                 0.732
       37               98.160                 0.734
       38               98.222                 0.732
       39               98.284                 0.730
       40               98.347                 0.736
       41               98.409                 0.728
       42               98.472                 0.736
       43               98.535                 0.736
       44               98.596                 0.725
       45               98.659                 0.736
       46               98.722                 0.732
       47               98.784                 0.729
       48               98.846                 0.736
       49               98.909                 0.732
       50               98.972                 0.736
       51               99.034                 0.728
       52               99.096                 0.728
       53               99.158                 0.728
       54               99.220                 0.728
       55               99.282                 0.728
       56               99.344                 0.728
       57               99.406                 0.728
       58               99.468                 0.728
       59               99.530                 0.728
       60               99.593                 0.728
       61               99.655                 0.728
       62               99.717                 0.728
       63               99.779                 0.728
       64               99.841                 0.728
       65               99.903                 0.728
       66               99.965                 0.728
       67              100.000                 0.410


----------------------------------------------------------------------------
    TOTAL SOIL-LOSS VOLUME(ACRE-FEET) =      16.2484
    TOTAL STORM RUNOFF VOLUME(ACRE-FEET) =       1.0486
----------------------------------------------------------------------------
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============================================================================

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

============================================================================
               HYDROGRAPH IN  ONE-MINUTE UNIT INTERVALS(CFS)
        (Notes: Time indicated is at END of Each Unit Intervals.
                Peak 5-minute rainfall intensity is modeled as
                a constant value for entire 5-minute period.)
----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.        7.5      15.0      22.5      30.0
----------------------------------------------------------------------------
  14.000      0.0851      0.11  Q  V      .         .         .         .
  14.017      0.0852      0.11  Q  V      .         .         .         .
  14.033      0.0853      0.11  Q  V      .         .         .         .
  14.050      0.0855      0.11  Q  V      .         .         .         .
  14.067      0.0856      0.11  Q  V      .         .         .         .
  14.083      0.0858      0.11  Q  V      .         .         .         .
  14.100      0.0859      0.11  Q  V      .         .         .         .
  14.117      0.0861      0.11  Q  V      .         .         .         .
  14.133      0.0862      0.11  Q  V      .         .         .         .
  14.150      0.0864      0.11  Q  V      .         .         .         .
  14.167      0.0865      0.11  Q  V      .         .         .         .
  14.183      0.0867      0.11  Q  V      .         .         .         .
  14.200      0.0868      0.11  Q  V      .         .         .         .
  14.217      0.0870      0.11  Q  V      .         .         .         .
  14.233      0.0871      0.11  Q  V      .         .         .         .
  14.250      0.0873      0.11  Q  V      .         .         .         .
  14.267      0.0874      0.11  Q  V      .         .         .         .
  14.283      0.0876      0.11  Q  V      .         .         .         .
  14.300      0.0877      0.11  Q  V      .         .         .         .
  14.317      0.0879      0.11  Q  V      .         .         .         .
  14.333      0.0881      0.11  Q  V      .         .         .         .
  14.350      0.0882      0.11  Q  V      .         .         .         .
  14.367      0.0884      0.11  Q  V      .         .         .         .
  14.383      0.0885      0.11  Q  V      .         .         .         .
  14.400      0.0887      0.11  Q  V      .         .         .         .
  14.417      0.0888      0.11  Q  V      .         .         .         .
  14.433      0.0890      0.11  Q  V      .         .         .         .
  14.450      0.0892      0.12  Q  V      .         .         .         .
  14.467      0.0893      0.12  Q  V      .         .         .         .
  14.483      0.0895      0.12  Q  V      .         .         .         .
  14.500      0.0896      0.12  Q  V      .         .         .         .
  14.517      0.0898      0.12  Q  V      .         .         .         .
  14.533      0.0900      0.12  Q  V      .         .         .         .
  14.550      0.0901      0.12  Q  V      .         .         .         .
  14.567      0.0903      0.12  Q  V      .         .         .         .
  14.583      0.0904      0.12  Q  V      .         .         .         .
  14.600      0.0906      0.12  Q  V      .         .         .         .
  14.617      0.0908      0.12  Q  V      .         .         .         .
  14.633      0.0909      0.12  Q  V      .         .         .         .
  14.650      0.0911      0.12  Q  V      .         .         .         .
  14.667      0.0913      0.12  Q  V      .         .         .         .
  14.683      0.0914      0.12  Q  V      .         .         .         .
  14.700      0.0916      0.12  Q  V      .         .         .         .
  14.717      0.0918      0.12  Q  V      .         .         .         .
  14.733      0.0919      0.12  Q  V      .         .         .         .
  14.750      0.0921      0.12  Q  V      .         .         .         .
  14.767      0.0923      0.12  Q  V      .         .         .         .
  14.783      0.0925      0.12  Q  V      .         .         .         .
  14.800      0.0926      0.13  Q  V      .         .         .         .
  14.817      0.0928      0.13  Q  V      .         .         .         .
  14.833      0.0930      0.13  Q  V      .         .         .         .
  14.850      0.0932      0.13  Q  V      .         .         .         .
  14.867      0.0933      0.13  Q  V      .         .         .         .
  14.883      0.0935      0.13  Q  V      .         .         .         .
  14.900      0.0937      0.13  Q  V      .         .         .         .
  14.917      0.0939      0.13  Q  V      .         .         .         .
  14.933      0.0940      0.13  Q  V      .         .         .         .
  14.950      0.0942      0.13  Q  V      .         .         .         .
  14.967      0.0944      0.13  Q  V      .         .         .         .
  14.983      0.0946      0.13  Q  V      .         .         .         .
  15.000      0.0948      0.13  Q  V      .         .         .         .
  15.017      0.0949      0.13  Q  V      .         .         .         .
  15.033      0.0951      0.13  Q  V      .         .         .         .
  15.050      0.0953      0.13  Q  V      .         .         .         .
  15.067      0.0955      0.14  Q  V      .         .         .         .
  15.083      0.0957      0.14  Q  V      .         .         .         .
  15.100      0.0959      0.14  Q  V      .         .         .         .
  15.117      0.0961      0.14  Q  V      .         .         .         .
  15.133      0.0963      0.14  Q  V      .         .         .         .
  15.150      0.0964      0.14  Q  V      .         .         .         .
  15.167      0.0966      0.14  Q  V      .         .         .         .
  15.183      0.0968      0.14  Q  V      .         .         .         .
  15.200      0.0970      0.14  Q  V      .         .         .         .
  15.217      0.0972      0.14  Q  V      .         .         .         .
  15.233      0.0974      0.15  Q  V      .         .         .         .
  15.250      0.0976      0.16  Q  V      .         .         .         .
  15.267      0.0979      0.17  Q  V      .         .         .         .
  15.283      0.0981      0.18  Q  V      .         .         .         .
  15.300      0.0984      0.21  Q  V      .         .         .         .
  15.317      0.0987      0.24  Q  V      .         .         .         .
  15.333      0.0991      0.29  Q  V      .         .         .         .
  15.350      0.0996      0.36  Q  V      .         .         .         .
  15.367      0.1003      0.46  Q  V      .         .         .         .
  15.383      0.1011      0.58  Q  V      .         .         .         .
  15.400      0.1020      0.71  Q  V      .         .         .         .
  15.417      0.1032      0.85  .Q V      .         .         .         .
  15.433      0.1046      1.03  .Q V      .         .         .         .
  15.450      0.1063      1.23  .Q  V     .         .         .         .
  15.467      0.1084      1.51  . Q V     .         .         .         .
  15.483      0.1109      1.83  . Q V     .         .         .         .
  15.500      0.1137      2.05  . Q V     .         .         .         .
  15.517      0.1168      2.25  .  QV     .         .         .         .
  15.533      0.1202      2.44  .  QV     .         .         .         .
  15.550      0.1238      2.62  .  QV     .         .         .         .
  15.567      0.1277      2.81  .  QV     .         .         .         .
  15.583      0.1318      3.00  .   QV    .         .         .         .
  15.600      0.1362      3.19  .   QV    .         .         .         .
  15.617      0.1409      3.39  .   QV    .         .         .         .
  15.633      0.1458      3.59  .   QV    .         .         .         .
  15.650      0.1510      3.80  .    Q    .         .         .         .
  15.667      0.1566      4.01  .    Q    .         .         .         .
  15.683      0.1624      4.21  .    QV   .         .         .         .
  15.700      0.1684      4.40  .    QV   .         .         .         .
  15.717      0.1748      4.59  .     Q   .         .         .         .
  15.733      0.1813      4.77  .     Q   .         .         .         .
  15.750      0.1882      4.96  .     QV  .         .         .         .
  15.767      0.1952      5.12  .     QV  .         .         .         .
  15.783      0.2025      5.27  .      Q  .         .         .         .
  15.800      0.2098      5.32  .      QV .         .         .         .
  15.817      0.2172      5.35  .      QV .         .         .         .
  15.833      0.2248      5.55  .      QV .         .         .         .
  15.850      0.2329      5.84  .      QV .         .         .         .
  15.867      0.2414      6.19  .       QV.         .         .         .
  15.883      0.2505      6.59  .       QV.         .         .         .
  15.900      0.2602      7.05  .        Q.         .         .         .
  15.917      0.2706      7.58  .         Q         .         .         .
  15.933      0.2819      8.18  .         Q         .         .         .
  15.950      0.2941      8.89  .         .Q        .         .         .
  15.967      0.3077      9.89  .         .V Q      .         .         .
  15.983      0.3232     11.22  .         . V Q     .         .         .
  16.000      0.3408     12.80  .         .  V   Q  .         .         .
  16.017      0.3611     14.68  .         .  V     Q.         .         .
  16.033      0.3841     16.73  .         .   V     . Q       .         .
  16.050      0.4104     19.08  .         .    V    .    Q    .         .
  16.067      0.4401     21.57  .         .     V   .       Q .         .
  16.083      0.4746     25.03  .         .       V .         .  Q      .
  16.100      0.5138     28.45  .         .        V.         .      Q  .
  16.117      0.5546     29.63  .         .         .V        .        Q.
```

```
  16.133      0.5953     29.60  .          .         . V       .        Q.
  16.150      0.6347     28.54  .          .         .   V     .       Q .
  16.167      0.6701     25.71  .          .         .    V    .   Q     .
  16.183      0.6998     21.62  .          .         .     V Q .         .
  16.200      0.7261     19.08  .          .         .    Q V  .         .
  16.217      0.7497     17.09  .          .         . Q     V .         .
  16.233      0.7712     15.61  .          .        Q       V.         .
  16.250      0.7908     14.26  .          .       Q.         V         .
  16.267      0.8088     13.10  .          .     Q  .         V         .
  16.283      0.8255     12.11  .          .    Q   .         .V        .
  16.300      0.8412     11.38  .          .   Q    .         . V       .
  16.317      0.8560     10.72  .          .  Q     .         . V       .
  16.333      0.8698     10.04  .          . Q      .         .  V      .
  16.350      0.8826      9.34  .          . Q      .         .  V      .
  16.367      0.8946      8.66  .         .Q        .         .   V     .
  16.383      0.9056      8.02  .         Q         .         .   V     .
  16.400      0.9158      7.40  .        Q.         .         .   V     .
  16.417      0.9252      6.79  .        Q.         .         .    V    .
  16.433      0.9337      6.18  .       Q .         .         .    V    .
  16.450      0.9413      5.56  .      Q  .         .         .    V    .
  16.467      0.9481      4.88  .     Q   .         .         .     V   .
  16.483      0.9539      4.23  .    Q    .         .         .     V   .
  16.500      0.9590      3.72  .   Q     .         .         .     V   .
  16.517      0.9635      3.26  .   Q     .         .         .     V   .
  16.533      0.9674      2.84  .  Q      .         .         .     V   .
  16.550      0.9708      2.45  .  Q      .         .         .      V  .
  16.567      0.9737      2.12  . Q       .         .         .      V  .
  16.583      0.9762      1.83  . Q       .         .         .      V  .
  16.600      0.9784      1.56  . Q       .         .         .      V  .
  16.617      0.9803      1.36  .Q        .         .         .      V  .
  16.633      0.9819      1.22  .Q        .         .         .      V  .
  16.650      0.9835      1.11  .Q        .         .         .      V  .
  16.667      0.9849      1.01  .Q        .         .         .      V  .
  16.683      0.9861      0.93  .Q        .         .         .      V  .
  16.700      0.9873      0.85  .Q        .         .         .      V  .
  16.717      0.9884      0.79  .Q        .         .         .      V  .
  16.733      0.9894      0.74  Q         .         .         .      V  .
  16.750      0.9904      0.69  Q         .         .         .      V  .
  16.767      0.9913      0.65  Q         .         .         .      V  .
  16.783      0.9921      0.61  Q         .         .         .      V  .
  16.800      0.9929      0.58  Q         .         .         .      V  .
  16.817      0.9937      0.55  Q         .         .         .      V  .
  16.833      0.9944      0.53  Q         .         .         .      V  .
  16.850      0.9951      0.51  Q         .         .         .      V  .
  16.867      0.9958      0.49  Q         .         .         .      V  .
  16.883      0.9964      0.47  Q         .         .         .       V .
  16.900      0.9970      0.45  Q         .         .         .       V .
  16.917      0.9976      0.44  Q         .         .         .       V .
  16.933      0.9982      0.43  Q         .         .         .       V .
  16.950      0.9988      0.42  Q         .         .         .       V .
  16.967      0.9994      0.41  Q         .         .         .       V .
  16.983      0.9999      0.40  Q         .         .         .       V .
  17.000      1.0005      0.39  Q         .         .         .       V .

****************************************************************************
  FLOW PROCESS FROM NODE    133.00 TO NODE    133.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 5 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE      0.00 TO NODE      1.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    140.10 TO NODE    133.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
============================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #2)

         WATERSHED AREA =      31.700 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.181 HOURS
         FOOTHILL S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.810
         LOW LOSS FRACTION = 0.990
         *HYDROGRAPH MODEL #7 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.27
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.82
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.32
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  2.65
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  4.10
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) = 10.70

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
           5-MINUTE FACTOR = 0.999
          30-MINUTE FACTOR = 0.999
           1-HOUR FACTOR = 0.999
           3-HOUR FACTOR = 1.000
           6-HOUR FACTOR = 1.000
          24-HOUR FACTOR = 1.000

         UNIT HYDROGRAPH TIME UNIT =   1.000 MINUTES
         UNIT INTERVAL PERCENTAGE OF LAG-TIME =   9.208


         RUNOFF HYDROGRAPH LISTING LIMITS:
         MODEL TIME(HOURS) FOR BEGINNING OF RESULTS =  14.00
         MODEL TIME(HOURS) FOR END OF RESULTS =  17.00


============================================================================
                      UNIT HYDROGRAPH DETERMINATION

----------------------------------------------------------------------------
    INTERVAL          "S" GRAPH          UNIT HYDROGRAPH
     NUMBER          MEAN VALUES          ORDINATES(CFS)
----------------------------------------------------------------------------
        1                0.599                11.473
        2                1.830                23.614
        3                3.443                30.902
        4                5.404                37.605
        5                8.031                50.340
        6               10.577                48.816
        7               14.049                66.549
        8               18.540                86.095
        9               24.030               105.222
       10               32.236               157.309
       11               45.555               255.299
       12               53.950               160.921
       13               59.162                99.911
       14               63.570                84.484
       15               66.523                56.615
       16               69.541                57.841
       17               72.132                49.681
       18               74.524                45.837
       19               76.752                42.706
       20               78.484                33.201
       21               80.139                31.736
       22               81.869                33.157
       23               83.358                28.535
       24               84.650                24.781
       25               85.982                25.529
       26               87.128                21.962
```

27	88.194	20.429
28	89.122	17.800
29	90.030	17.408
30	90.876	16.213
31	91.711	16.007
32	92.449	14.131
33	93.131	13.076
34	93.808	12.982
35	94.361	10.600
36	94.859	9.547
37	95.357	9.539
38	95.850	9.453
39	96.210	6.904
40	96.507	5.700
41	96.804	5.688
42	97.101	5.696
43	97.398	5.696
44	97.695	5.688
45	97.964	5.164
46	98.047	1.574
47	98.094	0.911
48	98.142	0.911
49	98.189	0.915
50	98.237	0.907
51	98.285	0.923
52	98.332	0.911
53	98.380	0.911
54	98.427	0.911
55	98.475	0.919
56	98.523	0.911
57	98.571	0.919
58	98.619	0.919
59	98.666	0.903
60	98.714	0.919
61	98.761	0.911
62	98.809	0.911
63	98.857	0.919
64	98.904	0.903
65	98.952	0.927
66	98.999	0.903
67	99.047	0.919
68	99.094	0.903
69	99.141	0.903
70	99.188	0.903
71	99.235	0.903
72	99.282	0.903
73	99.330	0.903
74	99.377	0.903
75	99.424	0.903
76	99.471	0.903
77	99.518	0.903
78	99.565	0.903
79	99.612	0.903
80	99.659	0.903
81	99.706	0.903
82	99.753	0.903
83	99.800	0.903
84	99.848	0.903
85	99.895	0.903
86	99.942	0.903
87	99.989	0.903
88	100.000	0.215

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 26.6722
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 1.5908

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

==========

HYDROGRAPH IN ONE-MINUTE UNIT INTERVALS(CFS)
(Notes: Time indicated is at END of Each Unit Intervals.
Peak 5-minute rainfall intensity is modeled as
a constant value for entire 5-minute period.)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	12.5	25.0	37.5	50.0
14.000	0.1382	0.17	Q V	.	.	.	.
14.017	0.1384	0.17	Q V	.	.	.	.
14.033	0.1386	0.17	Q V	.	.	.	.
14.050	0.1389	0.17	Q V	.	.	.	.
14.067	0.1391	0.17	Q V	.	.	.	.
14.083	0.1394	0.17	Q V	.	.	.	.
14.100	0.1396	0.17	Q V	.	.	.	.
14.117	0.1398	0.17	Q V	.	.	.	.
14.133	0.1401	0.17	Q V	.	.	.	.
14.150	0.1403	0.17	Q V	.	.	.	.
14.167	0.1406	0.18	Q V	.	.	.	.
14.183	0.1408	0.18	Q V	.	.	.	.
14.200	0.1410	0.18	Q V	.	.	.	.
14.217	0.1413	0.18	Q V	.	.	.	.
14.233	0.1415	0.18	Q V	.	.	.	.
14.250	0.1418	0.18	Q V	.	.	.	.
14.267	0.1420	0.18	Q V	.	.	.	.
14.283	0.1423	0.18	Q V	.	.	.	.
14.300	0.1425	0.18	Q V	.	.	.	.
14.317	0.1428	0.18	Q V	.	.	.	.
14.333	0.1430	0.18	Q V	.	.	.	.
14.350	0.1433	0.18	Q V	.	.	.	.
14.367	0.1435	0.18	Q V	.	.	.	.
14.383	0.1438	0.18	Q V	.	.	.	.
14.400	0.1440	0.18	Q V	.	.	.	.
14.417	0.1443	0.18	Q V	.	.	.	.
14.433	0.1445	0.19	Q V	.	.	.	.
14.450	0.1448	0.19	Q V	.	.	.	.
14.467	0.1451	0.19	Q V	.	.	.	.
14.483	0.1453	0.19	Q V	.	.	.	.
14.500	0.1456	0.19	Q V	.	.	.	.
14.517	0.1458	0.19	Q V	.	.	.	.
14.533	0.1461	0.19	Q V	.	.	.	.
14.550	0.1464	0.19	Q V	.	.	.	.
14.567	0.1466	0.19	Q V	.	.	.	.
14.583	0.1469	0.19	Q V	.	.	.	.
14.600	0.1471	0.19	Q V	.	.	.	.
14.617	0.1474	0.19	Q V	.	.	.	.
14.633	0.1477	0.19	Q V	.	.	.	.
14.650	0.1480	0.19	Q V	.	.	.	.
14.667	0.1482	0.20	Q V	.	.	.	.
14.683	0.1485	0.20	Q V	.	.	.	.
14.700	0.1488	0.20	Q V	.	.	.	.
14.717	0.1490	0.20	Q V	.	.	.	.
14.733	0.1493	0.20	Q V	.	.	.	.
14.750	0.1496	0.20	Q V	.	.	.	.
14.767	0.1499	0.20	Q V	.	.	.	.
14.783	0.1501	0.20	Q V	.	.	.	.
14.800	0.1504	0.20	Q V	.	.	.	.
14.817	0.1507	0.20	Q V	.	.	.	.
14.833	0.1510	0.20	Q V	.	.	.	.
14.850	0.1513	0.20	Q V	.	.	.	.
14.867	0.1515	0.21	Q V	.	.	.	.
14.883	0.1518	0.21	Q V	.	.	.	.
14.900	0.1521	0.21	Q V	.	.	.	.
14.917	0.1524	0.21	Q V	.	.	.	.
14.933	0.1527	0.21	Q V	.	.	.	.

```
14.950      0.1530      0.21  Q  V      .          .          .          .
14.967      0.1533      0.21  Q  V      .          .          .          .
14.983      0.1536      0.21  Q  V      .          .          .          .
15.000      0.1538      0.21  Q  V      .          .          .          .
15.017      0.1541      0.21  Q  V      .          .          .          .
15.033      0.1544      0.22  Q  V      .          .          .          .
15.050      0.1547      0.22  Q  V      .          .          .          .
15.067      0.1550      0.22  Q  V      .          .          .          .
15.083      0.1553      0.22  Q  V      .          .          .          .
15.100      0.1556      0.22  Q  V      .          .          .          .
15.117      0.1559      0.22  Q  V      .          .          .          .
15.133      0.1563      0.22  Q  V      .          .          .          .
15.150      0.1566      0.22  Q  V      .          .          .          .
15.167      0.1569      0.22  Q  V      .          .          .          .
15.183      0.1572      0.23  Q  V      .          .          .          .
15.200      0.1575      0.23  Q  V      .          .          .          .
15.217      0.1578      0.23  Q  V      .          .          .          .
15.233      0.1581      0.23  Q  V      .          .          .          .
15.250      0.1584      0.23  Q  V      .          .          .          .
15.267      0.1588      0.23  Q  V      .          .          .          .
15.283      0.1591      0.23  Q   V     .          .          .          .
15.300      0.1594      0.24  Q   V     .          .          .          .
15.317      0.1597      0.24  Q   V     .          .          .          .
15.333      0.1601      0.24  Q   V     .          .          .          .
15.350      0.1604      0.27  Q   V     .          .          .          .
15.367      0.1609      0.31  Q   V     .          .          .          .
15.383      0.1614      0.36  Q   V     .          .          .          .
15.400      0.1620      0.43  Q   V     .          .          .          .
15.417      0.1627      0.52  Q   V     .          .          .          .
15.433      0.1635      0.62  Q   V     .          .          .          .
15.450      0.1646      0.75  Q   V     .          .          .          .
15.467      0.1658      0.92  Q   V     .          .          .          .
15.483      0.1674      1.15  Q   V     .          .          .          .
15.500      0.1694      1.45  .Q  V     .          .          .          .
15.517      0.1720      1.89  .Q  V     .          .          .          .
15.533      0.1751      2.22  .Q  V     .          .          .          .
15.550      0.1785      2.51  . Q V     .          .          .          .
15.567      0.1823      2.78  . Q V     .          .          .          .
15.583      0.1865      3.04  . Q V     .          .          .          .
15.600      0.1911      3.31  . Q V     .          .          .          .
15.617      0.1960      3.59  . Q V     .          .          .          .
15.633      0.2013      3.87  .  Q V    .          .          .          .
15.650      0.2071      4.16  .  Q V    .          .          .          .
15.667      0.2132      4.45  .  Q V    .          .          .          .
15.683      0.2198      4.75  .  Q V    .          .          .          .
15.700      0.2267      5.03  .   QV    .          .          .          .
15.717      0.2340      5.31  .   QV    .          .          .          .
15.733      0.2417      5.59  .   Q V   .          .          .          .
15.750      0.2498      5.88  .   Q V   .          .          .          .
15.767      0.2583      6.18  .   Q V   .          .          .          .
15.783      0.2672      6.48  .    QV   .          .          .          .
15.800      0.2765      6.76  .    QV   .          .          .          .
15.817      0.2862      7.04  .    Q V  .          .          .          .
15.833      0.2962      7.26  .    Q V  .          .          .          .
15.850      0.3063      7.34  .    Q V  .          .          .          .
15.867      0.3169      7.64  .     QV  .          .          .          .
15.883      0.3280      8.11  .     Q V .          .          .          .
15.900      0.3400      8.66  .     Q V .          .          .          .
15.917      0.3528      9.35  .      QV .          .          .          .
15.933      0.3668     10.10  .       QV.          .          .          .
15.950      0.3819     11.00  .       QV.          .          .          .
15.967      0.3988     12.24  .        QV          .          .          .
15.983      0.4179     13.87  .         VQ        .          .          .
16.000      0.4395     15.73  .          .VQ      .          .          .
16.017      0.4642     17.87  .          .V  Q    .          .          .
16.033      0.4921     20.32  .          . V   Q  .          .          .
16.050      0.5233     22.62  .          .  V    Q .          .          .
16.067      0.5578     25.05  .          .   V     Q          .          .
16.083      0.5960     27.77  .          .   V      . Q       .          .
16.100      0.6383     30.66  .          .     V   .   Q      .          .
16.117      0.6856     34.32  .          .      V  .      Q   .          .
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16.133      0.7400     39.53  .          .       V .          .Q         .
16.150      0.7977     41.87  .          .         V          .  Q       .
16.167      0.8558     42.18  .          .         .V         .  Q       .
16.183      0.9128     41.40  .          .         . V        .  Q       .
16.200      0.9659     38.57  .          .         .   V     Q           .
16.217      1.0115     33.05  .          .         .    VQ   .           .
16.233      1.0513     28.90  .          .         .  Q  V   .           .
16.250      1.0871     26.03  .          .         Q      V  .           .
16.267      1.1196     23.57  .          .       Q .       V .           .
16.283      1.1495     21.70  .          .      Q  .       V .           .
16.300      1.1770     19.98  .          .    Q    .        V.           .
16.317      1.2026     18.59  .          .   Q     .         V           .
16.333      1.2265     17.36  .          .  Q      .         V           .
16.350      1.2491     16.37  .          .  Q      .         .V          .
16.367      1.2704     15.49  .          . Q       .         .V          .
16.383      1.2904     14.52  .          .Q        .         . V         .
16.400      1.3090     13.49  .          Q         .         . V         .
16.417      1.3262     12.49  .         Q.         .         .  V        .
16.433      1.3422     11.63  .         Q.         .         .  V        .
16.450      1.3570     10.74  .        Q .         .         .   V       .
16.467      1.3707      9.92  .      Q  .          .         .   V       .
16.483      1.3832      9.12  .      Q  .          .         .   V       .
16.500      1.3947      8.32  .     Q   .          .         .    V      .
16.517      1.4049      7.45  .    Q    .          .         .    V      .
16.533      1.4142      6.72  .    Q    .          .         .    V      .
16.550      1.4226      6.10  .   Q     .          .         .    V      .
16.567      1.4303      5.58  .   Q     .          .         .    V      .
16.583      1.4373      5.14  .   Q     .          .         .     V     .
16.600      1.4438      4.67  .  Q      .          .         .     V     .
16.617      1.4496      4.25  .  Q      .          .         .     V     .
16.633      1.4550      3.88  .  Q      .          .         .     V     .
16.650      1.4599      3.54  . Q       .          .         .     V     .
16.667      1.4643      3.22  . Q       .          .         .     V     .
16.683      1.4684      2.97  . Q       .          .         .     V     .
16.700      1.4722      2.74  . Q       .          .         .      V    .
16.717      1.4755      2.46  .Q        .          .         .      V    .
16.733      1.4785      2.18  .Q        .          .         .      V    .
16.750      1.4812      1.91  .Q        .          .         .      V    .
16.767      1.4835      1.65  .Q        .          .         .      V    .
16.783      1.4854      1.42  .Q        .          .         .      V    .
16.800      1.4872      1.28  .Q        .          .         .      V    .
16.817      1.4888      1.18  Q         .          .         .      V    .
16.833      1.4903      1.09  Q         .          .         .      V    .
16.850      1.4917      1.02  Q         .          .         .      V    .
16.867      1.4930      0.96  Q         .          .         .      V    .
16.883      1.4943      0.91  Q         .          .         .      V    .
16.900      1.4955      0.87  Q         .          .         .      V    .
16.917      1.4966      0.83  Q         .          .         .      V    .
16.933      1.4977      0.79  Q         .          .         .      V    .
16.950      1.4988      0.76  Q         .          .         .      V    .
16.967      1.4998      0.73  Q         .          .         .      V    .
16.983      1.5008      0.71  Q         .          .         .      V    .
17.000      1.5017      0.69  Q         .          .         .      V    .
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*****************************************************************************
  FLOW PROCESS FROM NODE    133.00 TO NODE    133.00 IS CODE =   7
-----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
=============================================================================


*****************************************************************************
  FLOW PROCESS FROM NODE    133.00 TO NODE    133.00 IS CODE =  11
-----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
=============================================================================

            STREAM HYDROGRAPH IN  ONE-MINUTE UNIT INTERVALS(CFS)
         (Notes: Time indicated is at END of Each Unit Intervals.
                 Peak 5-minute rainfall intensity is modeled as
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a constant value for entire 5-minute period.)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	800.0	1600.0	2400.0	3200.0
14.000	351.4552	594.14	.	Q .	V .	.	.
14.017	352.2783	597.52	.	Q .	V .	.	.
14.033	353.1070	601.64	.	Q .	V .	.	.
14.050	353.9420	606.25	.	Q .	V .	.	.
14.067	354.7839	611.24	.	Q .	V .	.	.
14.083	355.6337	616.95	.	Q .	V .	.	.
14.100	356.4926	623.58	.	Q .	V .	.	.
14.117	357.3624	631.47	.	Q .	V .	.	.
14.133	358.2442	640.15	.	Q .	V .	.	.
14.150	359.1363	647.66	.	Q .	V .	.	.
14.167	360.0375	654.28	.	Q .	V .	.	.
14.183	360.9469	660.23	.	Q .	V .	.	.
14.200	361.8640	665.80	.	Q .	V .	.	.
14.217	362.7884	671.13	.	Q .	V .	.	.
14.233	363.7196	676.12	.	Q .	V .	.	.
14.250	364.6573	680.71	.	Q .	V .	.	.
14.267	365.6011	685.23	.	Q .	V .	.	.
14.283	366.5510	689.59	.	Q .	V .	.	.
14.300	367.5068	693.93	.	Q .	V .	.	.
14.317	368.4686	698.29	.	Q .	V .	.	.
14.333	369.4363	702.54	.	Q .	V .	.	.
14.350	370.4098	706.73	.	Q .	V .	.	.
14.367	371.3889	710.90	.	Q .	V .	.	.
14.383	372.3739	715.08	.	Q .	V .	.	.
14.400	373.3646	719.24	.	Q .	V .	.	.
14.417	374.3610	723.36	.	Q.	V .	.	.
14.433	375.3630	727.49	.	Q.	V .	.	.
14.450	376.3708	731.65	.	Q.	V .	.	.
14.467	377.3843	735.84	.	Q.	V .	.	.
14.483	378.4036	739.96	.	Q.	V .	.	.
14.500	379.4285	744.10	.	Q.	V .	.	.
14.517	380.4592	748.26	.	Q.	V .	.	.
14.533	381.4956	752.44	.	Q.	V .	.	.
14.550	382.5378	756.65	.	Q.	V .	.	.
14.567	383.5859	760.89	.	Q.	V .	.	.
14.583	384.6398	765.16	.	Q.	V .	.	.
14.600	385.6997	769.49	.	Q.	V .	.	.
14.617	386.7656	773.80	.	Q.	V .	.	.
14.633	387.8374	778.16	.	Q.	V .	.	.
14.650	388.9153	782.56	.	Q.	V .	.	.
14.667	389.9994	787.02	.	Q.	V .	.	.
14.683	391.0896	791.51	.	Q.	V .	.	.
14.700	392.1861	796.06	.	Q.	V .	.	.
14.717	393.2890	800.66	.	Q	V .	.	.
14.733	394.3982	805.29	.	Q	V .	.	.
14.750	395.5138	809.93	.	Q	V .	.	.
14.767	396.6359	814.65	.	Q	V .	.	.
14.783	397.7646	819.43	.	Q	V .	.	.
14.800	398.9000	824.28	.	Q	V .	.	.
14.817	400.0420	829.14	.	Q	V .	.	.
14.833	401.1909	834.08	.	Q	V .	.	.
14.850	402.3466	839.08	.	Q	V .	.	.
14.867	403.5094	844.17	.	Q	V .	.	.
14.883	404.6793	849.32	.	Q	V .	.	.
14.900	405.8564	854.55	.	Q	V .	.	.
14.917	407.0407	859.84	.	Q	V .	.	.
14.933	408.2325	865.22	.	Q	V .	.	.
14.950	409.4318	870.68	.	Q	V .	.	.
14.967	410.6387	876.23	.	Q	V .	.	.
14.983	411.8534	881.87	.	.Q	V .	.	.
15.000	413.0760	887.61	.	.Q	V .	.	.
15.017	414.3066	893.42	.	.Q	V .	.	.
15.033	415.5454	899.34	.	.Q	V .	.	.
15.050	416.7924	905.36	.	.Q	V .	.	.
15.067	418.0479	911.50	.	.Q	V .	.	.
15.083	419.3120	917.75	.	.Q	V .	.	.
15.100	420.5849	924.13	.	.Q	V.	.	.
15.117	421.8668	930.62	.	.Q	V.	.	.
15.133	423.1577	937.23	.	.Q	V.	.	.
15.150	424.4579	943.97	.	.Q	V.	.	.
15.167	425.7677	950.87	.	.Q	V.	.	.
15.183	427.0871	957.90	.	.Q	V.	.	.
15.200	428.4164	965.11	.	. Q	V.	.	.
15.217	429.7560	972.49	.	. Q	V.	.	.
15.233	431.1059	980.04	.	. Q	V.	.	.
15.250	432.4664	987.77	.	. Q	V.	.	.
15.267	433.8379	995.66	.	. Q	V.	.	.
15.283	435.2204	1003.73	.	. Q	V.	.	.
15.300	436.6144	1012.02	.	. Q	V.	.	.
15.317	438.0201	1020.51	.	. Q	V.	.	.
15.333	439.4377	1029.24	.	. Q	V.	.	.
15.350	440.8680	1038.35	.	. Q	V.	.	.
15.367	442.3114	1047.93	.	. Q	V.	.	.
15.383	443.7686	1057.93	.	. Q	V	.	.
15.400	445.2402	1068.36	.	. Q	V	.	.
15.417	446.7268	1079.30	.	. Q	V	.	.
15.433	448.2295	1090.93	.	. Q	V	.	.
15.450	449.7502	1104.07	.	. Q	V	.	.
15.467	451.2898	1117.75	.	. Q	V	.	.
15.483	452.8470	1130.48	.	. Q	V	.	.
15.500	454.4216	1143.23	.	. Q	V	.	.
15.517	456.0144	1156.38	.	. Q	V	.	.
15.533	457.6255	1169.60	.	. Q	V	.	.
15.550	459.2550	1183.03	.	. Q	V	.	.
15.567	460.9034	1196.79	.	. Q	V	.	.
15.583	462.5715	1211.01	.	. Q	V	.	.
15.600	464.2597	1225.66	.	. Q	V	.	.
15.617	465.9689	1240.83	.	. Q	.V	.	.
15.633	467.6996	1256.52	.	. Q	.V	.	.
15.650	469.4528	1272.77	.	. Q	.V	.	.
15.667	471.2292	1289.70	.	. Q	.V	.	.
15.683	473.0274	1305.51	.	. Q	.V	.	.
15.700	474.8458	1320.15	.	. Q	.V	.	.
15.717	476.6838	1334.36	.	. Q	.V	.	.
15.733	478.5413	1348.54	.	. Q	.V	.	.
15.750	480.4171	1361.90	.	. Q	.V	.	.
15.767	482.3095	1373.89	.	. Q	.V	.	.
15.783	484.2141	1382.73	.	. Q	.V	.	.
15.800	486.1304	1391.21	.	. Q	.V	.	.
15.817	488.0677	1406.44	.	. Q	. V	.	.
15.833	490.0325	1426.50	.	. Q	. V	.	.
15.850	492.0307	1450.69	.	. Q .	V	.	.
15.867	494.0683	1479.25	.	. Q .	V	.	.
15.883	496.1513	1512.27	.	. Q .	V	.	.
15.900	498.2867	1550.33	.	. Q.	V	.	.
15.917	500.4830	1594.48	.	. Q.	V	.	.
15.933	502.7487	1644.91	.	. Q	V	.	.
15.950	505.0960	1704.14	.	. .Q	V	.	.
15.967	507.5659	1793.17	.	. . Q	.	.	.
15.983	510.1989	1911.54	.	. . Q	.	.	.
16.000	513.0247	2051.50	.	. . V	Q .	.	.
16.017	516.0677	2209.22	.	. . V	. Q .	.	.
16.033	519.3666	2395.06	.	. . V	. Q.	.	.
16.050	522.9331	2589.25	.	. . V	. . Q	.	.
16.067	526.7947	2803.52	.	. . V	. .	Q	.
16.083	530.9307	3002.75	.	. . V	.	Q	.
16.100	535.2213	3114.94	.	. . V	.	Q .	
16.117	539.5667	3154.82	.	. . V	.	Q.	
16.133	543.8711	3125.00	.	. . V	.	Q.	
16.150	548.0019	2998.97	.	. . V	.	Q	.
16.167	551.8720	2809.71	.	. . V	.	Q	.
16.183	555.5192	2647.86	.	. . V	. Q	.	
16.200	558.9688	2504.37	.	. . V	.Q	.	
16.217	562.2438	2377.70	.	. . V	Q.	.	
16.233	565.3667	2267.19	.	. . V	Q .	.	
16.250	568.3580	2171.73	.	. . V	Q .	.	
16.267	571.2423	2094.00	.	. . VQ	.	.	
16.283	574.0434	2033.61	.	. . Q	.	.	

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16.300    576.7736   1982.13  .         .         .   Q V   .         .
16.317    579.4368   1933.51  .         .         .   Q V   .         .
16.333    582.0360   1887.02  .         .         .  Q  V   .         .
16.350    584.5714   1840.64  .         .         .  Q  V   .         .
16.367    587.0464   1796.92  .         .         . Q   V   .         .
16.383    589.4644   1755.45  .         .         .Q    V   .         .
16.400    591.8291   1716.75  .         .         .Q    V   .         .
16.417    594.1417   1678.90  .         .         Q     V   .         .
16.433    596.4019   1640.94  .         .         Q     V   .         .
16.450    598.6105   1603.45  .         .         Q      V  .         .
16.467    600.7691   1567.13  .         .        Q.      V  .         .
16.483    602.8807   1533.06  .         .        Q.      V  .         .
16.500    604.9474   1500.42  .         .       Q .      V  .         .
16.517    606.9731   1470.66  .         .       Q .      V  .         .
16.533    608.9614   1443.50  .         .       Q .      V  .         .
16.550    610.9163   1419.20  .         .      Q  .      V  .         .
16.567    612.8387   1395.73  .         .      Q  .      V  .         .
16.583    614.7295   1372.66  .         .      Q  .      V  .         .
16.600    616.5906   1351.19  .         .     Q   .      V  .         .
16.617    618.4236   1330.72  .         .     Q   .      V  .         .
16.633    620.2288   1310.61  .         .     Q   .       V .         .
16.650    622.0086   1292.14  .         .     Q   .       V .         .
16.667    623.7645   1274.80  .         .    Q    .       V .         .
16.683    625.4958   1256.90  .         .    Q    .       V .         .
16.700    627.2021   1238.80  .         .    Q    .       V .         .
16.717    628.8849   1221.65  .         .    Q    .       V .         .
16.733    630.5446   1204.90  .         .    Q    .       V .         .
16.750    632.1812   1188.23  .         .   Q     .       V .         .
16.767    633.7956   1172.02  .         .   Q     .       V .         .
16.783    635.3893   1157.07  .         .   Q     .       V .         .
16.800    636.9634   1142.74  .         .   Q     .       V .         .
16.817    638.5182   1128.84  .         .   Q     .       V .         .
16.833    640.0546   1115.41  .         .  Q      .       V .         .
16.850    641.5741   1103.15  .         .  Q      .        V.         .
16.867    643.0770   1091.11  .         .  Q      .        V.         .
16.883    644.5639   1079.47  .         .  Q      .        V.         .
16.900    646.0350   1068.00  .         .  Q      .        V.         .
16.917    647.4901   1056.40  .         .  Q      .        V.         .
16.933    648.9299   1045.37  .         .  Q      .        V.         .
16.950    650.3556   1035.02  .         . Q       .        V.         .
16.967    651.7667   1024.50  .         . Q       .        V.         .
16.983    653.1636   1014.11  .         . Q       .        V.         .
17.000    654.5468   1004.23  .         . Q       .        V.         .
17.017    655.9158    993.89  .         . Q       .        V.         .
17.033    657.2700    983.09  .         . Q       .        V.         .
17.050    658.6094    972.48  .         . Q       .        V.         .
17.067    659.9340    961.66  .         . Q       .        V.         .
17.083    661.2423    949.84  .         .Q        .        V.         .
17.100    662.5333    937.25  .         .Q        .        V.         .
17.117    663.8054    923.53  .         .Q        .         V         .
17.133    665.0576    909.07  .         .Q        .         V         .
17.150    666.2916    895.95  .         .Q        .         V         .
17.167    667.5096    884.29  .         .Q        .         V         .
17.183    668.7128    873.52  .         Q         .         V         .
17.200    669.9017    863.12  .         Q         .         V         .
17.217    671.0759    852.50  .         Q         .         V         .
17.233    672.2360    842.23  .         Q         .         V         .
17.250    673.3827    832.46  .         Q         .         V         .
17.267    674.5161    822.88  .         Q         .         V         .
17.283    675.6368    813.60  .         Q         .         V         .
17.300    676.7457    805.11  .         Q         .         V         .
17.317    677.8434    796.92  .        Q.         .         V         .
17.333    678.9302    788.98  .        Q.         .         V         .
17.350    680.0062    781.17  .        Q.         .         V         .
17.367    681.0711    773.13  .        Q.         .         V         .
17.383    682.1243    764.58  .        Q.         .         V         .
17.400    683.1658    756.16  .        Q.         .         V         .
17.417    684.1960    747.87  .        Q.         .         V         .
17.433    685.2148    739.63  .        Q.         .         V         .
17.450    686.2227    731.75  .        Q.         .         .V        .
17.467    687.2209    724.66  .        Q.         .         .V        .
17.483    688.2097    717.89  .       Q .         .         .V        .
17.500    689.1895    711.29  .       Q .         .         .V        .
17.517    690.1603    704.80  .       Q .         .         .V        .
17.533    691.1223    698.42  .       Q .         .         .V        .
17.550    692.0756    692.07  .       Q .         .         .V        .
17.567    693.0200    685.67  .       Q .         .         .V        .
17.583    693.9550    678.82  .       Q .         .         .V        .
17.600    694.8804    671.82  .       Q .         .         .V        .
17.617    695.7962    664.90  .       Q .         .         .V        .
17.633    696.7026    658.05  .       Q .         .         .V        .
17.650    697.5997    651.29  .       Q .         .         .V        .
17.667    698.4884    645.18  .       Q .         .         .V        .
17.683    699.3692    639.48  .      Q  .         .         .V        .
17.700    700.2424    633.94  .      Q  .         .         .V        .
17.717    701.1080    628.47  .      Q  .         .         .V        .
17.733    701.9663    623.12  .      Q  .         .         .V        .
17.750    702.8173    617.82  .      Q  .         .         .V        .
17.767    703.6611    612.58  .      Q  .         .         .V        .
17.783    704.4976    607.31  .      Q  .         .         .V        .
17.800    705.3268    602.01  .      Q  .         .         .V        .
17.817    706.1487    596.69  .      Q  .         .         .V        .
17.833    706.9631    591.32  .      Q  .         .         .V        .
17.850    707.7700    585.82  .      Q  .         .         .V        .
17.867    708.5682    579.47  .      Q  .         .         . V       .
17.883    709.3565    572.34  .      Q  .         .         . V       .
17.900    710.1351    565.29  .      Q  .         .         . V       .
17.917    710.9041    558.29  .     Q   .         .         . V       .
17.933    711.6635    551.32  .     Q   .         .         . V       .
17.950    712.4146    545.29  .     Q   .         .         . V       .
17.967    713.1589    540.32  .     Q   .         .         . V       .
17.983    713.8966    535.60  .     Q   .         .         . V       .
18.000    714.6282    531.12  .     Q   .         .         . V       .
=====================================================================

  END OF FLOODSCx ROUTING ANALYSIS
```

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****************************************************************************

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              Ver. 8.0  Release Date: 01/01/2003  License ID 1261

                           Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* SPRING TRAILS               JUNE, 2011                  J - 13565-C     *
* BASIN 2 - POST PROJECT           100 YR PRECIPITATION WITH AMC-III      *
* FOR DETENTION BASIN SIZING (100-YEAR)                                   *
 ***************************************************************************

  FILE NAME: ST2_H_P.DAT
  TIME/DATE OF STUDY: 17:55 06/07/2011


                          ** INPUT SUMMARY **


****************************************************************************
  FLOW PROCESS FROM NODE    201.10 TO NODE   2203.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #1<<<<<
============================================================================
  WATERSHED AREA =      23.400 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.177 HOURS
  VALLEY(DEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.225; LOW LOSS FRACTION = 0.530
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.32; 30-MINUTE =  1.04;  1-HOUR =  1.60
    3-HOUR =  3.25;    6-HOUR =  5.00; 24-HOUR = 14.00
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.999; 30-MINUTE = 0.999;  1-HOUR = 0.999
    3-HOUR = 1.000;    6-HOUR = 1.000; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE   2203.00 TO NODE   2203.00 IS CODE = 3.2
----------------------------------------------------------------------------
  >>>>>FLOW-THROUGH DETENTION BASIN ROUTING MODEL APPLIED TO STREAM #1<<<<<
============================================================================
  ROUTE RUNOFF HYDROGRAPH FROM STREAM NUMBER 1
  THROUGH A FLOW-THROUGH DETENTION BASIN.
  SPECIFIED BASIN CONDITIONS ARE AS FOLLOWS:
  DEAD STORAGE(AF) =      0.000
  SPECIFIED DEAD STORAGE(AF) FILLED =      0.000
  SPECIFIED EFFECTIVE VOLUME(AF) FILLED ABOVE OUTLET =      0.000
  DETENTION BASIN CONSTANT LOSS RATE(CFS) =    0.00

  BASIN DEPTH VERSUS OUTFLOW AND STORAGE INFORMATION:

          INTERVAL    DEPTH      OUTFLOW     STORAGE
           NUMBER      (FT)       (CFS)        (AF)
               1       0.00        0.00       0.000
               2       1.00        0.94       1.870
               3       2.00       48.00       2.420
               4       3.00      100.00      20.000
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    221.10 TO NODE    224.00 IS CODE =   1
```

```
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERSHED AREA =      22.100 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.177 HOURS
  DESERT(UNDEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.860; LOW LOSS FRACTION = 0.920
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.27; 30-MINUTE =  0.82;  1-HOUR =  1.32
    3-HOUR =  2.65;    6-HOUR =  4.10; 24-HOUR = 10.70
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.999; 30-MINUTE = 0.999;  1-HOUR = 0.999
    3-HOUR = 1.000;    6-HOUR = 1.000; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE    223.00 TO NODE    223.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    223.00 TO NODE    223.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================
============================================================================
```

```
+-----------------------------------------------------------------------------------------------------------------------------+
|                                        * AES FLOODSCx PROGRAM RESULTS SUMMARY *                                             |
|INPUT FILENAME: [ST2_H_P.DAT    ]                                                                          Page:   1 of    |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|UPSTREAM  DOWNSTREAM|                               | UPSTREAM   DOWNSTREAM| TIME(2) TO | MAX. STORAGE|           |
| NODE #     NODE #  | HYDROLOGIC/HYDRAULIC PROCESS  |PEAK (CFS)  PEAK (CFS)| PEAK (HR)  | MODELED (AF)| FOOTNOTES |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|   201.10    2203.00| Subarea (UH) Added to Stream #1|       0.0        57.6|     16.167 |             |           |
|  2203.00    2203.00| Flow-Through Basin:   Stream #1|      57.6        48.0|     16.250 |         2.42|           |
|   221.10     224.00| Subarea (UH) Added to Stream #2|       0.0        26.8|     16.133 |             |           |
|   223.00     223.00| Stream #2 Added to:   Stream #1|      48.0        68.4|     16.150 |             |           |
|   223.00     223.00| View:                 Stream #1|                  68.4|     16.150 |        18.98|     3     |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|Notes: 1 = BASIN MODEL VOLUME EXCEEDED; 2 = TIME IS AT END OF 1-MINUTE UNIT INTERVAL                                          |
|       3 = RUNOFF ESTIMATES DO NOT EXTEND PAST 2 DAYS AFTER THE PEAK DAY OF THE DESIGN STORM                                  |
+-----------------------------------------------------------------------------------------------------------------------------+

  END OF FLOODSCx ROUTING ANALYSIS
```

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

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                           Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* SPRING TRAILS                  JUNE, 2011                  J - 13565-C    *
* BASIN 2 - PRE PROJECT              25 YR PRECIPITATION WITH AMC-II       *
* FOR DETENTION BASIN SIZING (100-YEAR)                                    *
 ************************************************************************

  FILE NAME: ST2_H_E.DAT
  TIME/DATE OF STUDY: 10:39 06/10/2011


****************************************************************************
  FLOW PROCESS FROM NODE    601.10 TO NODE    802.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
============================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERSHED AREA =      63.700 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.195 HOURS
         VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.840
         LOW LOSS FRACTION = 0.990
         *HYDROGRAPH MODEL #7 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.27
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.82
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.32
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  2.65
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  4.10
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) = 10.70

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
           5-MINUTE FACTOR = 0.997
          30-MINUTE FACTOR = 0.997
           1-HOUR FACTOR = 0.997
           3-HOUR FACTOR = 1.000
           6-HOUR FACTOR = 1.000
          24-HOUR FACTOR = 1.000

         UNIT HYDROGRAPH TIME UNIT =   1.000 MINUTES
         UNIT INTERVAL PERCENTAGE OF LAG-TIME =   8.547


         RUNOFF HYDROGRAPH LISTING LIMITS:
         MODEL TIME(HOURS) FOR BEGINNING OF RESULTS =  14.00
         MODEL TIME(HOURS) FOR END OF RESULTS =  17.00


============================================================================
                       UNIT HYDROGRAPH DETERMINATION

----------------------------------------------------------------------------
     INTERVAL          "S" GRAPH          UNIT HYDROGRAPH
      NUMBER          MEAN VALUES          ORDINATES(CFS)
```

1	0.712	27.435
2	2.196	57.148
3	4.109	73.681
4	6.639	97.451
5	9.843	123.413
6	13.647	146.541
7	18.505	187.124
8	24.127	216.541
9	29.994	226.009
10	36.402	246.802
11	42.575	237.789
12	48.860	242.102
13	53.917	194.771
14	58.065	159.792
15	61.406	128.656
16	64.181	106.916
17	66.888	104.252
18	69.128	86.308
19	70.824	65.314
20	72.743	73.916
21	74.272	58.893
22	75.651	53.121
23	76.901	48.152
24	78.107	46.464
25	79.254	44.152
26	80.291	39.975
27	81.198	34.927
28	82.170	37.418
29	82.934	29.456
30	83.762	31.877
31	84.541	30.002
32	85.233	26.653
33	85.906	25.913
34	86.523	23.788
35	87.134	23.515
36	87.689	21.402
37	88.175	18.696
38	88.677	19.356
39	89.180	19.365
40	89.683	19.373
41	90.146	17.824
42	90.544	15.351
43	90.942	15.316
44	91.339	15.316
45	91.737	15.307
46	92.106	14.215
47	92.423	12.235
48	92.740	12.200
49	93.056	12.182
50	93.373	12.200
51	93.690	12.191
52	93.997	11.857
53	94.256	9.973
54	94.508	9.683
55	94.759	9.682
56	95.010	9.673
57	95.262	9.709
58	95.513	9.665
59	95.765	9.683
60	96.002	9.154
61	96.177	6.725
62	96.342	6.373
63	96.509	6.408
64	96.674	6.373
65	96.840	6.408
66	97.006	6.390
67	97.172	6.390
68	97.339	6.408
69	97.504	6.373
70	97.670	6.408

71	97.836	6.390
72	97.989	5.880
73	98.062	2.817
74	98.123	2.359
75	98.184	2.359
76	98.246	2.377
77	98.307	2.359
78	98.369	2.359
79	98.430	2.359
80	98.492	2.377
81	98.553	2.359
82	98.614	2.359
83	98.675	2.359
84	98.737	2.377
85	98.798	2.341
86	98.860	2.377
87	98.921	2.359
88	98.982	2.359
89	99.044	2.377
90	99.105	2.359
91	99.166	2.359
92	99.227	2.359
93	99.289	2.359
94	99.350	2.359
95	99.411	2.359
96	99.472	2.359
97	99.534	2.359
98	99.595	2.359
99	99.656	2.359
100	99.717	2.359
101	99.779	2.359
102	99.840	2.359
103	99.901	2.359
104	99.962	2.359
105	100.000	1.451

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 53.7658
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 3.0242

==========

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

==========

HYDROGRAPH IN ONE-MINUTE UNIT INTERVALS(CFS)
(Notes: Time indicated is at END of Each Unit Intervals.
Peak 5-minute rainfall intensity is modeled as
a constant value for entire 5-minute period.)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	17.5	35.0	52.5	70.0
14.000	0.2763	0.34	Q V	.	.	.	.
14.017	0.2768	0.34	Q V	.	.	.	.
14.033	0.2772	0.34	Q V	.	.	.	.
14.050	0.2777	0.34	Q V	.	.	.	.
14.067	0.2782	0.34	Q V	.	.	.	.
14.083	0.2787	0.34	Q V	.	.	.	.
14.100	0.2791	0.35	Q V	.	.	.	.
14.117	0.2796	0.35	Q V	.	.	.	.
14.133	0.2801	0.35	Q V	.	.	.	.
14.150	0.2806	0.35	Q V	.	.	.	.
14.167	0.2811	0.35	Q V	.	.	.	.
14.183	0.2815	0.35	Q V	.	.	.	.
14.200	0.2820	0.35	Q V	.	.	.	.
14.217	0.2825	0.35	Q V	.	.	.	.
14.233	0.2830	0.36	Q V	.	.	.	.
14.250	0.2835	0.36	Q V	.	.	.	.
14.267	0.2840	0.36	Q V	.	.	.	.
14.283	0.2845	0.36	Q V	.	.	.	.
14.300	0.2850	0.36	Q V	.	.	.	.
14.317	0.2855	0.36	Q V	.	.	.	.
14.333	0.2860	0.36	Q V	.	.	.	.
14.350	0.2865	0.36	Q V	.	.	.	.
14.367	0.2870	0.37	Q V	.	.	.	.
14.383	0.2875	0.37	Q V	.	.	.	.
14.400	0.2880	0.37	Q V	.	.	.	.
14.417	0.2885	0.37	Q V	.	.	.	.
14.433	0.2890	0.37	Q V	.	.	.	.
14.450	0.2895	0.37	Q V	.	.	.	.
14.467	0.2900	0.37	Q V	.	.	.	.
14.483	0.2906	0.37	Q V	.	.	.	.
14.500	0.2911	0.38	Q V	.	.	.	.
14.517	0.2916	0.38	Q V	.	.	.	.
14.533	0.2921	0.38	Q V	.	.	.	.
14.550	0.2926	0.38	Q V	.	.	.	.
14.567	0.2932	0.38	Q V	.	.	.	.
14.583	0.2937	0.38	Q V	.	.	.	.
14.600	0.2942	0.38	Q V	.	.	.	.
14.617	0.2947	0.39	Q V	.	.	.	.
14.633	0.2953	0.39	Q V	.	.	.	.
14.650	0.2958	0.39	Q V	.	.	.	.
14.667	0.2963	0.39	Q V	.	.	.	.
14.683	0.2969	0.39	Q V	.	.	.	.
14.700	0.2974	0.39	Q V	.	.	.	.
14.717	0.2980	0.39	Q V	.	.	.	.
14.733	0.2985	0.40	Q V	.	.	.	.
14.750	0.2991	0.40	Q V	.	.	.	.
14.767	0.2996	0.40	Q V	.	.	.	.
14.783	0.3002	0.40	Q V	.	.	.	.
14.800	0.3007	0.40	Q V	.	.	.	.
14.817	0.3013	0.40	Q V	.	.	.	.
14.833	0.3018	0.41	Q V	.	.	.	.
14.850	0.3024	0.41	Q V	.	.	.	.
14.867	0.3030	0.41	Q V	.	.	.	.
14.883	0.3035	0.41	Q V	.	.	.	.
14.900	0.3041	0.41	Q V	.	.	.	.
14.917	0.3047	0.41	Q V	.	.	.	.
14.933	0.3052	0.42	Q V	.	.	.	.

```
14.950      0.3058      0.42  Q   V     .         .         .         .
14.967      0.3064      0.42  Q   V     .         .         .         .
14.983      0.3070      0.42  Q   V     .         .         .         .
15.000      0.3076      0.42  Q   V     .         .         .         .
15.017      0.3081      0.43  Q   V     .         .         .         .
15.033      0.3087      0.43  Q   V     .         .         .         .
15.050      0.3093      0.43  Q   V     .         .         .         .
15.067      0.3099      0.43  Q   V     .         .         .         .
15.083      0.3105      0.44  Q   V     .         .         .         .
15.100      0.3111      0.44  Q   V     .         .         .         .
15.117      0.3117      0.44  Q   V     .         .         .         .
15.133      0.3123      0.44  Q   V     .         .         .         .
15.150      0.3129      0.44  Q   V     .         .         .         .
15.167      0.3136      0.45  Q   V     .         .         .         .
15.183      0.3142      0.45  Q   V     .         .         .         .
15.200      0.3148      0.45  Q   V     .         .         .         .
15.217      0.3154      0.45  Q   V     .         .         .         .
15.233      0.3161      0.46  Q   V     .         .         .         .
15.250      0.3167      0.46  Q   V     .         .         .         .
15.267      0.3173      0.46  Q   V     .         .         .         .
15.283      0.3180      0.47  Q   V     .         .         .         .
15.300      0.3186      0.47  Q   V     .         .         .         .
15.317      0.3193      0.47  Q   V     .         .         .         .
15.333      0.3199      0.48  Q   V     .         .         .         .
15.350      0.3206      0.51  Q   V     .         .         .         .
15.367      0.3214      0.57  Q   V     .         .         .         .
15.383      0.3223      0.65  Q   V     .         .         .         .
15.400      0.3234      0.76  Q   V     .         .         .         .
15.417      0.3246      0.92  Q   V     .         .         .         .
15.433      0.3261      1.11  Q   V     .         .         .         .
15.450      0.3280      1.36  Q   V     .         .         .         .
15.467      0.3303      1.66  Q   V     .         .         .         .
15.483      0.3330      2.00  .Q  V     .         .         .         .
15.500      0.3363      2.39  .Q  V     .         .         .         .
15.517      0.3402      2.80  .Q  V     .         .         .         .
15.533      0.3447      3.26  .Q  V     .         .         .         .
15.550      0.3498      3.71  . Q V     .         .         .         .
15.567      0.3555      4.16  . Q V     .         .         .         .
15.583      0.3619      4.61  . Q V     .         .         .         .
15.600      0.3688      5.07  . Q V     .         .         .         .
15.617      0.3765      5.55  .  QV     .         .         .         .
15.633      0.3848      6.05  .  Q V    .         .         .         .
15.650      0.3938      6.55  .  Q V    .         .         .         .
15.667      0.4036      7.09  .   QV    .         .         .         .
15.683      0.4141      7.60  .   QV    .         .         .         .
15.700      0.4252      8.08  .   QV    .         .         .         .
15.717      0.4370      8.56  .   QV    .         .         .         .
15.733      0.4494      9.03  .    Q    .         .         .         .
15.750      0.4625      9.49  .    QV   .         .         .         .
15.767      0.4762      9.96  .    QV   .         .         .         .
15.783      0.4905     10.40  .    QV   .         .         .         .
15.800      0.5055     10.84  .     Q   .         .         .         .
15.817      0.5211     11.32  .     Q   .         .         .         .
15.833      0.5374     11.84  .     QV  .         .         .         .
15.850      0.5545     12.46  .      Q  .         .         .         .
15.867      0.5727     13.16  .      Q  .         .         .         .
15.883      0.5920     14.06  .      VQ .         .         .         .
15.900      0.6129     15.15  .       Q .         .         .         .
15.917      0.6355     16.44  .       VQ.         .         .         .
15.933      0.6603     17.96  .       V Q         .         .         .
15.950      0.6874     19.72  .        V.Q        .         .         .
15.967      0.7182     22.35  .        V. Q       .         .         .
15.983      0.7538     25.82  .        V.   Q     .         .         .
16.000      0.7949     29.83  .         V      Q  .         .         .
16.017      0.8424     34.52  .         .V       Q.         .         .
16.033      0.8974     39.91  .         .V        . Q       .         .
16.050      0.9597     45.24  .         . V       .    Q    .         .
16.067      1.0295     50.67  .         .  V      .      Q .         .
16.083      1.1067     56.03  .         .   V     .         . Q       .
16.100      1.1904     60.75  .         .    V    .         .   Q     .
16.117      1.2797     64.82  .         .     V   .         .     Q   .
```

```
16.133      1.3728     67.65  .         .       V .         .       Q .
16.150      1.4678     68.97  .         .        V.         .        Q.
16.167      1.5614     67.94  .         .         V         .       Q .
16.183      1.6514     65.36  .         .         .V        .      Q  .
16.200      1.7357     61.20  .         .         . V       .   Q    .
16.217      1.8134     56.37  .         .         .  V      . Q      .
16.233      1.8838     51.11  .         .         .   V    Q.        .
16.250      1.9475     46.29  .         .         .    VQ   .        .
16.267      2.0053     41.90  .         .         .  Q  V   .        .
16.283      2.0584     38.54  .         .         . Q    V  .        .
16.300      2.1073     35.56  .         .         Q      V  .        .
16.317      2.1524     32.69  .         .       Q .       V .        .
16.333      2.1941     30.27  .         .      Q  .        V.        .
16.350      2.2332     28.39  .         .    Q    .        V.        .
16.367      2.2695     26.41  .         .   Q     .         V        .
16.383      2.3035     24.66  .         .  Q      .         V        .
16.400      2.3352     23.00  .         . Q       .         V        .
16.417      2.3648     21.52  .         . Q       .         .V       .
16.433      2.3923     19.97  .         .Q        .         .V       .
16.450      2.4179     18.57  .         Q         .         .V       .
16.467      2.4417     17.26  .        Q.         .         . V      .
16.483      2.4638     16.05  .        Q.         .         . V      .
16.500      2.4843     14.86  .       Q .         .         . V      .
16.517      2.5034     13.87  .      Q  .         .         .  V     .
16.533      2.5211     12.89  .      Q  .         .         .  V     .
16.550      2.5377     12.02  .     Q   .         .         .  V     .
16.567      2.5532     11.25  .     Q   .         .         .  V     .
16.583      2.5678     10.60  .     Q   .         .         .  V     .
16.600      2.5816     10.05  .    Q    .         .         .   V    .
16.617      2.5948      9.54  .    Q    .         .         .   V    .
16.633      2.6073      9.08  .    Q    .         .         .   V    .
16.650      2.6192      8.67  .   Q     .         .         .   V    .
16.667      2.6306      8.27  .   Q     .         .         .   V    .
16.683      2.6415      7.91  .   Q     .         .         .   V    .
16.700      2.6519      7.55  .   Q     .         .         .    V   .
16.717      2.6619      7.22  .   Q     .         .         .    V   .
16.733      2.6714      6.92  .  Q      .         .         .    V   .
16.750      2.6805      6.63  .  Q      .         .         .    V   .
16.767      2.6893      6.36  .  Q      .         .         .    V   .
16.783      2.6977      6.10  .  Q      .         .         .    V   .
16.800      2.7058      5.87  .  Q      .         .         .    V   .
16.817      2.7136      5.68  .  Q      .         .         .    V   .
16.833      2.7211      5.47  .  Q      .         .         .    V   .
16.850      2.7284      5.26  .  Q      .         .         .     V  .
16.867      2.7354      5.06  . Q       .         .         .     V  .
16.883      2.7421      4.87  . Q       .         .         .     V  .
16.900      2.7485      4.69  . Q       .         .         .     V  .
16.917      2.7548      4.56  . Q       .         .         .     V  .
16.933      2.7609      4.43  . Q       .         .         .     V  .
16.950      2.7668      4.30  . Q       .         .         .     V  .
16.967      2.7725      4.11  . Q       .         .         .     V  .
16.983      2.7779      3.93  . Q       .         .         .     V  .
17.000      2.7831      3.74  . Q       .         .         .     V  .
=====================================================================

 END OF FLOODSCx ROUTING ANALYSIS
```

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****************************************************************************

              F L O O D    R O U T I N G    A N A L Y S I S
          USING COUNTY HYDROLOGY MANUAL OF SAN BERNARDINO(1986)
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             Ver. 8.0  Release Date: 01/01/2003  License ID 1261

                          Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* SPRING TRAILS                JUNE, 2011                  J - 13565-C    *
* BASIN 2 - PRE PROJECT              25 YR PRECIPITATION WITH AMC-II      *
* FOR DETENTION BASIN SIZING (100-YEAR)                                   *
 ***************************************************************************

  FILE NAME: ST2_H_E.DAT
  TIME/DATE OF STUDY: 17:51 06/06/2011


                         ** INPUT SUMMARY **


****************************************************************************
  FLOW PROCESS FROM NODE    601.10 TO NODE    802.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #1<<<<<
============================================================================
  WATERSHED AREA =      63.700 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.195 HOURS
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.840; LOW LOSS FRACTION = 0.990
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.27; 30-MINUTE =  0.82;  1-HOUR =  1.32
    3-HOUR =  2.65;    6-HOUR =  4.10; 24-HOUR = 10.70
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.997; 30-MINUTE = 0.997;  1-HOUR = 0.997
    3-HOUR = 1.000;    6-HOUR = 1.000; 24-HOUR = 1.000
============================================================================
```

```
+-----------------------------------------------------------------------------------------------------------------------+
|                                    * AES FLOODSCx PROGRAM RESULTS SUMMARY *                                           |
|INPUT FILENAME: [ST2_H_E.DAT    ]                                                                   Page:   1 of    |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|UPSTREAM  DOWNSTREAM|                               | UPSTREAM   DOWNSTREAM| TIME(2) TO | MAX. STORAGE|           |
| NODE #     NODE #  | HYDROLOGIC/HYDRAULIC PROCESS  |PEAK (CFS)  PEAK (CFS)| PEAK (HR)  | MODELED (AF)| FOOTNOTES |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|   601.10     802.00| Subarea (UH) Added to Stream #1|       0.0        69.0|     16.150 |             |           |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|Notes: 1 = BASIN MODEL VOLUME EXCEEDED; 2 = TIME IS AT END OF 1-MINUTE UNIT INTERVAL                                  |
|       3 = RUNOFF ESTIMATES DO NOT EXTEND PAST 2 DAYS AFTER THE PEAK DAY OF THE DESIGN STORM                           |
+-----------------------------------------------------------------------------------------------------------------------+

  END OF FLOODSCx ROUTING ANALYSIS
```

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

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             Ver. 8.0  Release Date: 01/01/2003  License ID 1261

                           Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* SPRING TRAILS                JUNE, 2011                  J - 13565-C     *
* BASIN 2 - POST PROJECT           100 YR PRECIPITATION WITH AMC-III       *
* FOR DETENTION BASIN SIZING (100-YEAR)                                    *
 ****************************************************************************

  FILE NAME: ST2_H_P.DAT
  TIME/DATE OF STUDY: 10:39 06/10/2011


****************************************************************************
  FLOW PROCESS FROM NODE    201.10 TO NODE   2203.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
============================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERSHED AREA =      23.400 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.177 HOURS
         VALLEY(DEVELOPED) S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.225
         LOW LOSS FRACTION = 0.530
         *HYDROGRAPH MODEL #7 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.32
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  1.04
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.60
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  3.25
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  5.00
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) = 14.00

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
           5-MINUTE FACTOR = 0.999
          30-MINUTE FACTOR = 0.999
           1-HOUR FACTOR = 0.999
           3-HOUR FACTOR = 1.000
           6-HOUR FACTOR = 1.000
          24-HOUR FACTOR = 1.000

         UNIT HYDROGRAPH TIME UNIT =   1.000 MINUTES
         UNIT INTERVAL PERCENTAGE OF LAG-TIME =   9.416


         RUNOFF HYDROGRAPH LISTING LIMITS:
         MODEL TIME(HOURS) FOR BEGINNING OF RESULTS =  14.00
         MODEL TIME(HOURS) FOR END OF RESULTS =  17.00


============================================================================
                       UNIT HYDROGRAPH DETERMINATION

----------------------------------------------------------------------------
     INTERVAL          "S" GRAPH          UNIT HYDROGRAPH
      NUMBER          MEAN VALUES          ORDINATES(CFS)
```

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	0.538	7.613
2	1.620	15.307
3	3.051	20.244
4	5.302	31.855
5	9.278	56.268
6	14.307	71.153
7	19.842	78.315
8	25.919	85.991
9	32.520	93.408
10	39.783	102.762
11	48.503	123.390
12	56.007	106.181
13	64.006	113.175
14	70.690	94.586
15	76.337	79.898
16	80.688	61.563
17	84.687	56.590
18	87.787	43.864
19	90.071	32.312
20	92.050	27.998
21	93.810	24.903
22	95.105	18.324
23	96.171	15.094
24	96.924	10.650
25	97.662	10.443
26	98.096	6.140
27	98.272	2.498
28	98.449	2.498
29	98.626	2.501
30	98.802	2.496
31	98.979	2.498
32	99.155	2.501
33	99.332	2.498
34	99.508	2.498
35	99.685	2.498
36	99.861	2.498
37	100.000	1.961

```
----------------------------------------------------------------------------
    TOTAL SOIL-LOSS VOLUME(ACRE-FEET) =      10.5300
    TOTAL STORM RUNOFF VOLUME(ACRE-FEET) =      16.7599
----------------------------------------------------------------------------
```

```
============================================================================

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

============================================================================
              HYDROGRAPH IN  ONE-MINUTE UNIT INTERVALS(CFS)
        (Notes: Time indicated is at END of Each Unit Intervals.
                Peak 5-minute rainfall intensity is modeled as
                a constant value for entire 5-minute period.)
----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.       15.0      30.0      45.0      60.0
----------------------------------------------------------------------------
  14.000      7.6656     10.01  .     Q   .       V .         .         .
  14.017      7.6795     10.06  .     Q   .       V .         .         .
  14.033      7.6934     10.11  .     Q   .       V .         .         .
  14.050      7.7074     10.16  .     Q   .       V .         .         .
  14.067      7.7215     10.22  .     Q   .       V .         .         .
  14.083      7.7357     10.29  .     Q   .       V .         .         .
  14.100      7.7500     10.37  .     Q   .       V .         .         .
  14.117      7.7644     10.45  .     Q   .       V .         .         .
  14.133      7.7789     10.54  .      Q  .       V .         .         .
  14.150      7.7935     10.63  .      Q  .       V .         .         .
  14.167      7.8083     10.72  .      Q  .       V .         .         .
  14.183      7.8232     10.82  .      Q  .       V .         .         .
  14.200      7.8382     10.92  .      Q  .       V .         .         .
  14.217      7.8534     11.02  .      Q  .       V .         .         .
  14.233      7.8687     11.11  .      Q  .       V .         .         .
  14.250      7.8841     11.20  .      Q  .       V .         .         .
  14.267      7.8996     11.27  .      Q  .       V .         .         .
  14.283      7.9153     11.35  .      Q  .       V .         .         .
  14.300      7.9310     11.42  .      Q  .       V .         .         .
  14.317      7.9468     11.49  .      Q  .       V .         .         .
  14.333      7.9628     11.55  .      Q  .        V.         .         .
  14.350      7.9788     11.62  .      Q  .        V.         .         .
  14.367      7.9948     11.68  .      Q  .        V.         .         .
  14.383      8.0110     11.74  .      Q  .        V.         .         .
  14.400      8.0273     11.80  .      Q  .        V.         .         .
  14.417      8.0436     11.87  .      Q  .        V.         .         .
  14.433      8.0600     11.92  .      Q  .        V.         .         .
  14.450      8.0766     11.98  .      Q  .        V.         .         .
  14.467      8.0931     12.04  .       Q .        V.         .         .
  14.483      8.1098     12.11  .       Q .        V.         .         .
  14.500      8.1266     12.17  .       Q .        V.         .         .
  14.517      8.1434     12.23  .       Q .        V.         .         .
  14.533      8.1604     12.29  .       Q .        V.         .         .
  14.550      8.1774     12.36  .       Q .        V.         .         .
  14.567      8.1945     12.42  .       Q .        V.         .         .
  14.583      8.2117     12.49  .       Q .        V.         .         .
  14.600      8.2290     12.55  .       Q .        V.         .         .
  14.617      8.2464     12.62  .       Q .        V.         .         .
  14.633      8.2638     12.69  .       Q .        V.         .         .
  14.650      8.2814     12.76  .       Q .        V.         .         .
  14.667      8.2991     12.83  .       Q .        V.         .         .
  14.683      8.3168     12.90  .       Q .        V.         .         .
  14.700      8.3347     12.97  .       Q .        V.         .         .
  14.717      8.3527     13.04  .       Q .        V.         .         .
  14.733      8.3707     13.12  .       Q .        V.         .         .
  14.750      8.3889     13.19  .       Q .         V         .         .
  14.767      8.4072     13.27  .       Q .         V         .         .
  14.783      8.4256     13.34  .       Q .         V         .         .
  14.800      8.4440     13.42  .       Q .         V         .         .
  14.817      8.4626     13.50  .        Q.         V         .         .
  14.833      8.4814     13.58  .        Q.         V         .         .
  14.850      8.5002     13.67  .        Q.         V         .         .
  14.867      8.5191     13.75  .        Q.         V         .         .
  14.883      8.5382     13.84  .        Q.         V         .         .
  14.900      8.5574     13.92  .        Q.         V         .         .
  14.917      8.5767     14.01  .        Q.         V         .         .
  14.933      8.5961     14.10  .        Q.         V         .         .
  14.950      8.6156     14.19  .        Q.         V         .         .
  14.967      8.6353     14.29  .        Q.         V         .         .
  14.983      8.6551     14.38  .        Q.         V         .         .
  15.000      8.6751     14.48  .        Q.         V         .         .
  15.017      8.6952     14.58  .        Q.         V         .         .
  15.033      8.7154     14.68  .        Q.         V         .         .
  15.050      8.7357     14.78  .        Q.         V         .         .
  15.067      8.7562     14.89  .        Q.         V         .         .
  15.083      8.7769     14.99  .        Q.         V         .         .
  15.100      8.7977     15.10  .         Q         V         .         .
  15.117      8.8187     15.22  .         Q         .V        .         .
  15.133      8.8398     15.33  .         Q         .V        .         .
  15.150      8.8610     15.45  .         Q         .V        .         .
  15.167      8.8825     15.56  .         Q         .V        .         .
  15.183      8.9041     15.69  .         Q         .V        .         .
  15.200      8.9259     15.81  .         Q         .V        .         .
  15.217      8.9478     15.94  .         Q         .V        .         .
  15.233      8.9699     16.07  .         Q         .V        .         .
  15.250      8.9923     16.20  .         Q         .V        .         .
  15.267      9.0148     16.34  .         Q         .V        .         .
  15.283      9.0375     16.48  .         Q         .V        .         .
  15.300      9.0604     16.62  .         .Q        .V        .         .
  15.317      9.0835     16.77  .         .Q        .V        .         .
  15.333      9.1068     16.92  .         .Q        .V        .         .
  15.350      9.1303     17.07  .         .Q        .V        .         .
  15.367      9.1540     17.22  .         .Q        .V        .         .
  15.383      9.1779     17.37  .         .Q        .V        .         .
  15.400      9.2021     17.52  .         .Q        .V        .         .
  15.417      9.2264     17.66  .         .Q        . V       .         .
  15.433      9.2509     17.79  .         .Q        . V       .         .
  15.450      9.2756     17.93  .         .Q        . V       .         .
  15.467      9.3005     18.06  .         . Q       . V       .         .
  15.483      9.3255     18.20  .         . Q       . V       .         .
  15.500      9.3508     18.34  .         . Q       . V       .         .
  15.517      9.3762     18.47  .         . Q       . V       .         .
  15.533      9.4019     18.62  .         . Q       . V       .         .
  15.550      9.4277     18.78  .         . Q       . V       .         .
  15.567      9.4539     18.96  .         . Q       . V       .         .
  15.583      9.4802     19.16  .         . Q       . V       .         .
  15.600      9.5069     19.37  .         . Q       . V       .         .
  15.617      9.5339     19.61  .         .  Q      . V       .         .
  15.633      9.5613     19.86  .         .  Q      . V       .         .
  15.650      9.5890     20.13  .         .  Q      . V       .         .
  15.667      9.6171     20.42  .         .  Q      . V       .         .
  15.683      9.6457     20.74  .         .  Q      .  V      .         .
  15.700      9.6747     21.08  .         .   Q     .  V      .         .
  15.717      9.7043     21.45  .         .   Q     .  V      .         .
  15.733      9.7344     21.85  .         .   Q     .  V      .         .
  15.750      9.7651     22.31  .         .   Q     .  V      .         .
  15.767      9.7965     22.81  .         .    Q    .  V      .         .
  15.783      9.8287     23.35  .         .    Q    .  V      .         .
  15.800      9.8616     23.91  .         .    Q    .  V      .         .
  15.817      9.8954     24.52  .         .     Q   .  V      .         .
  15.833      9.9301     25.17  .         .     Q   .  V      .         .
  15.850      9.9657     25.89  .         .      Q  .  V      .         .
  15.867     10.0024     26.62  .         .      Q  .  V      .         .
  15.883     10.0401     27.41  .         .       Q .  V      .         .
  15.900     10.0790     28.23  .         .       Q .   V     .         .
  15.917     10.1191     29.11  .         .        Q.   V     .         .
  15.933     10.1605     30.04  .         .         Q   V     .         .
  15.950     10.2033     31.08  .         .         Q   V     .         .
  15.967     10.2479     32.38  .         .         .Q  V     .         .
  15.983     10.2947     33.96  .         .         . Q V     .         .
  16.000     10.3440     35.76  .         .         .  QV     .         .
  16.017     10.3962     37.95  .         .         .   VQ    .         .
  16.033     10.4524     40.75  .         .         .   V  Q  .         .
  16.050     10.5126     43.74  .         .         .    V   Q.         .
  16.067     10.5769     46.64  .         .         .    V    .Q        .
  16.083     10.6451     49.54  .         .         .    V    .  Q      .
  16.100     10.7170     52.19  .         .         .    V    .   Q     .
  16.117     10.7918     54.31  .         .         .    V    .     Q   .
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 16.133     10.8691     56.14  .         .         .    V    .      Q  .
 16.150     10.9478     57.10  .         .         .     V   .       Q .
 16.167     11.0272     57.64  .         .         .     V   .       Q .
 16.183     11.1060     57.24  .         .         .     V   .       Q .
 16.200     11.1830     55.93  .         .         .     V   .      Q  .
 16.217     11.2566     53.40  .         .         .     V   .    Q    .
 16.233     11.3266     50.84  .         .         .      V  .  Q     .
 16.250     11.3922     47.60  .         .         .      V  .Q       .
 16.267     11.4533     44.38  .         .         .      V Q.        .
 16.283     11.5103     41.37  .         .         .      Q  .        .
 16.300     11.5637     38.74  .         .         .    Q V  .        .
 16.317     11.6134     36.13  .         .         .   Q  V  .        .
 16.333     11.6600     33.81  .         .         . Q    V  .        .
 16.350     11.7037     31.74  .         .         .Q     V  .        .
 16.367     11.7449     29.91  .         .        Q.       V .        .
 16.383     11.7836     28.13  .         .       Q .       V .        .
 16.400     11.8202     26.55  .         .      Q  .       V .        .
 16.417     11.8549     25.18  .         .     Q   .       V .        .
 16.433     11.8880     24.04  .         .     Q   .       V .        .
 16.450     11.9197     23.00  .         .    Q    .       V .        .
 16.467     11.9502     22.15  .         .   Q     .       V .        .
 16.483     11.9798     21.49  .         .   Q     .       V .        .
 16.500     12.0086     20.90  .         .  Q      .       V .        .
 16.517     12.0367     20.38  .         .  Q      .       V .        .
 16.533     12.0641     19.90  .         .  Q      .       V .        .
 16.550     12.0909     19.47  .         . Q       .       V .        .
 16.567     12.1171     19.04  .         . Q       .       V .        .
 16.583     12.1427     18.58  .         . Q       .       V .        .
 16.600     12.1677     18.14  .         . Q       .        V.        .
 16.617     12.1921     17.72  .         .Q        .        V.        .
 16.633     12.2160     17.32  .         .Q        .        V.        .
 16.650     12.2393     16.93  .         .Q        .        V.        .
 16.667     12.2622     16.62  .         .Q        .        V.        .
 16.683     12.2846     16.32  .         Q         .        V.        .
 16.700     12.3067     16.04  .         Q         .        V.        .
 16.717     12.3285     15.78  .         Q         .        V.        .
 16.733     12.3499     15.53  .         Q         .        V.        .
 16.750     12.3709     15.29  .         Q         .        V.        .
 16.767     12.3917     15.06  .         Q         .        V.        .
 16.783     12.4121     14.83  .        Q.         .        V.        .
 16.800     12.4322     14.62  .        Q.         .        V.        .
 16.817     12.4521     14.42  .        Q.         .        V.        .
 16.833     12.4717     14.23  .        Q.         .        V.        .
 16.850     12.4910     14.04  .        Q.         .        V.        .
 16.867     12.5101     13.86  .        Q.         .        V.        .
 16.883     12.5290     13.69  .        Q.         .        V.        .
 16.900     12.5476     13.53  .        Q.         .        V.        .
 16.917     12.5660     13.37  .       Q .         .        V.        .
 16.933     12.5842     13.21  .       Q .         .         V        .
 16.950     12.6022     13.06  .       Q .         .         V        .
 16.967     12.6200     12.91  .       Q .         .         V        .
 16.983     12.6376     12.77  .       Q .         .         V        .
 17.000     12.6550     12.63  .       Q .         .         V        .


****************************************************************************
  FLOW PROCESS FROM NODE   2203.00 TO NODE   2203.00 IS CODE = 3.2
----------------------------------------------------------------------------
  >>>>>FLOW-THROUGH DETENTION BASIN ROUTING MODEL APPLIED TO STREAM #1<<<<<
============================================================================

                    INFLOW
                  (STREAM 1)
                       |
                       |
                       V                __effective depth
                 -----------            |   (and volume)
                |           |    |    |
                |           |    |....V........
                | detention |<-->|           outflow
                |   basin   |    |.........______
```

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                 -----------     |    ^    |  \
                     |           |  dead   |   basin outlet
                     V           | storage |
                 OUTFLOW          ---------
               (STREAM 1)


          ROUTE RUNOFF HYDROGRAPH FROM STREAM NUMBER 1
          THROUGH A FLOW-THROUGH DETENTION BASIN
          SPECIFIED BASIN CONDITIONS ARE AS FOLLOWS:
            DEAD STORAGE(AF) =       0.000
            SPECIFIED DEAD STORAGE(AF) FILLED =      0.000
            SPECIFIED EFFECTIVE VOLUME(AF) FILLED ABOVE OUTLET =      0.000
            DETENTION BASIN CONSTANT LOSS RATE(CFS) =    0.00


          BASIN DEPTH VERSUS OUTFLOW AND STORAGE INFORMATION:

           INTERVAL    DEPTH      OUTFLOW     STORAGE
            NUMBER      (FT)       (CFS)        (AF)
                1       0.00        0.00       0.000
                2       1.00        0.94       1.870
                3       2.00       48.00       2.420
                4       3.00      100.00      20.000
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=========================================================================
 MODIFIED-PULS BASIN ROUTING MODEL RESULTS(1-MINUTE COMPUTATION INTERVALS):
 (Note: Computed EFFECTIVE DEPTH and VOLUME are estimated at the clock time;
        MEAN OUTFLOW is the average value during the unit interval.)
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CLOCK TIME (HRS)	DEAD-STORAGE FILLED(AF)	INFLOW (CFS)	LOSS (CFS)	EFFECTIVE DEPTH(FT)	MEAN OUTFLOW (CFS)	EFFECTIVE VOLUME(AF)
14.017	0.000	10.06	0.00	1.19	9.7	1.973
14.033	0.000	10.11	0.00	1.19	9.8	1.973
14.050	0.000	10.16	0.00	1.19	9.8	1.974
14.067	0.000	10.22	0.00	1.19	9.8	1.974
14.083	0.000	10.29	0.00	1.19	9.9	1.975
14.100	0.000	10.37	0.00	1.19	9.9	1.975
14.117	0.000	10.45	0.00	1.19	10.0	1.976
14.133	0.000	10.54	0.00	1.19	10.0	1.977
14.150	0.000	10.63	0.00	1.20	10.1	1.977
14.167	0.000	10.72	0.00	1.20	10.2	1.978
14.183	0.000	10.82	0.00	1.20	10.2	1.979
14.200	0.000	10.92	0.00	1.20	10.3	1.980
14.217	0.000	11.02	0.00	1.20	10.4	1.981
14.233	0.000	11.11	0.00	1.20	10.5	1.982
14.250	0.000	11.20	0.00	1.20	10.5	1.983
14.267	0.000	11.27	0.00	1.21	10.6	1.983
14.283	0.000	11.35	0.00	1.21	10.7	1.984
14.300	0.000	11.42	0.00	1.21	10.8	1.985
14.317	0.000	11.49	0.00	1.21	10.8	1.986
14.333	0.000	11.55	0.00	1.21	10.9	1.987
14.350	0.000	11.62	0.00	1.21	11.0	1.988
14.367	0.000	11.68	0.00	1.22	11.1	1.989
14.383	0.000	11.74	0.00	1.22	11.1	1.990
14.400	0.000	11.80	0.00	1.22	11.2	1.990
14.417	0.000	11.87	0.00	1.22	11.3	1.991
14.433	0.000	11.92	0.00	1.22	11.3	1.992
14.450	0.000	11.98	0.00	1.22	11.4	1.993
14.467	0.000	12.04	0.00	1.22	11.5	1.994
14.483	0.000	12.11	0.00	1.23	11.5	1.994
14.500	0.000	12.17	0.00	1.23	11.6	1.995
14.517	0.000	12.23	0.00	1.23	11.7	1.996
14.533	0.000	12.29	0.00	1.23	11.7	1.997
14.550	0.000	12.36	0.00	1.23	11.8	1.997
14.567	0.000	12.42	0.00	1.23	11.9	1.998
14.583	0.000	12.49	0.00	1.23	11.9	1.999

14.600	0.000	12.55	0.00	1.24	12.0	2.000
14.617	0.000	12.62	0.00	1.24	12.1	2.000
14.633	0.000	12.69	0.00	1.24	12.1	2.001
14.650	0.000	12.76	0.00	1.24	12.2	2.002
14.667	0.000	12.83	0.00	1.24	12.3	2.003
14.683	0.000	12.90	0.00	1.24	12.3	2.004
14.700	0.000	12.97	0.00	1.24	12.4	2.004
14.717	0.000	13.04	0.00	1.25	12.5	2.005
14.733	0.000	13.12	0.00	1.25	12.5	2.006
14.750	0.000	13.19	0.00	1.25	12.6	2.007
14.767	0.000	13.27	0.00	1.25	12.7	2.008
14.783	0.000	13.34	0.00	1.25	12.7	2.008
14.800	0.000	13.42	0.00	1.25	12.8	2.009
14.817	0.000	13.50	0.00	1.25	12.9	2.010
14.833	0.000	13.58	0.00	1.26	13.0	2.011
14.850	0.000	13.67	0.00	1.26	13.0	2.012
14.867	0.000	13.75	0.00	1.26	13.1	2.013
14.883	0.000	13.84	0.00	1.26	13.2	2.014
14.900	0.000	13.92	0.00	1.26	13.3	2.014
14.917	0.000	14.01	0.00	1.26	13.3	2.015
14.933	0.000	14.10	0.00	1.27	13.4	2.016
14.950	0.000	14.19	0.00	1.27	13.5	2.017
14.967	0.000	14.29	0.00	1.27	13.6	2.018
14.983	0.000	14.38	0.00	1.27	13.7	2.019
15.000	0.000	14.48	0.00	1.27	13.8	2.020
15.017	0.000	14.58	0.00	1.28	13.8	2.021
15.033	0.000	14.68	0.00	1.28	13.9	2.022
15.050	0.000	14.78	0.00	1.28	14.0	2.023
15.067	0.000	14.89	0.00	1.28	14.1	2.024
15.083	0.000	14.99	0.00	1.28	14.2	2.026
15.100	0.000	15.10	0.00	1.28	14.3	2.027
15.117	0.000	15.22	0.00	1.29	14.4	2.028
15.133	0.000	15.33	0.00	1.29	14.5	2.029
15.150	0.000	15.45	0.00	1.29	14.6	2.030
15.167	0.000	15.56	0.00	1.29	14.7	2.031
15.183	0.000	15.69	0.00	1.30	14.8	2.033
15.200	0.000	15.81	0.00	1.30	14.9	2.034
15.217	0.000	15.94	0.00	1.30	15.0	2.035
15.233	0.000	16.07	0.00	1.30	15.1	2.036
15.250	0.000	16.20	0.00	1.30	15.2	2.038
15.267	0.000	16.34	0.00	1.31	15.3	2.039
15.283	0.000	16.48	0.00	1.31	15.5	2.040
15.300	0.000	16.62	0.00	1.31	15.6	2.042
15.317	0.000	16.77	0.00	1.32	15.7	2.043
15.333	0.000	16.92	0.00	1.32	15.8	2.045
15.350	0.000	17.07	0.00	1.32	16.0	2.046
15.367	0.000	17.22	0.00	1.32	16.1	2.048
15.383	0.000	17.37	0.00	1.33	16.2	2.049
15.400	0.000	17.52	0.00	1.33	16.4	2.051
15.417	0.000	17.66	0.00	1.33	16.5	2.053
15.433	0.000	17.79	0.00	1.34	16.6	2.054
15.450	0.000	17.93	0.00	1.34	16.8	2.056
15.467	0.000	18.06	0.00	1.34	16.9	2.057
15.483	0.000	18.20	0.00	1.34	17.0	2.059
15.500	0.000	18.34	0.00	1.35	17.2	2.061
15.517	0.000	18.47	0.00	1.35	17.3	2.062
15.533	0.000	18.62	0.00	1.35	17.5	2.064
15.550	0.000	18.78	0.00	1.36	17.6	2.065
15.567	0.000	18.96	0.00	1.36	17.7	2.067
15.583	0.000	19.16	0.00	1.36	17.9	2.069
15.600	0.000	19.37	0.00	1.36	18.0	2.071
15.617	0.000	19.61	0.00	1.37	18.2	2.073
15.633	0.000	19.86	0.00	1.37	18.4	2.075
15.650	0.000	20.13	0.00	1.38	18.5	2.077
15.667	0.000	20.42	0.00	1.38	18.7	2.079
15.683	0.000	20.74	0.00	1.38	18.9	2.082
15.700	0.000	21.08	0.00	1.39	19.2	2.084
15.717	0.000	21.45	0.00	1.39	19.4	2.087
15.733	0.000	21.85	0.00	1.40	19.6	2.090
15.750	0.000	22.31	0.00	1.41	19.9	2.093
15.767	0.000	22.81	0.00	1.41	20.2	2.097
15.783	0.000	23.35	0.00	1.42	20.5	2.101
15.800	0.000	23.91	0.00	1.43	20.9	2.105
15.817	0.000	24.52	0.00	1.44	21.2	2.110
15.833	0.000	25.17	0.00	1.44	21.6	2.114
15.850	0.000	25.89	0.00	1.45	22.1	2.120
15.867	0.000	26.62	0.00	1.46	22.5	2.125
15.883	0.000	27.41	0.00	1.48	23.0	2.131
15.900	0.000	28.23	0.00	1.49	23.6	2.138
15.917	0.000	29.11	0.00	1.50	24.1	2.145
15.933	0.000	30.04	0.00	1.51	24.7	2.152
15.950	0.000	31.08	0.00	1.53	25.4	2.160
15.967	0.000	32.38	0.00	1.54	26.1	2.168
15.983	0.000	33.96	0.00	1.56	26.9	2.178
16.000	0.000	35.76	0.00	1.58	27.8	2.189
16.017	0.000	37.95	0.00	1.60	28.8	2.202
16.033	0.000	40.75	0.00	1.63	30.0	2.217
16.050	0.000	43.74	0.00	1.66	31.3	2.234
16.067	0.000	46.64	0.00	1.70	32.9	2.253
16.083	0.000	49.54	0.00	1.73	34.6	2.273
16.100	0.000	52.19	0.00	1.77	36.4	2.295
16.117	0.000	54.31	0.00	1.81	38.3	2.317
16.133	0.000	56.14	0.00	1.85	40.1	2.339
16.150	0.000	57.10	0.00	1.89	42.0	2.360
16.167	0.000	57.64	0.00	1.93	43.7	2.379
16.183	0.000	57.24	0.00	1.96	45.2	2.396
16.200	0.000	55.93	0.00	1.98	46.5	2.409
16.217	0.000	53.40	0.00	1.99	47.4	2.417
16.233	0.000	50.84	0.00	2.00	47.9	2.421
16.250	0.000	47.60	0.00	2.00	48.0	2.421
16.267	0.000	44.38	0.00	1.99	47.8	2.416
16.283	0.000	41.37	0.00	1.98	47.3	2.408
16.300	0.000	38.74	0.00	1.96	46.5	2.397
16.317	0.000	36.13	0.00	1.93	45.5	2.384
16.333	0.000	33.81	0.00	1.91	44.3	2.370
16.350	0.000	31.74	0.00	1.88	43.0	2.354
16.367	0.000	29.91	0.00	1.85	41.7	2.338
16.383	0.000	28.13	0.00	1.82	40.3	2.321
16.400	0.000	26.55	0.00	1.79	38.8	2.304
16.417	0.000	25.18	0.00	1.76	37.4	2.287
16.433	0.000	24.04	0.00	1.73	36.0	2.271
16.450	0.000	23.00	0.00	1.70	34.6	2.255
16.467	0.000	22.15	0.00	1.67	33.2	2.240
16.483	0.000	21.49	0.00	1.65	32.0	2.225
16.500	0.000	20.90	0.00	1.62	30.8	2.212
16.517	0.000	20.38	0.00	1.60	29.6	2.199
16.533	0.000	19.90	0.00	1.58	28.6	2.187
16.550	0.000	19.47	0.00	1.56	27.6	2.176
16.567	0.000	19.04	0.00	1.54	26.7	2.165
16.583	0.000	18.58	0.00	1.52	25.8	2.155
16.600	0.000	18.14	0.00	1.50	25.0	2.146
16.617	0.000	17.72	0.00	1.49	24.2	2.137
16.633	0.000	17.32	0.00	1.47	23.4	2.129
16.650	0.000	16.93	0.00	1.46	22.7	2.121
16.667	0.000	16.62	0.00	1.44	22.1	2.113
16.683	0.000	16.32	0.00	1.43	21.4	2.106
16.700	0.000	16.04	0.00	1.42	20.9	2.100
16.717	0.000	15.78	0.00	1.41	20.3	2.093
16.733	0.000	15.53	0.00	1.40	19.8	2.087
16.750	0.000	15.29	0.00	1.39	19.3	2.082
16.767	0.000	15.06	0.00	1.38	18.8	2.077
16.783	0.000	14.83	0.00	1.37	18.4	2.072
16.800	0.000	14.62	0.00	1.36	18.0	2.067
16.817	0.000	14.42	0.00	1.35	17.6	2.063
16.833	0.000	14.23	0.00	1.34	17.2	2.059
16.850	0.000	14.04	0.00	1.34	16.9	2.055
16.867	0.000	13.86	0.00	1.33	16.6	2.051
16.883	0.000	13.69	0.00	1.32	16.3	2.047
16.900	0.000	13.53	0.00	1.32	16.0	2.044
16.917	0.000	13.37	0.00	1.31	15.7	2.041
16.933	0.000	13.21	0.00	1.30	15.4	2.038
16.950	0.000	13.06	0.00	1.30	15.2	2.035

16.967	0.000	12.91	0.00	1.29	14.9	2.032
16.983	0.000	12.77	0.00	1.29	14.7	2.029
17.000	0.000	12.63	0.00	1.29	14.5	2.027
17.017	0.000	12.50	0.00	1.28	14.3	2.024
17.033	0.000	12.36	0.00	1.28	14.1	2.022
17.050	0.000	12.22	0.00	1.27	13.9	2.020
17.067	0.000	12.09	0.00	1.27	13.7	2.018
17.083	0.000	11.94	0.00	1.26	13.5	2.016
17.100	0.000	11.79	0.00	1.26	13.3	2.013
17.117	0.000	11.65	0.00	1.26	13.1	2.011
17.133	0.000	11.50	0.00	1.25	13.0	2.009
17.150	0.000	11.35	0.00	1.25	12.8	2.007
17.167	0.000	11.20	0.00	1.25	12.6	2.005
17.183	0.000	11.04	0.00	1.24	12.4	2.004
17.200	0.000	10.89	0.00	1.24	12.3	2.002
17.217	0.000	10.74	0.00	1.24	12.1	2.000
17.233	0.000	10.60	0.00	1.23	12.0	1.998
17.250	0.000	10.47	0.00	1.23	11.8	1.996
17.267	0.000	10.35	0.00	1.23	11.6	1.994
17.283	0.000	10.24	0.00	1.22	11.5	1.993
17.300	0.000	10.13	0.00	1.22	11.3	1.991
17.317	0.000	10.02	0.00	1.22	11.2	1.989
17.333	0.000	9.93	0.00	1.21	11.1	1.988
17.350	0.000	9.83	0.00	1.21	10.9	1.986
17.367	0.000	9.74	0.00	1.21	10.8	1.985
17.383	0.000	9.65	0.00	1.21	10.7	1.983
17.400	0.000	9.57	0.00	1.20	10.6	1.982
17.417	0.000	9.48	0.00	1.20	10.5	1.980
17.433	0.000	9.41	0.00	1.20	10.3	1.979
17.450	0.000	9.33	0.00	1.20	10.2	1.978
17.467	0.000	9.25	0.00	1.19	10.1	1.977
17.483	0.000	9.18	0.00	1.19	10.0	1.976
17.500	0.000	9.11	0.00	1.19	9.9	1.974
17.517	0.000	9.04	0.00	1.19	9.8	1.973
17.533	0.000	8.97	0.00	1.19	9.7	1.972
17.550	0.000	8.90	0.00	1.18	9.6	1.971
17.567	0.000	8.83	0.00	1.18	9.6	1.970
17.583	0.000	8.77	0.00	1.18	9.5	1.969
17.600	0.000	8.70	0.00	1.18	9.4	1.968
17.617	0.000	8.64	0.00	1.18	9.3	1.967
17.633	0.000	8.57	0.00	1.18	9.2	1.966
17.650	0.000	8.51	0.00	1.17	9.2	1.966
17.667	0.000	8.45	0.00	1.17	9.1	1.965
17.683	0.000	8.39	0.00	1.17	9.0	1.964
17.700	0.000	8.34	0.00	1.17	8.9	1.963
17.717	0.000	8.28	0.00	1.17	8.9	1.962
17.733	0.000	8.22	0.00	1.17	8.8	1.961
17.750	0.000	8.17	0.00	1.16	8.7	1.961
17.767	0.000	8.11	0.00	1.16	8.7	1.960
17.783	0.000	8.06	0.00	1.16	8.6	1.959
17.800	0.000	8.00	0.00	1.16	8.5	1.958
17.817	0.000	7.95	0.00	1.16	8.5	1.958
17.833	0.000	7.90	0.00	1.16	8.4	1.957
17.850	0.000	7.85	0.00	1.16	8.4	1.956
17.867	0.000	7.80	0.00	1.16	8.3	1.956
17.883	0.000	7.75	0.00	1.15	8.2	1.955
17.900	0.000	7.70	0.00	1.15	8.2	1.954
17.917	0.000	7.65	0.00	1.15	8.1	1.954
17.933	0.000	7.60	0.00	1.15	8.1	1.953
17.950	0.000	7.56	0.00	1.15	8.0	1.952
17.967	0.000	7.51	0.00	1.15	8.0	1.952
17.983	0.000	7.47	0.00	1.15	7.9	1.951
18.000	0.000	7.42	0.00	1.15	7.9	1.951

```
--------------------------------------------------------------------------
  PROCESS SUMMARY OF STORAGE:
    INFLOW  VOLUME =     16.760 AF
    BASIN  STORAGE =      0.005 AF (WITH      0.000 AF INITIALLY FILLED)
    OUTFLOW VOLUME =     16.755 AF
    LOSS    VOLUME =      0.000 AF
```

```
**************************************************************************
  FLOW PROCESS FROM NODE    221.10 TO NODE    224.00 IS CODE =   1
--------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
==========================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #2)

         WATERSHED AREA =      22.100 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.177 HOURS
         DESERT(UNDEVELOPED) S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.860
         LOW LOSS FRACTION = 0.920
         *HYDROGRAPH MODEL #7 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.27
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.82
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.32
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  2.65
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  4.10
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) = 10.70

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
           5-MINUTE FACTOR = 0.999
          30-MINUTE FACTOR = 0.999
           1-HOUR FACTOR = 0.999
           3-HOUR FACTOR = 1.000
           6-HOUR FACTOR = 1.000
          24-HOUR FACTOR = 1.000

         UNIT HYDROGRAPH TIME UNIT =   1.000 MINUTES
         UNIT INTERVAL PERCENTAGE OF LAG-TIME =   9.416


         RUNOFF HYDROGRAPH LISTING LIMITS:
         MODEL TIME(HOURS) FOR BEGINNING OF RESULTS =  14.00
         MODEL TIME(HOURS) FOR END OF RESULTS =  17.00


==========================================================================
                       UNIT HYDROGRAPH DETERMINATION

--------------------------------------------------------------------------
    INTERVAL          "S" GRAPH          UNIT HYDROGRAPH
     NUMBER          MEAN VALUES          ORDINATES(CFS)
--------------------------------------------------------------------------
        1                0.414                 5.537
        2                1.413                13.350
        3                3.000                21.199
        4                5.173                29.049
        5                7.937                36.936
        6               11.783                51.387
        7               17.909                81.871
        8               26.815               119.023
        9               35.612               117.557
       10               43.163               100.912
       11               49.195                80.607
       12               54.307                68.312
       13               58.498                56.002
       14               61.935                45.939
       15               64.863                39.126
       16               67.431                34.310
       17               69.788                31.505
       18               71.944                28.813
       19               73.821                25.074
       20               75.516                22.660
       21               77.129                21.559
       22               78.613                19.832
       23               79.866                16.741
       24               81.108                16.594
```

25	82.215	14.798
26	83.232	13.592
27	84.238	13.437
28	85.159	12.309
29	86.063	12.080
30	86.919	11.442
31	87.676	10.110
32	88.427	10.043
33	89.062	8.479
34	89.627	7.551
35	90.187	7.492
36	90.719	7.110
37	91.247	7.049
38	91.748	6.700
39	92.201	6.057
40	92.652	6.029
41	93.080	5.710
42	93.494	5.536
43	93.896	5.369
44	94.227	4.424
45	94.547	4.274
46	94.867	4.280
47	95.187	4.280
48	95.505	4.252
49	95.774	3.587
50	96.019	3.274
51	96.263	3.271
52	96.508	3.274
53	96.753	3.271
54	96.967	2.861
55	97.137	2.273
56	97.307	2.262
57	97.476	2.267
58	97.646	2.267
59	97.802	2.090
60	97.902	1.336
61	97.997	1.264
62	98.091	1.258
63	98.185	1.258
64	98.280	1.270
65	98.388	1.441
66	98.501	1.508
67	98.614	1.513
68	98.727	1.513
69	98.840	1.508
70	98.953	1.508
71	99.066	1.508
72	99.179	1.508
73	99.292	1.508
74	99.404	1.508
75	99.517	1.508
76	99.630	1.508
77	99.743	1.508
78	99.856	1.508
79	99.969	1.508
80	100.000	0.419

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 17.4757
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 2.2280

==========

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

==========

HYDROGRAPH IN ONE-MINUTE UNIT INTERVALS(CFS)
(Notes: Time indicated is at END of Each Unit Intervals.
Peak 5-minute rainfall intensity is modeled as
a constant value for entire 5-minute period.)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0. 7.5 15.0 22.5 30.0
14.000	0.7694	0.95	.Q . V . . .
14.017	0.7707	0.95	.Q . V . . .
14.033	0.7720	0.95	.Q . V . . .
14.050	0.7733	0.95	.Q . V . . .
14.067	0.7746	0.96	.Q . V . . .
14.083	0.7760	0.96	.Q . V . . .
14.100	0.7773	0.96	.Q . V . . .
14.117	0.7786	0.97	.Q . V . . .
14.133	0.7800	0.97	.Q . V . . .
14.150	0.7813	0.97	.Q . V . . .
14.167	0.7826	0.98	.Q . V . . .
14.183	0.7840	0.98	.Q . V . . .
14.200	0.7854	0.98	.Q . V . . .
14.217	0.7867	0.99	.Q . V . . .
14.233	0.7881	0.99	.Q . V . . .
14.250	0.7895	0.99	.Q . V . . .
14.267	0.7908	1.00	.Q . V . . .
14.283	0.7922	1.00	.Q . V . . .
14.300	0.7936	1.00	.Q . V . . .
14.317	0.7950	1.01	.Q . V . . .
14.333	0.7964	1.01	.Q . V . . .
14.350	0.7978	1.01	.Q . V . . .
14.367	0.7992	1.02	.Q . V . . .
14.383	0.8006	1.02	.Q . V . . .
14.400	0.8020	1.02	.Q . V . . .
14.417	0.8034	1.03	.Q . V . . .
14.433	0.8048	1.03	.Q . V . . .
14.450	0.8062	1.04	.Q . V . . .
14.467	0.8077	1.04	.Q . V . . .
14.483	0.8091	1.04	.Q . V . . .
14.500	0.8106	1.05	.Q . V . . .
14.517	0.8120	1.05	.Q . V . . .
14.533	0.8135	1.05	.Q . V . . .
14.550	0.8149	1.06	.Q . V . . .
14.567	0.8164	1.06	.Q . V . . .
14.583	0.8178	1.07	.Q . V . . .
14.600	0.8193	1.07	.Q . V . . .
14.617	0.8208	1.07	.Q . V . . .
14.633	0.8223	1.08	.Q . V . . .
14.650	0.8238	1.08	.Q . V . . .
14.667	0.8253	1.09	.Q . V . . .
14.683	0.8268	1.09	.Q . V . . .
14.700	0.8283	1.09	.Q . V . . .
14.717	0.8298	1.10	.Q . V . . .
14.733	0.8313	1.10	.Q . V . . .
14.750	0.8328	1.11	.Q . V . . .
14.767	0.8344	1.11	.Q . V . . .
14.783	0.8359	1.12	.Q . V . . .
14.800	0.8374	1.12	.Q . V . . .
14.817	0.8390	1.13	.Q . V . . .
14.833	0.8406	1.13	.Q . V . . .
14.850	0.8421	1.14	.Q . V . . .
14.867	0.8437	1.14	.Q . V . . .
14.883	0.8453	1.15	.Q . V . . .
14.900	0.8469	1.15	.Q . V . . .
14.917	0.8485	1.16	.Q . V . . .
14.933	0.8501	1.16	.Q . V . . .

```
14.950      0.8517      1.17  .Q        .    V    .         .         .
14.967      0.8533      1.17  .Q        .    V    .         .         .
14.983      0.8549      1.18  .Q        .    V    .         .         .
15.000      0.8565      1.19  .Q        .    V    .         .         .
15.017      0.8582      1.19  .Q        .    V    .         .         .
15.033      0.8598      1.20  .Q        .    V    .         .         .
15.050      0.8615      1.20  .Q        .    V    .         .         .
15.067      0.8632      1.21  .Q        .    V    .         .         .
15.083      0.8648      1.22  .Q        .    V    .         .         .
15.100      0.8665      1.22  .Q        .    V    .         .         .
15.117      0.8682      1.23  .Q        .    V    .         .         .
15.133      0.8699      1.24  .Q        .    V    .         .         .
15.150      0.8716      1.24  .Q        .    V    .         .         .
15.167      0.8733      1.25  .Q        .    V    .         .         .
15.183      0.8751      1.26  .Q        .    V    .         .         .
15.200      0.8768      1.26  .Q        .    V    .         .         .
15.217      0.8786      1.27  .Q        .    V    .         .         .
15.233      0.8803      1.28  .Q        .    V    .         .         .
15.250      0.8821      1.29  .Q        .    V    .         .         .
15.267      0.8839      1.30  .Q        .    V    .         .         .
15.283      0.8857      1.30  .Q        .    V    .         .         .
15.300      0.8875      1.31  .Q        .    V    .         .         .
15.317      0.8893      1.32  .Q        .    V    .         .         .
15.333      0.8911      1.33  .Q        .    V    .         .         .
15.350      0.8930      1.34  .Q        .     V   .         .         .
15.367      0.8948      1.35  .Q        .     V   .         .         .
15.383      0.8967      1.36  .Q        .     V   .         .         .
15.400      0.8986      1.37  .Q        .     V   .         .         .
15.417      0.9005      1.39  .Q        .     V   .         .         .
15.433      0.9025      1.41  .Q        .     V   .         .         .
15.450      0.9044      1.43  .Q        .     V   .         .         .
15.467      0.9064      1.46  .Q        .     V   .         .         .
15.483      0.9085      1.49  .Q        .     V   .         .         .
15.500      0.9106      1.53  . Q       .     V   .         .         .
15.517      0.9127      1.57  . Q       .     V   .         .         .
15.533      0.9150      1.63  . Q       .     V   .         .         .
15.550      0.9173      1.70  . Q       .     V   .         .         .
15.567      0.9198      1.79  . Q       .     V   .         .         .
15.583      0.9224      1.89  . Q       .     V   .         .         .
15.600      0.9251      2.00  . Q       .     V   .         .         .
15.617      0.9281      2.13  . Q       .     V   .         .         .
15.633      0.9312      2.27  .  Q      .     V   .         .         .
15.650      0.9345      2.42  .  Q      .     V   .         .         .
15.667      0.9381      2.59  .  Q      .     V   .         .         .
15.683      0.9419      2.75  .  Q      .     V   .         .         .
15.700      0.9459      2.91  .  Q      .     V   .         .         .
15.717      0.9501      3.07  .   Q     .      V  .         .         .
15.733      0.9546      3.23  .   Q     .      V  .         .         .
15.750      0.9593      3.39  .   Q     .      V  .         .         .
15.767      0.9641      3.55  .   Q     .      V  .         .         .
15.783      0.9692      3.66  .   Q     .      V  .         .         .
15.800      0.9743      3.73  .   Q     .      V  .         .         .
15.817      0.9796      3.82  .    Q    .      V  .         .         .
15.833      0.9851      3.98  .    Q    .      V  .         .         .
15.850      0.9909      4.20  .    Q    .      V  .         .         .
15.867      0.9970      4.48  .    Q    .      V  .         .         .
15.883      1.0036      4.81  .     Q   .       V .         .         .
15.900      1.0108      5.22  .     Q   .       V .         .         .
15.917      1.0187      5.68  .      Q  .       V .         .         .
15.933      1.0272      6.22  .       Q .       V .         .         .
15.950      1.0367      6.85  .        Q.       V .         .         .
15.967      1.0473      7.69  .         Q       V .         .         .
15.983      1.0594      8.79  .         .Q       V.         .         .
16.000      1.0733     10.15  .         .  Q     V.         .         .
16.017      1.0895     11.76  .         .    Q   V.         .         .
16.033      1.1083     13.63  .         .        QV.        .         .
16.050      1.1300     15.76  .         .         VQ        .         .
16.067      1.1553     18.37  .         .         V   Q     .         .
16.083      1.1848     21.43  .         .         .V      Q .         .
16.100      1.2180     24.06  .         .         .V        . Q       .
16.117      1.2537     25.91  .         .         . V       .   Q     .
```

```
16.133      1.2906     26.79  .         .         .  V      .    Q    .
16.150      1.3270     26.46  .         .         .  V      .    Q    .
16.167      1.3610     24.72  .         .         .   V     . Q        .
16.183      1.3920     22.45  .         .         .   V    Q.          .
16.200      1.4198     20.20  .         .         .    VQ   .          .
16.217      1.4449     18.23  .         .         .   QV    .          .
16.233      1.4676     16.48  .         .        .Q    V   .          .
16.250      1.4882     14.98  .         .       Q.     V   .          .
16.267      1.5071     13.71  .         .      Q .      V  .          .
16.283      1.5245     12.65  .         .     Q  .      V  .          .
16.300      1.5408     11.80  .         .    Q   .      V  .          .
16.317      1.5560     11.03  .         .   Q    .      V  .          .
16.333      1.5701     10.27  .         .  Q     .       V .          .
16.350      1.5833      9.59  .         . Q      .       V .          .
16.367      1.5957      8.96  .         .Q       .       V .          .
16.383      1.6072      8.34  .         .Q       .       V .          .
16.400      1.6179      7.77  .         Q        .        V.          .
16.417      1.6279      7.28  .        Q.        .        V.          .
16.433      1.6373      6.82  .        Q.        .        V.          .
16.450      1.6461      6.42  .       Q .        .        V.          .
16.467      1.6545      6.06  .       Q .        .        V.          .
16.483      1.6624      5.73  .      Q  .        .        V.          .
16.500      1.6698      5.41  .      Q  .        .        V.          .
16.517      1.6769      5.11  .     Q   .        .         V          .
16.533      1.6835      4.83  .     Q   .        .         V          .
16.550      1.6898      4.59  .     Q   .        .         V          .
16.567      1.6959      4.37  .    Q    .        .         V          .
16.583      1.7016      4.18  .    Q    .        .         V          .
16.600      1.7072      4.02  .    Q    .        .         V          .
16.617      1.7125      3.87  .    Q    .        .         V          .
16.633      1.7176      3.73  .   Q     .        .         V          .
16.650      1.7226      3.59  .   Q     .        .         V          .
16.667      1.7273      3.46  .   Q     .        .         .V         .
16.683      1.7319      3.34  .   Q     .        .         .V         .
16.700      1.7364      3.21  .   Q     .        .         .V         .
16.717      1.7406      3.10  .   Q     .        .         .V         .
16.733      1.7447      2.99  .  Q      .        .         .V         .
16.750      1.7487      2.89  .  Q      .        .         .V         .
16.767      1.7526      2.80  .  Q      .        .         .V         .
16.783      1.7563      2.71  .  Q      .        .         .V         .
16.800      1.7599      2.62  .  Q      .        .         .V         .
16.817      1.7634      2.54  .  Q      .        .         .V         .
16.833      1.7668      2.45  .  Q      .        .         .V         .
16.850      1.7700      2.38  .  Q      .        .         .V         .
16.867      1.7732      2.30  .  Q      .        .         .V         .
16.883      1.7763      2.22  . Q       .        .         .V         .
16.900      1.7792      2.15  . Q       .        .         .V         .
16.917      1.7821      2.08  . Q       .        .         .V         .
16.933      1.7849      2.01  . Q       .        .         . V        .
16.950      1.7875      1.94  . Q       .        .         . V        .
16.967      1.7901      1.88  . Q       .        .         . V        .
16.983      1.7926      1.82  . Q       .        .         . V        .
17.000      1.7950      1.76  . Q       .        .         . V        .
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    223.00 TO NODE    223.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    223.00 TO NODE    223.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================

            STREAM HYDROGRAPH IN  ONE-MINUTE UNIT INTERVALS(CFS)
         (Notes: Time indicated is at END of Each Unit Intervals.
                 Peak 5-minute rainfall intensity is modeled as
```

a constant value for entire 5-minute period.)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	17.5	35.0	52.5	70.0
14.000	6.4627	10.61	. Q . V	.	.	.	.
14.017	6.4774	10.66	. Q . V	.	.	.	.
14.033	6.4922	10.70	. Q . V	.	.	.	.
14.050	6.5070	10.75	. Q . V	.	.	.	.
14.067	6.5218	10.80	. Q . V	.	.	.	.
14.083	6.5368	10.85	. Q . V	.	.	.	.
14.100	6.5518	10.90	. Q . V	.	.	.	.
14.117	6.5669	10.96	. Q . V	.	.	.	.
14.133	6.5820	11.02	. Q . V	.	.	.	.
14.150	6.5973	11.08	. Q . V	.	.	.	.
14.167	6.6127	11.15	. Q . V	.	.	.	.
14.183	6.6281	11.22	. Q . V	.	.	.	.
14.200	6.6437	11.29	. Q . V	.	.	.	.
14.217	6.6593	11.37	. Q . V	.	.	.	.
14.233	6.6751	11.45	. Q . V	.	.	.	.
14.250	6.6910	11.53	. Q . V	.	.	.	.
14.267	6.7070	11.61	. Q . V	.	.	.	.
14.283	6.7231	11.69	. Q . V	.	.	.	.
14.300	6.7393	11.77	. Q . V	.	.	.	.
14.317	6.7556	11.85	. Q . V	.	.	.	.
14.333	6.7720	11.93	. Q . V	.	.	.	.
14.350	6.7886	12.01	. Q . V	.	.	.	.
14.367	6.8052	12.08	. Q . V	.	.	.	.
14.383	6.8220	12.16	. Q . V	.	.	.	.
14.400	6.8388	12.23	. Q . V	.	.	.	.
14.417	6.8558	12.31	. Q . V	.	.	.	.
14.433	6.8728	12.38	. Q . V	.	.	.	.
14.450	6.8900	12.45	. Q . V	.	.	.	.
14.467	6.9072	12.52	. Q . V	.	.	.	.
14.483	6.9245	12.59	. Q . V	.	.	.	.
14.500	6.9420	12.66	. Q . V	.	.	.	.
14.517	6.9595	12.73	. Q . V	.	.	.	.
14.533	6.9771	12.80	. Q . V	.	.	.	.
14.550	6.9949	12.87	. Q . V	.	.	.	.
14.567	7.0127	12.93	. Q . V	.	.	.	.
14.583	7.0306	13.00	. Q . V	.	.	.	.
14.600	7.0486	13.07	. Q . V	.	.	.	.
14.617	7.0667	13.14	. Q . V	.	.	.	.
14.633	7.0849	13.21	. Q . V	.	.	.	.
14.650	7.1032	13.28	. Q . V	.	.	.	.
14.667	7.1216	13.35	. Q . V	.	.	.	.
14.683	7.1401	13.42	. Q . V	.	.	.	.
14.700	7.1586	13.49	. Q . V	.	.	.	.
14.717	7.1773	13.56	. Q . V	.	.	.	.
14.733	7.1961	13.64	. Q . V	.	.	.	.
14.750	7.2150	13.71	. Q . V	.	.	.	.
14.767	7.2340	13.78	. Q . V	.	.	.	.
14.783	7.2531	13.86	. Q . V	.	.	.	.
14.800	7.2723	13.94	. Q . V	.	.	.	.
14.817	7.2916	14.01	. Q . V	.	.	.	.
14.833	7.3110	14.09	. Q . V	.	.	.	.
14.850	7.3305	14.17	. Q . V	.	.	.	.
14.867	7.3501	14.25	. Q . V	.	.	.	.
14.883	7.3699	14.33	. Q . V	.	.	.	.
14.900	7.3897	14.41	. Q . V	.	.	.	.
14.917	7.4097	14.50	. Q . V	.	.	.	.
14.933	7.4298	14.58	. Q . V	.	.	.	.
14.950	7.4500	14.67	. Q . V	.	.	.	.
14.967	7.4703	14.76	. Q . V	.	.	.	.
14.983	7.4908	14.85	. Q . V	.	.	.	.
15.000	7.5113	14.94	. Q . V	.	.	.	.
15.017	7.5320	15.03	. Q . V	.	.	.	.
15.033	7.5529	15.12	. Q . V	.	.	.	.
15.050	7.5738	15.22	. Q . V	.	.	.	.
15.067	7.5949	15.32	. Q . V	.	.	.	.
15.083	7.6162	15.42	. Q . V	.	.	.	.
15.100	7.6375	15.52	. Q . V	.	.	.	.
15.117	7.6591	15.62	. Q . V	.	.	.	.
15.133	7.6807	15.72	. Q . V	.	.	.	.
15.150	7.7025	15.83	. Q. V	.	.	.	.
15.167	7.7245	15.94	. Q. V	.	.	.	.
15.183	7.7466	16.05	. Q. V	.	.	.	.
15.200	7.7689	16.17	. Q. V	.	.	.	.
15.217	7.7913	16.28	. Q. V	.	.	.	.
15.233	7.8139	16.40	. Q. V	.	.	.	.
15.250	7.8366	16.52	. Q. V	.	.	.	.
15.267	7.8595	16.64	. Q. V	.	.	.	.
15.283	7.8826	16.77	. Q. V	.	.	.	.
15.300	7.9059	16.90	. Q. V	.	.	.	.
15.317	7.9294	17.03	. Q. V	.	.	.	.
15.333	7.9530	17.17	. Q. V	.	.	.	.
15.350	7.9769	17.31	. Q. V	.	.	.	.
15.367	8.0009	17.45	. Q. V	.	.	.	.
15.383	8.0251	17.59	. Q V	.	.	.	.
15.400	8.0496	17.74	. Q V	.	.	.	.
15.417	8.0742	17.89	. Q V	.	.	.	.
15.433	8.0991	18.04	. Q V	.	.	.	.
15.450	8.1241	18.20	. Q V	.	.	.	.
15.467	8.1494	18.36	. Q V	.	.	.	.
15.483	8.1750	18.53	. Q V	.	.	.	.
15.500	8.2007	18.71	. Q V	.	.	.	.
15.517	8.2267	18.89	. Q V	.	.	.	.
15.533	8.2530	19.08	. Q V	.	.	.	.
15.550	8.2796	19.29	. .Q V	.	.	.	.
15.567	8.3065	19.52	. .Q V	.	.	.	.
15.583	8.3337	19.77	. .Q V	.	.	.	.
15.600	8.3613	20.04	. .Q V	.	.	.	.
15.617	8.3893	20.33	. .Q V	.	.	.	.
15.633	8.4177	20.64	. .Q V	.	.	.	.
15.650	8.4466	20.97	. .Q V	.	.	.	.
15.667	8.4760	21.33	. . Q V	.	.	.	.
15.683	8.5059	21.70	. . Q V	.	.	.	.
15.700	8.5363	22.08	. . Q V	.	.	.	.
15.717	8.5672	22.47	. . Q V	.	.	.	.
15.733	8.5988	22.88	. . Q V	.	.	.	.
15.750	8.6309	23.31	. . Q V	.	.	.	.
15.767	8.6636	23.76	. . Q V	.	.	.	.
15.783	8.6969	24.19	. . Q V	.	.	.	.
15.800	8.7308	24.61	. . Q V	.	.	.	.
15.817	8.7654	25.07	. . Q V	.	.	.	.
15.833	8.8007	25.63	. . Q V	.	.	.	.
15.850	8.8369	26.28	. . Q V	.	.	.	.
15.867	8.8741	27.02	. . Q V	.	.	.	.
15.883	8.9124	27.86	. . Q V	.	.	.	.
15.900	8.9521	28.79	. . Q V	.	.	.	.
15.917	8.9932	29.82	. . QV	.	.	.	.
15.933	9.0358	30.97	. . Q V.	.	.	.	.
15.950	9.0802	32.24	. . QV.	.	.	.	.
15.967	9.1268	33.79	. . Q.	.	.	.	.
15.983	9.1759	35.68	. . VQ	.	.	.	.
16.000	9.2282	37.92	. . V.Q	.	.	.	.
16.017	9.2840	40.54	. . V. Q	.	.	.	.
16.033	9.3440	43.59	. . V. Q	.	.	.	.
16.050	9.4089	47.09	. . V. Q	.	.	.	.
16.067	9.4795	51.24	. . V.	Q.	.	.	.
16.083	9.5566	56.00	. . V	.Q	.	.	.
16.100	9.6399	60.43	. . V	. Q	.	.	.
16.117	9.7282	64.16	. . V	.	Q	.	.
16.133	9.8204	66.93	. . V	.	.	Q	.
16.150	9.9147	68.44	. . V	.	.	Q.	.
16.167	10.0089	68.41	. . .V	.	.	Q.	.
16.183	10.1021	67.67	. . .V	.	.	Q	.
16.200	10.1940	66.68	. . .V	.	.	Q	.
16.217	10.2844	65.62	. . .V	.	Q	.	.
16.233	10.3730	64.36	. . .V	.	Q	.	.
16.250	10.4598	62.98	. . . V	.	Q	.	.
16.267	10.5445	61.53	. . . V	.	Q	.	.
16.283	10.6271	59.94	. . . V	.	Q	.	.

```
16.300     10.7074     58.29  .         .         . V       .  Q      .
16.317     10.7852     56.51  .         .         . V       . Q       .
16.333     10.8604     54.58  .         .         . V       .Q        .
16.350     10.9329     52.62  .         .         .  V      Q         .
16.367     11.0026     50.63  .         .         .  V    Q .         .
16.383     11.0696     48.60  .         .         .  V   Q  .         .
16.400     11.1337     46.60  .         .         .  V  Q   .         .
16.417     11.1953     44.66  .         .         .  V Q    .         .
16.433     11.2542     42.78  .         .         .  VQ     .         .
16.450     11.3107     41.00  .         .         .  Q      .         .
16.467     11.3648     39.30  .         .         . QV      .         .
16.483     11.4167     37.70  .         .         .Q  V     .         .
16.500     11.4666     36.18  .         .         Q   V     .         .
16.517     11.5144     34.75  .         .        Q.   V     .         .
16.533     11.5604     33.42  .         .        Q.   V     .         .
16.550     11.6048     32.19  .         .       Q .   V     .         .
16.567     11.6475     31.04  .         .      Q  .   V     .         .
16.583     11.6888     29.98  .         .      Q  .   V     .         .
16.600     11.7287     28.98  .         .     Q   .   V     .         .
16.617     11.7674     28.05  .         .     Q   .   V     .         .
16.633     11.8048     27.17  .         .    Q    .   V     .         .
16.650     11.8411     26.33  .         .    Q    .   V     .         .
16.667     11.8762     25.54  .         .   Q     .    V    .         .
16.683     11.9104     24.78  .         .   Q     .    V    .         .
16.700     11.9435     24.08  .         .  Q      .    V    .         .
16.717     11.9758     23.41  .         .  Q      .    V    .         .
16.733     12.0072     22.78  .         .  Q      .    V    .         .
16.750     12.0377     22.19  .         . Q       .    V    .         .
16.767     12.0675     21.64  .         . Q       .    V    .         .
16.783     12.0966     21.12  .         . Q       .    V    .         .
16.800     12.1250     20.62  .         .Q        .    V    .         .
16.817     12.1528     20.15  .         .Q        .    V    .         .
16.833     12.1799     19.70  .         .Q        .    V    .         .
16.850     12.2065     19.28  .         .Q        .    V    .         .
16.867     12.2325     18.87  .         Q         .    V    .         .
16.883     12.2579     18.49  .         Q         .    V    .         .
16.900     12.2829     18.12  .         Q         .    V    .         .
16.917     12.3074     17.76  .         Q         .    V    .         .
16.933     12.3314     17.43  .        Q.         .    V    .         .
16.950     12.3549     17.11  .        Q.         .     V   .         .
16.967     12.3781     16.80  .        Q.         .     V   .         .
16.983     12.4008     16.51  .        Q.         .     V   .         .
17.000     12.4232     16.23  .        Q.         .     V   .         .
17.017     12.4452     15.97  .        Q.         .     V   .         .
17.033     12.4668     15.74  .       Q .         .     V   .         .
17.050     12.4882     15.53  .       Q .         .     V   .         .
17.067     12.5093     15.32  .       Q .         .     V   .         .
17.083     12.5302     15.12  .       Q .         .     V   .         .
17.100     12.5507     14.93  .       Q .         .     V   .         .
17.117     12.5710     14.74  .       Q .         .     V   .         .
17.133     12.5911     14.55  .       Q .         .     V   .         .
17.150     12.6109     14.36  .       Q .         .     V   .         .
17.167     12.6304     14.17  .       Q .         .     V   .         .
17.183     12.6496     13.99  .      Q  .         .     V   .         .
17.200     12.6686     13.80  .      Q  .         .     V   .         .
17.217     12.6874     13.61  .      Q  .         .     V   .         .
17.233     12.7059     13.43  .      Q  .         .     V   .         .
17.250     12.7241     13.24  .      Q  .         .     V   .         .
17.267     12.7421     13.06  .      Q  .         .     V   .         .
17.283     12.7598     12.85  .      Q  .         .     V   .         .
17.300     12.7772     12.64  .      Q  .         .     V   .         .
17.317     12.7944     12.43  .      Q  .         .     V   .         .
17.333     12.8112     12.23  .     Q   .         .     V   .         .
17.350     12.8278     12.04  .     Q   .         .      V  .         .
17.367     12.8441     11.87  .     Q   .         .      V  .         .
17.383     12.8603     11.72  .     Q   .         .      V  .         .
17.400     12.8762     11.58  .     Q   .         .      V  .         .
17.417     12.8920     11.45  .     Q   .         .      V  .         .
17.433     12.9076     11.33  .     Q   .         .      V  .         .
17.450     12.9231     11.21  .     Q   .         .      V  .         .
17.467     12.9383     11.09  .     Q   .         .      V  .         .
17.483     12.9535     10.98  .     Q   .         .      V  .         .
17.500     12.9684     10.88  .     Q   .         .      V  .         .
17.517     12.9833     10.77  .     Q   .         .      V  .         .
17.533     12.9980     10.67  .     Q   .         .      V  .         .
17.550     13.0125     10.57  .     Q   .         .      V  .         .
17.567     13.0270     10.48  .    Q    .         .      V  .         .
17.583     13.0413     10.39  .    Q    .         .      V  .         .
17.600     13.0555     10.30  .    Q    .         .      V  .         .
17.617     13.0696     10.21  .    Q    .         .      V  .         .
17.633     13.0835     10.13  .    Q    .         .      V  .         .
17.650     13.0973     10.05  .    Q    .         .      V  .         .
17.667     13.1111      9.97  .    Q    .         .      V  .         .
17.683     13.1247      9.89  .    Q    .         .      V  .         .
17.700     13.1382      9.82  .    Q    .         .      V  .         .
17.717     13.1516      9.74  .    Q    .         .      V  .         .
17.733     13.1650      9.67  .    Q    .         .      V  .         .
17.750     13.1782      9.60  .    Q    .         .      V  .         .
17.767     13.1913      9.53  .    Q    .         .      V  .         .
17.783     13.2043      9.46  .    Q    .         .      V  .         .
17.800     13.2173      9.39  .    Q    .         .      V  .         .
17.817     13.2301      9.33  .    Q    .         .      V  .         .
17.833     13.2429      9.26  .    Q    .         .      V  .         .
17.850     13.2556      9.20  .    Q    .         .      V  .         .
17.867     13.2681      9.14  .    Q    .         .      V  .         .
17.883     13.2806      9.07  .    Q    .         .      V  .         .
17.900     13.2931      9.01  .    Q    .         .       V .         .
17.917     13.3054      8.95  .    Q    .         .       V .         .
17.933     13.3176      8.90  .    Q    .         .       V .         .
17.950     13.3298      8.84  .    Q    .         .       V .         .
17.967     13.3419      8.78  .    Q    .         .       V .         .
17.983     13.3539      8.73  .   Q     .         .       V .         .
18.000     13.3659      8.67  .   Q     .         .       V .         .
=====================================================================

  END OF FLOODSCx ROUTING ANALYSIS
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****************************************************************************

             F L O O D    R O U T I N G    A N A L Y S I S
          USING COUNTY HYDROLOGY MANUAL OF SAN BERNARDINO(1986)
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             Ver. 8.0  Release Date: 01/01/2003  License ID 1261

                          Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* SPRING TRAILS                JUNE, 2011                  J - 13565-C     *
* BASIN 3 - POST PROJECT           100-YR PRECIPITATION WITH AMC-III       *
* FOR DETENTION BASIN SIZING (100-YEAR)                                    *
 ***************************************************************************

  FILE NAME: ST3_H_P.DAT
  TIME/DATE OF STUDY: 16:33 06/07/2011


                         ** INPUT SUMMARY **


****************************************************************************
  FLOW PROCESS FROM NODE    300.10 TO NODE   3311.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #1<<<<<
============================================================================
  WATERSHED AREA =      88.600 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.207 HOURS
  VALLEY(DEVELOPED) S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.200; LOW LOSS FRACTION = 0.520
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.32; 30-MINUTE =  1.04;  1-HOUR =  1.60
    3-HOUR =  3.25;    6-HOUR =  5.00; 24-HOUR = 14.00
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.996; 30-MINUTE = 0.996;  1-HOUR = 0.996
    3-HOUR = 0.999;    6-HOUR = 1.000; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE   3311.00 TO NODE   3311.00 IS CODE = 3.2
----------------------------------------------------------------------------
  >>>>>FLOW-THROUGH DETENTION BASIN ROUTING MODEL APPLIED TO STREAM #1<<<<<
============================================================================
  ROUTE RUNOFF HYDROGRAPH FROM STREAM NUMBER 1
  THROUGH A FLOW-THROUGH DETENTION BASIN.
  SPECIFIED BASIN CONDITIONS ARE AS FOLLOWS:
  DEAD STORAGE(AF) =      0.000
  SPECIFIED DEAD STORAGE(AF) FILLED =      0.000
  SPECIFIED EFFECTIVE VOLUME(AF) FILLED ABOVE OUTLET =      0.000
  DETENTION BASIN CONSTANT LOSS RATE(CFS) =    0.00

  BASIN DEPTH VERSUS OUTFLOW AND STORAGE INFORMATION:

          INTERVAL    DEPTH      OUTFLOW     STORAGE
           NUMBER      (FT)       (CFS)        (AF)
               1       0.00        0.00       0.000
               2       2.00        3.56       7.070
               3       3.00      168.00       9.660
               4       4.00      300.00      14.000
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    319.11 TO NODE    327.00 IS CODE =   1
```

```
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERSHED AREA =     119.500 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.100 HOURS
  FOOTHILL S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.720; LOW LOSS FRACTION = 0.990
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.27; 30-MINUTE =  0.82;  1-HOUR =  1.32
    3-HOUR =  2.65;    6-HOUR =  4.10; 24-HOUR = 10.70
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.995; 30-MINUTE = 0.995;  1-HOUR = 0.995
    3-HOUR = 0.999;    6-HOUR = 1.000; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE   3311.00 TO NODE    327.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    327.00 TO NODE    327.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================
============================================================================
```

```
+-----------------------------------------------------------------------------------------------------------------------+
|                                    * AES FLOODSCx PROGRAM RESULTS SUMMARY *                                           |
|INPUT FILENAME: [ST3_H_P.DAT    ]                                                                   Page:   1 of    |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|UPSTREAM  DOWNSTREAM|                               | UPSTREAM   DOWNSTREAM| TIME(2) TO | MAX. STORAGE|           |
| NODE #     NODE #  | HYDROLOGIC/HYDRAULIC PROCESS  |PEAK (CFS)  PEAK (CFS)| PEAK (HR)  | MODELED (AF)| FOOTNOTES |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|   300.10    3311.00| Subarea (UH) Added to Stream #1|       0.0       208.1|     16.200 |             |           |
|  3311.00    3311.00| Flow-Through Basin:   Stream #1|     208.1       168.0|     16.300 |         9.66|           |
|   319.11     327.00| Subarea (UH) Added to Stream #2|       0.0       209.7|     16.100 |             |           |
|  3311.00     327.00| Stream #2 Added to:   Stream #1|     168.0       331.1|     16.100 |             |           |
|   327.00     327.00| View:                 Stream #1|                 331.1|     16.100 |        74.93|     3     |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|Notes: 1 = BASIN MODEL VOLUME EXCEEDED; 2 = TIME IS AT END OF 1-MINUTE UNIT INTERVAL                                  |
|       3 = RUNOFF ESTIMATES DO NOT EXTEND PAST 2 DAYS AFTER THE PEAK DAY OF THE DESIGN STORM                          |
+-----------------------------------------------------------------------------------------------------------------------+

  END OF FLOODSCx ROUTING ANALYSIS
```

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****************************************************************************

             F L O O D    R O U T I N G    A N A L Y S I S
          USING COUNTY HYDROLOGY MANUAL OF SAN BERNARDINO(1986)
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                           Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* SPRING TRAILS                JUNE, 2011                    J - 13565-C     *
* BASIN 3 - PRE PROJECT              25 YR PRECIPITATION WITH AMC-II       *
* FOR DETENTION BASIN SIZING (100-YEAR)                                    *
 ************************************************************************

  FILE NAME: ST3_H_E.DAT
  TIME/DATE OF STUDY: 10:41 06/10/2011


****************************************************************************
  FLOW PROCESS FROM NODE    301.10 TO NODE    303.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
============================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERSHED AREA =      18.900 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.127 HOURS
         VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.860
         LOW LOSS FRACTION = 0.990
         *HYDROGRAPH MODEL #7 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.27
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.82
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.32
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  2.65
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  4.10
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) = 10.70

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
           5-MINUTE FACTOR = 0.999
          30-MINUTE FACTOR = 0.999
           1-HOUR FACTOR = 0.999
           3-HOUR FACTOR = 1.000
           6-HOUR FACTOR = 1.000
          24-HOUR FACTOR = 1.000

         UNIT HYDROGRAPH TIME UNIT =   1.000 MINUTES
         UNIT INTERVAL PERCENTAGE OF LAG-TIME =  13.123


         RUNOFF HYDROGRAPH LISTING LIMITS:
         MODEL TIME(HOURS) FOR BEGINNING OF RESULTS =  14.00
         MODEL TIME(HOURS) FOR END OF RESULTS =  18.00


============================================================================
                       UNIT HYDROGRAPH DETERMINATION

----------------------------------------------------------------------------
     INTERVAL          "S" GRAPH          UNIT HYDROGRAPH
      NUMBER          MEAN VALUES          ORDINATES(CFS)
```

1	1.095	12.517
2	3.720	29.998
3	7.714	45.647
4	13.181	62.474
5	20.769	86.727
6	29.705	102.126
7	39.369	110.442
8	48.867	108.553
9	56.237	84.230
10	61.624	61.559
11	65.890	48.760
12	69.364	39.700
13	72.141	31.739
14	74.591	27.997
15	76.610	23.078
16	78.451	21.040
17	80.121	19.087
18	81.571	16.569
19	82.863	14.764
20	84.118	14.347
21	85.216	12.549
22	86.224	11.510
23	87.161	10.708
24	87.971	9.262
25	88.737	8.749
26	89.509	8.823
27	90.220	8.134
28	90.832	6.994
29	91.443	6.975
30	92.031	6.730
31	92.528	5.678
32	93.014	5.555
33	93.500	5.555
34	93.975	5.428
35	94.375	4.570
36	94.761	4.410
37	95.147	4.410
38	95.533	4.412
39	95.913	4.347
40	96.201	3.290
41	96.456	2.912
42	96.711	2.915
43	96.966	2.909
44	97.221	2.915
45	97.475	2.909
46	97.730	2.915
47	97.969	2.732
48	98.089	1.364
49	98.183	1.075
50	98.277	1.075
51	98.371	1.078
52	98.466	1.078
53	98.560	1.075
54	98.654	1.075
55	98.748	1.075
56	98.842	1.078
57	98.936	1.078
58	99.031	1.075
59	99.125	1.075
60	99.219	1.075
61	99.313	1.075
62	99.407	1.075
63	99.501	1.075
64	99.595	1.075
65	99.689	1.075
66	99.783	1.075
67	99.877	1.075
68	99.971	1.075
69	100.000	0.330

```
---------------------------------------------------------------------------
    TOTAL SOIL-LOSS VOLUME(ACRE-FEET) =      15.9813
    TOTAL STORM RUNOFF VOLUME(ACRE-FEET) =       0.8699
---------------------------------------------------------------------------
```

```
===========================================================================

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

===========================================================================
                HYDROGRAPH IN  ONE-MINUTE UNIT INTERVALS(CFS)
        (Notes: Time indicated is at END of Each Unit Intervals.
                 Peak 5-minute rainfall intensity is modeled as
                 a constant value for entire 5-minute period.)
---------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.        7.5      15.0      22.5      30.0
---------------------------------------------------------------------------
  14.000      0.0828      0.10  Q  V      .         .         .         .
  14.017      0.0830      0.10  Q  V      .         .         .         .
  14.033      0.0831      0.10  Q  V      .         .         .         .
  14.050      0.0832      0.10  Q  V      .         .         .         .
  14.067      0.0834      0.10  Q  V      .         .         .         .
  14.083      0.0835      0.10  Q  V      .         .         .         .
  14.100      0.0837      0.10  Q  V      .         .         .         .
  14.117      0.0838      0.10  Q  V      .         .         .         .
  14.133      0.0840      0.11  Q  V      .         .         .         .
  14.150      0.0841      0.11  Q  V      .         .         .         .
  14.167      0.0843      0.11  Q  V      .         .         .         .
  14.183      0.0844      0.11  Q  V      .         .         .         .
  14.200      0.0845      0.11  Q  V      .         .         .         .
  14.217      0.0847      0.11  Q  V      .         .         .         .
  14.233      0.0848      0.11  Q  V      .         .         .         .
  14.250      0.0850      0.11  Q  V      .         .         .         .
  14.267      0.0851      0.11  Q  V      .         .         .         .
  14.283      0.0853      0.11  Q  V      .         .         .         .
  14.300      0.0854      0.11  Q  V      .         .         .         .
  14.317      0.0856      0.11  Q  V      .         .         .         .
  14.333      0.0857      0.11  Q  V      .         .         .         .
  14.350      0.0859      0.11  Q  V      .         .         .         .
  14.367      0.0860      0.11  Q  V      .         .         .         .
  14.383      0.0862      0.11  Q  V      .         .         .         .
  14.400      0.0863      0.11  Q  V      .         .         .         .
  14.417      0.0865      0.11  Q  V      .         .         .         .
  14.433      0.0867      0.11  Q  V      .         .         .         .
  14.450      0.0868      0.11  Q  V      .         .         .         .
  14.467      0.0870      0.11  Q  V      .         .         .         .
  14.483      0.0871      0.11  Q   V     .         .         .         .
  14.500      0.0873      0.11  Q   V     .         .         .         .
  14.517      0.0874      0.11  Q   V     .         .         .         .
  14.533      0.0876      0.11  Q   V     .         .         .         .
  14.550      0.0877      0.11  Q   V     .         .         .         .
  14.567      0.0879      0.12  Q   V     .         .         .         .
  14.583      0.0881      0.12  Q   V     .         .         .         .
  14.600      0.0882      0.12  Q   V     .         .         .         .
  14.617      0.0884      0.12  Q   V     .         .         .         .
  14.633      0.0885      0.12  Q   V     .         .         .         .
  14.650      0.0887      0.12  Q   V     .         .         .         .
  14.667      0.0889      0.12  Q   V     .         .         .         .
  14.683      0.0890      0.12  Q   V     .         .         .         .
  14.700      0.0892      0.12  Q   V     .         .         .         .
  14.717      0.0894      0.12  Q   V     .         .         .         .
  14.733      0.0895      0.12  Q   V     .         .         .         .
  14.750      0.0897      0.12  Q   V     .         .         .         .
  14.767      0.0899      0.12  Q   V     .         .         .         .
  14.783      0.0900      0.12  Q   V     .         .         .         .
  14.800      0.0902      0.12  Q   V     .         .         .         .
  14.817      0.0904      0.12  Q   V     .         .         .         .
  14.833      0.0905      0.12  Q   V     .         .         .         .
  14.850      0.0907      0.12  Q   V     .         .         .         .
  14.867      0.0909      0.12  Q   V     .         .         .         .
  14.883      0.0910      0.12  Q   V     .         .         .         .
  14.900      0.0912      0.13  Q   V     .         .         .         .
  14.917      0.0914      0.13  Q   V     .         .         .         .
  14.933      0.0916      0.13  Q   V     .         .         .         .
```

14.950	0.0917	0.13	Q	V	.	.	.	.	
14.967	0.0919	0.13	Q	V	.	.	.	.	
14.983	0.0921	0.13	Q	V	.	.	.	.	
15.000	0.0923	0.13	Q	V	.	.	.	.	
15.017	0.0925	0.13	Q	V	.	.	.	.	
15.033	0.0926	0.13	Q	V	.	.	.	.	
15.050	0.0928	0.13	Q	V	.	.	.	.	
15.067	0.0930	0.13	Q	V	.	.	.	.	
15.083	0.0932	0.13	Q	V	.	.	.	.	
15.100	0.0934	0.13	Q	V	.	.	.	.	
15.117	0.0935	0.13	Q	V	.	.	.	.	
15.133	0.0937	0.13	Q	V	.	.	.	.	
15.150	0.0939	0.14	Q	V	.	.	.	.	
15.167	0.0941	0.14	Q	V	.	.	.	.	
15.183	0.0943	0.14	Q	V	.	.	.	.	
15.200	0.0945	0.14	Q	V	.	.	.	.	
15.217	0.0947	0.14	Q	V	.	.	.	.	
15.233	0.0949	0.14	Q	V	.	.	.	.	
15.250	0.0951	0.14	Q	V	.	.	.	.	
15.267	0.0953	0.14	Q	V	.	.	.	.	
15.283	0.0955	0.14	Q	V	.	.	.	.	
15.300	0.0957	0.14	Q	V	.	.	.	.	
15.317	0.0959	0.14	Q	V	.	.	.	.	
15.333	0.0961	0.15	Q	V	.	.	.	.	
15.350	0.0963	0.16	Q	V	.	.	.	.	
15.367	0.0965	0.18	Q	V	.	.	.	.	
15.383	0.0968	0.21	Q	V	.	.	.	.	
15.400	0.0972	0.27	Q	V	.	.	.	.	
15.417	0.0976	0.34	Q	V	.	.	.	.	
15.433	0.0982	0.44	Q	V	.	.	.	.	
15.450	0.0990	0.55	Q	V	.	.	.	.	
15.467	0.0999	0.68	Q	V	.	.	.	.	
15.483	0.1011	0.81	.Q	V	.	.	.	.	
15.500	0.1024	0.94	.Q	V	.	.	.	.	
15.517	0.1038	1.07	.Q	V	.	.	.	.	
15.533	0.1055	1.20	.Q	V	.	.	.	.	
15.550	0.1073	1.34	.Q	V	.	.	.	.	
15.567	0.1093	1.48	.Q	V	.	.	.	.	
15.583	0.1116	1.63	. Q	V	.	.	.	.	
15.600	0.1140	1.78	. Q	V	.	.	.	.	
15.617	0.1167	1.94	. Q	V	.	.	.	.	
15.633	0.1196	2.11	. Q	V	.	.	.	.	
15.650	0.1228	2.29	. Q	V	.	.	.	.	
15.667	0.1262	2.48	. Q	V	.	.	.	.	
15.683	0.1298	2.65	. Q	V	.	.	.	.	
15.700	0.1337	2.81	. Q	V	.	.	.	.	
15.717	0.1378	2.94	. Q	V	.	.	.	.	
15.733	0.1420	3.06	. Q	V	.	.	.	.	
15.750	0.1463	3.16	. Q	V	.	.	.	.	
15.767	0.1508	3.24	. Q	V	.	.	.	.	
15.783	0.1554	3.33	. Q	V	.	.	.	.	
15.800	0.1601	3.45	. Q	V	.	.	.	.	
15.817	0.1651	3.63	. Q	V	.	.	.	.	
15.833	0.1705	3.89	. Q	V	.	.	.	.	
15.850	0.1763	4.21	. Q	V	.	.	.	.	
15.867	0.1826	4.59	. Q	V	.	.	.	.	
15.883	0.1895	5.02	. Q	V	.	.	.	.	
15.900	0.1971	5.52	. Q	V.	.	.	.	.	
15.917	0.2055	6.09	. QV.		.	.	.	.	
15.933	0.2148	6.75	. Q.		.	.	.	.	
15.950	0.2252	7.53	. Q		.	.	.	.	
15.967	0.2372	8.70	. VQ		.	.	.	.	
15.983	0.2514	10.34	. .V Q		.	.	.	.	
16.000	0.2685	12.39	. . V Q		.	.	.	.	
16.017	0.2889	14.84	. . V Q.		.	.	.	.	
16.033	0.3135	17.80	. . V . Q		.	.	.	.	
16.050	0.3420	20.70	. . V . Q		.	.	.	.	
16.067	0.3739	23.20	. . V . Q		.	.	.	.	
16.083	0.4083	24.99	. . V .		.	.	.	Q	
16.100	0.4436	25.59	. . V		.	.	.	Q	
16.117	0.4779	24.87	. . .V		.	.	.	Q	

16.133	0.5099	23.24	.	.	.	V	Q	.	
16.150	0.5387	20.94	.	.	.	V Q	.	.	
16.167	0.5639	18.29	.	.	.	QV	.	.	
16.183	0.5859	15.99	.	.	.Q	V	.	.	
16.200	0.6054	14.12	.	.	Q .	V	.	.	
16.217	0.6227	12.59	.	.	Q .	V .	.	.	
16.233	0.6383	11.32	.	.	Q .	V.	.	.	
16.250	0.6525	10.30	.	. Q	.	V	.	.	
16.267	0.6655	9.43	.	. Q	.	V	.	.	
16.283	0.6775	8.74	.	.Q	.	.V	.	.	
16.300	0.6887	8.12	.	Q	.	.V	.	.	
16.317	0.6991	7.52	.	Q	.	. V	.	.	
16.333	0.7086	6.96	.	Q.	.	. V	.	.	
16.350	0.7175	6.41	.	Q .	.	. V	.	.	
16.367	0.7256	5.88	.	Q .	.	. V	.	.	
16.383	0.7330	5.40	.	Q .	.	. V	.	.	
16.400	0.7398	4.94	.	Q .	.	. V	.	.	
16.417	0.7460	4.49	.	Q .	.	. V	.	.	
16.433	0.7517	4.10	.	Q .	.	. V	.	.	
16.450	0.7568	3.75	.	Q .	.	. V	.	.	
16.467	0.7615	3.41	.	Q .	.	. V	.	.	
16.483	0.7658	3.13	.	Q .	.	. V	.	.	
16.500	0.7699	2.91	.	Q .	.	. V	.	.	
16.517	0.7736	2.72	.	Q .	.	. V	.	.	
16.533	0.7771	2.53	.	Q .	.	. V	.	.	
16.550	0.7804	2.38	.	Q .	.	. V	.	.	
16.567	0.7834	2.24	. Q	.	.	. V	.	.	
16.583	0.7863	2.11	. Q	.	.	. V	.	.	
16.600	0.7891	1.99	. Q	.	.	. V	.	.	
16.617	0.7916	1.87	. Q	.	.	. V	.	.	
16.633	0.7941	1.75	. Q	.	.	. V	.	.	
16.650	0.7963	1.64	. Q	.	.	. V	.	.	
16.667	0.7984	1.53	. Q	.	.	. V	.	.	
16.683	0.8004	1.43	.Q	.	.	. V	.	.	
16.700	0.8023	1.35	.Q	.	.	. V	.	.	
16.717	0.8040	1.29	.Q	.	.	. V	.	.	
16.733	0.8057	1.22	.Q	.	.	. V	.	.	
16.750	0.8073	1.13	.Q	.	.	. V	.	.	
16.767	0.8087	1.04	.Q	.	.	. V	.	.	
16.783	0.8100	0.94	.Q	.	.	. V	.	.	
16.800	0.8112	0.86	.Q	.	.	. V	.	.	
16.817	0.8123	0.77	.Q	.	.	. V	.	.	
16.833	0.8133	0.73	Q	.	.	. V	.	.	
16.850	0.8142	0.69	Q	.	.	. V	.	.	
16.867	0.8151	0.66	Q	.	.	. V	.	.	
16.883	0.8160	0.64	Q	.	.	. V	.	.	
16.900	0.8169	0.62	Q	.	.	. V	.	.	
16.917	0.8177	0.60	Q	.	.	. V	.	.	
16.933	0.8185	0.58	Q	.	.	. V	.	.	
16.950	0.8193	0.57	Q	.	.	. V	.	.	
16.967	0.8200	0.55	Q	.	.	. V	.	.	
16.983	0.8208	0.53	Q	.	.	. V	.	.	
17.000	0.8215	0.52	Q	.	.	. V	.	.	
17.017	0.8222	0.50	Q	.	.	. V	.	.	
17.033	0.8228	0.48	Q	.	.	. V	.	.	
17.050	0.8235	0.47	Q	.	.	. V	.	.	
17.067	0.8241	0.45	Q	.	.	. V	.	.	
17.083	0.8247	0.43	Q	.	.	. V	.	.	
17.100	0.8252	0.39	Q	.	.	. V	.	.	
17.117	0.8257	0.34	Q	.	.	. V	.	.	
17.133	0.8261	0.30	Q	.	.	. V	.	.	
17.150	0.8264	0.26	Q	.	.	. V	.	.	
17.167	0.8267	0.21	Q	.	.	. V	.	.	
17.183	0.8270	0.19	Q	.	.	. V	.	.	
17.200	0.8272	0.17	Q	.	.	. V	.	.	
17.217	0.8274	0.16	Q	.	.	. V	.	.	
17.233	0.8277	0.15	Q	.	.	. V	.	.	
17.250	0.8279	0.14	Q	.	.	. V	.	.	
17.267	0.8280	0.14	Q	.	.	. V	.	.	
17.283	0.8282	0.13	Q	.	.	. V	.	.	
17.300	0.8284	0.13	Q	.	.	. V	.	.	

```
 17.317      0.8286      0.12  Q         .         .         .       V .
 17.333      0.8287      0.12  Q         .         .         .       V .
 17.350      0.8289      0.12  Q         .         .         .       V .
 17.367      0.8291      0.11  Q         .         .         .       V .
 17.383      0.8292      0.11  Q         .         .         .       V .
 17.400      0.8294      0.11  Q         .         .         .       V .
 17.417      0.8295      0.10  Q         .         .         .       V .
 17.433      0.8296      0.10  Q         .         .         .       V .
 17.450      0.8298      0.10  Q         .         .         .       V .
 17.467      0.8299      0.10  Q         .         .         .       V .
 17.483      0.8300      0.10  Q         .         .         .       V .
 17.500      0.8302      0.10  Q         .         .         .       V .
 17.517      0.8303      0.10  Q         .         .         .       V .
 17.533      0.8304      0.10  Q         .         .         .       V .
 17.550      0.8306      0.10  Q         .         .         .       V .
 17.567      0.8307      0.10  Q         .         .         .       V .
 17.583      0.8308      0.09  Q         .         .         .       V .
 17.600      0.8310      0.09  Q         .         .         .       V .
 17.617      0.8311      0.09  Q         .         .         .       V .
 17.633      0.8312      0.09  Q         .         .         .       V .
 17.650      0.8314      0.09  Q         .         .         .       V .
 17.667      0.8315      0.09  Q         .         .         .       V .
 17.683      0.8316      0.09  Q         .         .         .       V .
 17.700      0.8317      0.09  Q         .         .         .       V .
 17.717      0.8319      0.09  Q         .         .         .       V .
 17.733      0.8320      0.09  Q         .         .         .       V .
 17.750      0.8321      0.09  Q         .         .         .       V .
 17.767      0.8322      0.09  Q         .         .         .       V .
 17.783      0.8324      0.09  Q         .         .         .       V .
 17.800      0.8325      0.09  Q         .         .         .       V .
 17.817      0.8326      0.09  Q         .         .         .       V .
 17.833      0.8327      0.09  Q         .         .         .       V .
 17.850      0.8329      0.09  Q         .         .         .       V .
 17.867      0.8330      0.09  Q         .         .         .       V .
 17.883      0.8331      0.09  Q         .         .         .       V .
 17.900      0.8332      0.09  Q         .         .         .       V .
 17.917      0.8333      0.09  Q         .         .         .       V .
 17.933      0.8335      0.09  Q         .         .         .       V .
 17.950      0.8336      0.09  Q         .         .         .       V .
 17.967      0.8337      0.09  Q         .         .         .       V .
 17.983      0.8338      0.09  Q         .         .         .       V .
 18.000      0.8339      0.09  Q         .         .         .       V .


****************************************************************************
  FLOW PROCESS FROM NODE    201.10 TO NODE    210.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
============================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #2)

         WATERSHED AREA =     179.400 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.100 HOURS
         FOOTHILL S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.760
         LOW LOSS FRACTION = 0.990
         *HYDROGRAPH MODEL #7 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.27
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.82
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.32
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  2.65
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  4.10
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) = 10.70

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
           5-MINUTE FACTOR = 0.992
          30-MINUTE FACTOR = 0.992
           1-HOUR FACTOR = 0.992
           3-HOUR FACTOR = 0.999
           6-HOUR FACTOR = 0.999
          24-HOUR FACTOR = 1.000

         UNIT HYDROGRAPH TIME UNIT =   1.000 MINUTES
         UNIT INTERVAL PERCENTAGE OF LAG-TIME =  16.667


         RUNOFF HYDROGRAPH LISTING LIMITS:
         MODEL TIME(HOURS) FOR BEGINNING OF RESULTS =  14.00
         MODEL TIME(HOURS) FOR END OF RESULTS =  18.00


============================================================================
                      UNIT HYDROGRAPH DETERMINATION

----------------------------------------------------------------------------
    INTERVAL          "S" GRAPH          UNIT HYDROGRAPH
     NUMBER          MEAN VALUES          ORDINATES(CFS)
----------------------------------------------------------------------------
        1                 1.088                118.018
        2                 3.867                301.489
        3                 8.030                451.647
        4                13.512                594.604
        5                22.070                928.367
        6                38.303               1760.993
        7                55.310               1844.923
        8                63.640                903.698
        9                69.177                600.670
       10                73.775                498.756
       11                77.638                419.075
       12                80.673                329.269
       13                83.521                308.913
       14                85.876                255.523
       15                87.919                221.581
       16                89.627                185.331
       17                91.182                168.620
       18                92.568                150.351
       19                93.783                131.855
       20                94.757                105.616
       21                95.655                 97.443
       22                96.333                 73.580
       23                96.871                 58.313
       24                97.409                 58.338
       25                97.910                 54.397
       26                98.078                 18.167
       27                98.164                  9.357
       28                98.250                  9.356
       29                98.336                  9.357
       30                98.423                  9.357
       31                98.509                  9.357
       32                98.595                  9.357
       33                98.681                  9.332
       34                98.767                  9.357
       35                98.854                  9.381
       36                98.940                  9.331
       37                99.026                  9.357
       38                99.112                  9.331
       39                99.198                  9.331
       40                99.284                  9.331
       41                99.370                  9.331
       42                99.456                  9.331
       43                99.542                  9.331
       44                99.628                  9.331
       45                99.714                  9.331
       46                99.800                  9.331
       47                99.886                  9.331
       48                99.972                  9.331
       49               100.000                  3.019
```

```
----------------------------------------------------------------------------
    TOTAL SOIL-LOSS VOLUME(ACRE-FEET) =     150.1512
    TOTAL STORM RUNOFF VOLUME(ACRE-FEET) =       9.7502
----------------------------------------------------------------------------
```

```
============================================================================

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

============================================================================
                HYDROGRAPH IN  ONE-MINUTE UNIT INTERVALS(CFS)
        (Notes: Time indicated is at END of Each Unit Intervals.
                 Peak 5-minute rainfall intensity is modeled as
                 a constant value for entire 5-minute period.)
----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.      100.0     200.0     300.0     400.0
----------------------------------------------------------------------------
  14.000      0.7906      0.98  Q  V      .         .         .         .
  14.017      0.7919      0.98  Q  V      .         .         .         .
  14.033      0.7933      0.99  Q  V      .         .         .         .
  14.050      0.7946      0.99  Q  V      .         .         .         .
  14.067      0.7960      0.99  Q  V      .         .         .         .
  14.083      0.7974      1.00  Q  V      .         .         .         .
  14.100      0.7988      1.00  Q  V      .         .         .         .
  14.117      0.8002      1.01  Q  V      .         .         .         .
  14.133      0.8016      1.01  Q  V      .         .         .         .
  14.150      0.8030      1.02  Q  V      .         .         .         .
  14.167      0.8044      1.02  Q  V      .         .         .         .
  14.183      0.8058      1.03  Q  V      .         .         .         .
  14.200      0.8072      1.03  Q  V      .         .         .         .
  14.217      0.8086      1.03  Q  V      .         .         .         .
  14.233      0.8100      1.04  Q  V      .         .         .         .
  14.250      0.8115      1.04  Q  V      .         .         .         .
  14.267      0.8129      1.04  Q  V      .         .         .         .
  14.283      0.8143      1.05  Q  V      .         .         .         .
  14.300      0.8158      1.05  Q  V      .         .         .         .
  14.317      0.8172      1.05  Q  V      .         .         .         .
  14.333      0.8187      1.06  Q  V      .         .         .         .
  14.350      0.8202      1.06  Q  V      .         .         .         .
  14.367      0.8216      1.07  Q  V      .         .         .         .
  14.383      0.8231      1.07  Q  V      .         .         .         .
  14.400      0.8246      1.07  Q  V      .         .         .         .
  14.417      0.8261      1.08  Q  V      .         .         .         .
  14.433      0.8276      1.08  Q  V      .         .         .         .
  14.450      0.8290      1.08  Q  V      .         .         .         .
  14.467      0.8305      1.09  Q  V      .         .         .         .
  14.483      0.8321      1.09  Q  V      .         .         .         .
  14.500      0.8336      1.10  Q  V      .         .         .         .
  14.517      0.8351      1.10  Q  V      .         .         .         .
  14.533      0.8366      1.10  Q  V      .         .         .         .
  14.550      0.8381      1.11  Q  V      .         .         .         .
  14.567      0.8397      1.11  Q  V      .         .         .         .
  14.583      0.8412      1.12  Q  V      .         .         .         .
  14.600      0.8427      1.12  Q  V      .         .         .         .
  14.617      0.8443      1.13  Q  V      .         .         .         .
  14.633      0.8458      1.13  Q  V      .         .         .         .
  14.650      0.8474      1.13  Q  V      .         .         .         .
  14.667      0.8490      1.14  Q  V      .         .         .         .
  14.683      0.8506      1.14  Q  V      .         .         .         .
  14.700      0.8521      1.15  Q  V      .         .         .         .
  14.717      0.8537      1.15  Q  V      .         .         .         .
  14.733      0.8553      1.16  Q  V      .         .         .         .
  14.750      0.8569      1.16  Q  V      .         .         .         .
  14.767      0.8585      1.17  Q  V      .         .         .         .
  14.783      0.8601      1.17  Q  V      .         .         .         .
  14.800      0.8618      1.18  Q  V      .         .         .         .
  14.817      0.8634      1.18  Q  V      .         .         .         .
  14.833      0.8650      1.19  Q  V      .         .         .         .
  14.850      0.8667      1.19  Q  V      .         .         .         .
  14.867      0.8683      1.20  Q  V      .         .         .         .
  14.883      0.8700      1.21  Q  V      .         .         .         .
  14.900      0.8717      1.21  Q  V      .         .         .         .
  14.917      0.8733      1.22  Q  V      .         .         .         .
  14.933      0.8750      1.22  Q  V      .         .         .         .
```

14.950	0.8767	1.23	Q V . . . .
14.967	0.8784	1.24	Q V . . . .
14.983	0.8801	1.24	Q V . . . .
15.000	0.8819	1.25	Q V . . . .
15.017	0.8836	1.26	Q V . . . .
15.033	0.8853	1.26	Q V . . . .
15.050	0.8871	1.27	Q V . . . .
15.067	0.8888	1.28	Q V . . . .
15.083	0.8906	1.28	Q V . . . .
15.100	0.8924	1.29	Q V . . . .
15.117	0.8942	1.30	Q V . . . .
15.133	0.8960	1.31	Q V . . . .
15.150	0.8978	1.31	Q V . . . .
15.167	0.8996	1.32	Q V . . . .
15.183	0.9015	1.35	Q V . . . .
15.200	0.9034	1.41	Q V . . . .
15.217	0.9055	1.52	Q V . . . .
15.233	0.9078	1.69	Q V . . . .
15.250	0.9105	1.97	Q V . . . .
15.267	0.9139	2.44	Q V . . . .
15.283	0.9181	3.05	Q V . . . .
15.300	0.9233	3.75	Q V . . . .
15.317	0.9295	4.52	Q V . . . .
15.333	0.9369	5.36	Q V . . . .
15.350	0.9457	6.37	Q V . . . .
15.367	0.9562	7.62	Q V . . . .
15.383	0.9687	9.09	Q V . . . .
15.400	0.9835	10.74	.Q V . . . .
15.417	1.0011	12.78	.Q V . . . .
15.433	1.0227	15.69	.Q V . . . .
15.450	1.0485	18.74	.Q V . . . .
15.467	1.0772	20.87	. Q V . . . .
15.483	1.1086	22.75	. Q V . . . .
15.500	1.1424	24.56	. Q V . . . .
15.517	1.1787	26.35	. Q V . . . .
15.533	1.2174	28.10	. Q V . . . .
15.550	1.2586	29.90	. Q V . . . .
15.567	1.3022	31.68	. Q V . . . .
15.583	1.3484	33.52	. Q V . . . .
15.600	1.3971	35.36	. Q V . . . .
15.617	1.4485	37.28	. Q V . . . .
15.633	1.5025	39.24	. Q V . . . .
15.650	1.5594	41.28	. Q V . . . .
15.667	1.6191	43.37	. Q V . . . .
15.683	1.6816	45.35	. Q V . . . .
15.700	1.7464	47.08	. Q V . . . .
15.717	1.8134	48.66	. Q V . . . .
15.733	1.8825	50.11	. Q V . . . .
15.750	1.9529	51.14	. Q V . . . .
15.767	2.0229	50.80	. Q V . . . .
15.783	2.0925	50.56	. Q V . . . .
15.800	2.1645	52.28	. Q V . . . .
15.817	2.2401	54.86	. Q V. . . . .
15.833	2.3199	57.92	. Q V. . . . .
15.850	2.4046	61.52	. Q V. . . . .
15.867	2.4951	65.68	. Q V . . . .
15.883	2.5921	70.41	. Q V . . . .
15.900	2.6964	75.79	. Q .V . . . .
15.917	2.8094	82.03	. Q .V . . . .
15.933	2.9323	89.20	. Q . V . . . .
15.950	3.0668	97.68	. Q. V . . . .
15.967	3.2184	110.00	. Q V . . . .
15.983	3.3938	127.40	. . QV . . . .
16.000	3.5990	148.98	. . Q . . . .
16.017	3.8395	174.57	. . V Q . . . .
16.033	4.1257	207.80	. . V Q . . . .
16.050	4.4759	254.20	. . V . Q . . . .
16.067	4.8798	293.27	. . V Q. . . . .
16.083	5.3011	305.87	. . .V Q . . . .
16.100	5.7232	306.46	. . . V Q . . . .
16.117	6.1294	294.91	. . . V Q. . . . .

16.133	6.4863	259.05	. . . QV . . . .
16.150	6.7809	213.91	. . .Q V . . . .
16.167	7.0375	186.26	. . Q . V . . . .
16.183	7.2655	165.55	. . Q . V. . . . .
16.200	7.4694	148.05	. . Q . V . . . .
16.217	7.6525	132.90	. . Q . .V . . . .
16.233	7.8185	120.56	. . Q . . V . . . .
16.250	7.9697	109.74	. Q . . V . . . .
16.267	8.1100	101.85	. Q . . V . . . .
16.283	8.2408	95.00	. Q. . . V . . . .
16.300	8.3616	87.65	. Q . . . V . . . .
16.317	8.4719	80.12	. Q . . . V . . . .
16.333	8.5724	72.92	. Q . . . . V . . .
16.350	8.6636	66.25	. Q . . . . V . . .
16.367	8.7463	60.02	. Q . . . . V . . .
16.383	8.8198	53.38	. Q . . . . V . . .
16.400	8.8848	47.21	. Q . . . . V . . .
16.417	8.9418	41.35	. Q . . . . V . . .
16.433	8.9899	34.90	. Q . . . . V . . .
16.450	9.0294	28.68	. Q . . . . V . .
16.467	9.0631	24.46	. Q . . . . V . .
16.483	9.0922	21.12	. Q . . . . V . .
16.500	9.1173	18.21	.Q . . . . V . .
16.517	9.1389	15.71	.Q . . . . V . .
16.533	9.1577	13.67	.Q . . . . V . .
16.550	9.1743	12.06	.Q . . . . V . .
16.567	9.1892	10.82	.Q . . . . V . .
16.583	9.2027	9.79	Q . . . . V . .
16.600	9.2150	8.89	Q . . . . V . .
16.617	9.2261	8.09	Q . . . . V . .
16.633	9.2363	7.41	Q . . . . V . .
16.650	9.2457	6.82	Q . . . . V . .
16.667	9.2544	6.31	Q . . . . V . .
16.683	9.2625	5.86	Q . . . . V . .
16.700	9.2700	5.48	Q . . . . V .
16.717	9.2771	5.13	Q . . . . V .
16.733	9.2837	4.80	Q . . . . V .
16.750	9.2899	4.48	Q . . . . V .
16.767	9.2955	4.07	Q . . . . V .
16.783	9.3005	3.63	Q . . . . V .
16.800	9.3049	3.20	Q . . . . V .
16.817	9.3087	2.79	Q . . . . V .
16.833	9.3120	2.38	Q . . . . V .
16.850	9.3149	2.14	Q . . . . V .
16.867	9.3177	1.99	Q . . . . V .
16.883	9.3203	1.87	Q . . . . V .
16.900	9.3227	1.78	Q . . . . V .
16.917	9.3251	1.69	Q . . . . V .
16.933	9.3273	1.62	Q . . . . V .
16.950	9.3294	1.56	Q . . . . V .
16.967	9.3315	1.51	Q . . . . V .
16.983	9.3335	1.45	Q . . . . V .
17.000	9.3354	1.39	Q . . . . V .
17.017	9.3373	1.34	Q . . . . V .
17.033	9.3391	1.29	Q . . . . V .
17.050	9.3408	1.25	Q . . . . V .
17.067	9.3424	1.20	Q . . . . V .
17.083	9.3440	1.16	Q . . . . V .
17.100	9.3456	1.13	Q . . . . V .
17.117	9.3471	1.09	Q . . . . V .
17.133	9.3486	1.06	Q . . . . V .
17.150	9.3500	1.04	Q . . . . V .
17.167	9.3514	1.02	Q . . . . V .
17.183	9.3528	1.01	Q . . . . V .
17.200	9.3542	1.00	Q . . . . V .
17.217	9.3555	0.99	Q . . . . V .
17.233	9.3569	0.98	Q . . . . V .
17.250	9.3582	0.98	Q . . . . V .
17.267	9.3596	0.97	Q . . . . V .
17.283	9.3609	0.96	Q . . . . V .
17.300	9.3622	0.96	Q . . . . V .

```
  17.317      9.3635      0.95  Q         .         .         .       V .
  17.333      9.3648      0.95  Q         .         .         .       V .
  17.350      9.3661      0.94  Q         .         .         .       V .
  17.367      9.3674      0.94  Q         .         .         .       V .
  17.383      9.3687      0.93  Q         .         .         .       V .
  17.400      9.3700      0.93  Q         .         .         .       V .
  17.417      9.3713      0.92  Q         .         .         .       V .
  17.433      9.3725      0.92  Q         .         .         .       V .
  17.450      9.3738      0.91  Q         .         .         .       V .
  17.467      9.3750      0.91  Q         .         .         .       V .
  17.483      9.3763      0.91  Q         .         .         .       V .
  17.500      9.3775      0.90  Q         .         .         .       V .
  17.517      9.3788      0.90  Q         .         .         .       V .
  17.533      9.3800      0.89  Q         .         .         .       V .
  17.550      9.3812      0.89  Q         .         .         .       V .
  17.567      9.3824      0.89  Q         .         .         .       V .
  17.583      9.3837      0.88  Q         .         .         .       V .
  17.600      9.3849      0.88  Q         .         .         .       V .
  17.617      9.3861      0.87  Q         .         .         .       V .
  17.633      9.3873      0.87  Q         .         .         .       V .
  17.650      9.3885      0.87  Q         .         .         .       V .
  17.667      9.3897      0.86  Q         .         .         .       V .
  17.683      9.3908      0.86  Q         .         .         .       V .
  17.700      9.3920      0.86  Q         .         .         .       V .
  17.717      9.3932      0.85  Q         .         .         .       V .
  17.733      9.3944      0.85  Q         .         .         .       V .
  17.750      9.3955      0.85  Q         .         .         .       V .
  17.767      9.3967      0.84  Q         .         .         .       V .
  17.783      9.3978      0.84  Q         .         .         .       V .
  17.800      9.3990      0.84  Q         .         .         .       V .
  17.817      9.4001      0.83  Q         .         .         .       V .
  17.833      9.4013      0.83  Q         .         .         .       V .
  17.850      9.4024      0.83  Q         .         .         .       V .
  17.867      9.4036      0.82  Q         .         .         .       V .
  17.883      9.4047      0.82  Q         .         .         .       V .
  17.900      9.4058      0.82  Q         .         .         .       V .
  17.917      9.4069      0.82  Q         .         .         .       V .
  17.933      9.4081      0.81  Q         .         .         .       V .
  17.950      9.4092      0.81  Q         .         .         .       V .
  17.967      9.4103      0.81  Q         .         .         .       V .
  17.983      9.4114      0.80  Q         .         .         .       V .
  18.000      9.4125      0.80  Q         .         .         .       V .

****************************************************************************
  FLOW PROCESS FROM NODE    210.00 TO NODE    210.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    210.00 TO NODE    210.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================

            STREAM HYDROGRAPH IN  ONE-MINUTE UNIT INTERVALS(CFS)
        (Notes: Time indicated is at END of Each Unit Intervals.
                Peak 5-minute rainfall intensity is modeled as
                a constant value for entire 5-minute period.)
----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.      100.0     200.0     300.0     400.0
----------------------------------------------------------------------------
  14.000      0.8734      1.08  Q  V      .         .         .         .
  14.017      0.8749      1.09  Q  V      .         .         .         .
  14.033      0.8764      1.09  Q  V      .         .         .         .
  14.050      0.8779      1.09  Q  V      .         .         .         .
  14.067      0.8794      1.10  Q  V      .         .         .         .
  14.083      0.8809      1.10  Q  V      .         .         .         .
  14.100      0.8824      1.11  Q  V      .         .         .         .
```

```
  14.117      0.8840      1.11  Q  V      .         .         .         .
  14.133      0.8855      1.12  Q  V      .         .         .         .
  14.150      0.8871      1.12  Q  V      .         .         .         .
  14.167      0.8886      1.13  Q  V      .         .         .         .
  14.183      0.8902      1.13  Q  V      .         .         .         .
  14.200      0.8917      1.14  Q  V      .         .         .         .
  14.217      0.8933      1.14  Q  V      .         .         .         .
  14.233      0.8949      1.14  Q  V      .         .         .         .
  14.250      0.8965      1.15  Q  V      .         .         .         .
  14.267      0.8980      1.15  Q  V      .         .         .         .
  14.283      0.8996      1.16  Q  V      .         .         .         .
  14.300      0.9012      1.16  Q  V      .         .         .         .
  14.317      0.9028      1.16  Q  V      .         .         .         .
  14.333      0.9044      1.17  Q  V      .         .         .         .
  14.350      0.9061      1.17  Q  V      .         .         .         .
  14.367      0.9077      1.18  Q  V      .         .         .         .
  14.383      0.9093      1.18  Q  V      .         .         .         .
  14.400      0.9109      1.18  Q  V      .         .         .         .
  14.417      0.9126      1.19  Q  V      .         .         .         .
  14.433      0.9142      1.19  Q  V      .         .         .         .
  14.450      0.9159      1.20  Q  V      .         .         .         .
  14.467      0.9175      1.20  Q  V      .         .         .         .
  14.483      0.9192      1.20  Q  V      .         .         .         .
  14.500      0.9208      1.21  Q  V      .         .         .         .
  14.517      0.9225      1.21  Q  V      .         .         .         .
  14.533      0.9242      1.22  Q  V      .         .         .         .
  14.550      0.9259      1.22  Q  V      .         .         .         .
  14.567      0.9276      1.23  Q  V      .         .         .         .
  14.583      0.9293      1.23  Q  V      .         .         .         .
  14.600      0.9310      1.24  Q  V      .         .         .         .
  14.617      0.9327      1.24  Q  V      .         .         .         .
  14.633      0.9344      1.25  Q  V      .         .         .         .
  14.650      0.9361      1.25  Q  V      .         .         .         .
  14.667      0.9378      1.26  Q  V      .         .         .         .
  14.683      0.9396      1.26  Q  V      .         .         .         .
  14.700      0.9413      1.27  Q  V      .         .         .         .
  14.717      0.9431      1.27  Q  V      .         .         .         .
  14.733      0.9448      1.28  Q  V      .         .         .         .
  14.750      0.9466      1.28  Q  V      .         .         .         .
  14.767      0.9484      1.29  Q  V      .         .         .         .
  14.783      0.9502      1.29  Q  V      .         .         .         .
  14.800      0.9520      1.30  Q  V      .         .         .         .
  14.817      0.9538      1.31  Q  V      .         .         .         .
  14.833      0.9556      1.31  Q  V      .         .         .         .
  14.850      0.9574      1.32  Q  V      .         .         .         .
  14.867      0.9592      1.32  Q  V      .         .         .         .
  14.883      0.9610      1.33  Q  V      .         .         .         .
  14.900      0.9629      1.34  Q  V      .         .         .         .
  14.917      0.9647      1.34  Q  V      .         .         .         .
  14.933      0.9666      1.35  Q  V      .         .         .         .
  14.950      0.9685      1.36  Q  V      .         .         .         .
  14.967      0.9703      1.36  Q  V      .         .         .         .
  14.983      0.9722      1.37  Q  V      .         .         .         .
  15.000      0.9741      1.38  Q  V      .         .         .         .
  15.017      0.9760      1.39  Q  V      .         .         .         .
  15.033      0.9780      1.39  Q  V      .         .         .         .
  15.050      0.9799      1.40  Q  V      .         .         .         .
  15.067      0.9818      1.41  Q  V      .         .         .         .
  15.083      0.9838      1.42  Q  V      .         .         .         .
  15.100      0.9857      1.42  Q  V      .         .         .         .
  15.117      0.9877      1.43  Q  V      .         .         .         .
  15.133      0.9897      1.44  Q  V      .         .         .         .
  15.150      0.9917      1.45  Q  V      .         .         .         .
  15.167      0.9937      1.46  Q  V      .         .         .         .
  15.183      0.9958      1.49  Q  V      .         .         .         .
  15.200      0.9979      1.55  Q  V      .         .         .         .
  15.217      1.0002      1.66  Q  V      .         .         .         .
  15.233      1.0027      1.83  Q  V      .         .         .         .
  15.250      1.0056      2.11  Q  V      .         .         .         .
  15.267      1.0092      2.58  Q  V      .         .         .         .
  15.283      1.0136      3.20  Q  V      .         .         .         .
```

15.300	1.0189	3.89	Q V . . . .
15.317	1.0254	4.67	Q V . . . .
15.333	1.0329	5.50	Q V . . . .
15.350	1.0419	6.53	Q V . . . .
15.367	1.0527	7.80	Q V . . . .
15.383	1.0655	9.30	Q V . . . .
15.400	1.0806	11.00	.Q V . . . .
15.417	1.0987	13.12	.Q V . . . .
15.433	1.1209	16.13	.Q V . . . .
15.450	1.1475	19.29	.Q V . . . .
15.467	1.1772	21.55	. Q V . . . .
15.483	1.2096	23.56	. Q V . . . .
15.500	1.2448	25.49	. Q V . . . .
15.517	1.2825	27.42	. Q V . . . .
15.533	1.3229	29.30	. Q V . . . .
15.550	1.3659	31.23	. Q V . . . .
15.567	1.4116	33.16	. Q V . . . .
15.583	1.4600	35.14	. Q V . . . .
15.600	1.5111	37.14	. Q V . . . .
15.617	1.5652	39.22	. Q V . . . .
15.633	1.6221	41.35	. Q V . . . .
15.650	1.6821	43.57	. Q V . . . .
15.667	1.7453	45.85	. Q V . . . .
15.683	1.8114	48.01	. Q V . . . .
15.700	1.8801	49.88	. Q V . . . .
15.717	1.9512	51.60	. Q V . . . .
15.733	2.0244	53.17	. Q V . . . .
15.750	2.0992	54.29	. Q V . . . .
15.767	2.1737	54.04	. Q V . . . .
15.783	2.2479	53.89	. Q V . . . .
15.800	2.3246	55.72	. Q V . . . .
15.817	2.4052	58.50	. Q V. . . .
15.833	2.4904	61.82	. Q V. . . .
15.850	2.5809	65.74	. Q V. . . .
15.867	2.6777	70.26	. Q V . . .
15.883	2.7816	75.43	. Q V . . .
15.900	2.8936	81.31	. Q V . . .
15.917	3.0150	88.12	. Q .V . . .
15.933	3.1471	95.95	. Q.V . . .
15.950	3.2920	105.22	. Q V . . .
15.967	3.4555	118.70	. .Q V . . .
15.983	3.6453	137.75	. . Q . . .
16.000	3.8675	161.37	. . V Q . . .
16.017	4.1284	189.41	. . V Q . . .
16.033	4.4392	225.59	. . V . Q . .
16.050	4.8178	274.91	. . V . Q . .
16.067	5.2537	316.46	. . V. .Q .
16.083	5.7095	330.86	. . .V . Q .
16.100	6.1668	332.05	. . . V . Q .
16.117	6.6073	319.78	. . . V .Q .
16.133	6.9961	282.29	. . . V Q . .
16.150	7.3196	234.85	. . . Q V . .
16.167	7.6014	204.55	. . Q V . .
16.183	7.8514	181.54	. . Q . V. .
16.200	8.0748	162.17	. . Q . V .
16.217	8.2752	145.49	. . Q . .V .
16.233	8.4568	131.88	. . Q . .V .
16.250	8.6222	120.04	. . Q . . V .
16.267	8.7755	111.28	. .Q . . V .
16.283	8.9184	103.74	. Q . . V .
16.300	9.0503	95.76	. Q. . . V .
16.317	9.1710	87.64	. Q . . . V .
16.333	9.2810	79.87	. Q . . . V .
16.350	9.3811	72.66	. Q . . . V .
16.367	9.4719	65.90	. Q . . . V .
16.383	9.5528	58.78	. Q . . . V .
16.400	9.6247	52.16	. Q . . . V .
16.417	9.6878	45.85	. Q . . . V .
16.433	9.7415	39.01	. Q . . . V .
16.450	9.7862	32.43	. Q . . . V .
16.467	9.8246	27.87	. Q . . . V .

16.483	9.8580	24.25	. Q . . . V .
16.500	9.8871	21.12	. Q . . . V .
16.517	9.9125	18.43	.Q . . . V .
16.533	9.9348	16.20	.Q . . . V .
16.550	9.9547	14.43	.Q . . . V .
16.567	9.9727	13.05	.Q . . . V .
16.583	9.9891	11.90	.Q . . . V .
16.600	10.0040	10.87	.Q . . . V .
16.617	10.0178	9.96	Q . . . V .
16.633	10.0304	9.16	Q . . . V .
16.650	10.0420	8.46	Q . . . V .
16.667	10.0528	7.85	Q . . . V .
16.683	10.0629	7.29	Q . . . V .
16.700	10.0723	6.83	Q . . . V .
16.717	10.0811	6.42	Q . . . V .
16.733	10.0894	6.03	Q . . . V .
16.750	10.0971	5.61	Q . . . V .
16.767	10.1042	5.11	Q . . . V .
16.783	10.1105	4.57	Q . . . V .
16.800	10.1161	4.06	Q . . . V .
16.817	10.1210	3.56	Q . . . V .
16.833	10.1253	3.11	Q . . . V .
16.850	10.1292	2.83	Q . . . V .
16.867	10.1328	2.65	Q . . . V .
16.883	10.1363	2.51	Q . . . V .
16.900	10.1396	2.39	Q . . . V .
16.917	10.1427	2.29	Q . . . V .
16.933	10.1458	2.21	Q . . . V .
16.950	10.1487	2.13	Q . . . V .
16.967	10.1515	2.06	Q . . . V .
16.983	10.1543	1.98	Q . . . V .
17.000	10.1569	1.91	Q . . . V .
17.017	10.1594	1.84	Q . . . V .
17.033	10.1619	1.78	Q . . . V .
17.050	10.1642	1.71	Q . . . V .
17.067	10.1665	1.65	Q . . . V .
17.083	10.1687	1.59	Q . . . V .
17.100	10.1708	1.51	Q . . . V .
17.117	10.1728	1.44	Q . . . V .
17.133	10.1746	1.36	Q . . . V .
17.150	10.1764	1.30	Q . . . V .
17.167	10.1781	1.24	Q . . . V .
17.183	10.1798	1.20	Q . . . V .
17.200	10.1814	1.17	Q . . . V .
17.217	10.1830	1.15	Q . . . V .
17.233	10.1845	1.13	Q . . . V .
17.250	10.1861	1.12	Q . . . V .
17.267	10.1876	1.11	Q . . . V .
17.283	10.1891	1.10	Q . . . V .
17.300	10.1906	1.09	Q . . . V .
17.317	10.1921	1.08	Q . . . V .
17.333	10.1936	1.07	Q . . . V .
17.350	10.1950	1.06	Q . . . V .
17.367	10.1965	1.05	Q . . . V .
17.383	10.1979	1.04	Q . . . V .
17.400	10.1993	1.03	Q . . . V .
17.417	10.2008	1.03	Q . . . V .
17.433	10.2022	1.02	Q . . . V .
17.450	10.2036	1.01	Q . . . V .
17.467	10.2049	1.01	Q . . . V .
17.483	10.2063	1.00	Q . . . V .
17.500	10.2077	1.00	Q . . . V .
17.517	10.2091	0.99	Q . . . V .
17.533	10.2104	0.99	Q . . . V .
17.550	10.2118	0.99	Q . . . V .
17.567	10.2131	0.98	Q . . . V .
17.583	10.2145	0.98	Q . . . V .
17.600	10.2158	0.97	Q . . . V .
17.617	10.2172	0.97	Q . . . V .
17.633	10.2185	0.96	Q . . . V .
17.650	10.2198	0.96	Q . . . V .

```
 17.667     10.2211      0.96  Q         .         .         .       V .
 17.683     10.2224      0.95  Q         .         .         .       V .
 17.700     10.2238      0.95  Q         .         .         .       V .
 17.717     10.2251      0.94  Q         .         .         .       V .
 17.733     10.2263      0.94  Q         .         .         .       V .
 17.750     10.2276      0.94  Q         .         .         .       V .
 17.767     10.2289      0.93  Q         .         .         .       V .
 17.783     10.2302      0.93  Q         .         .         .       V .
 17.800     10.2315      0.93  Q         .         .         .       V .
 17.817     10.2328      0.92  Q         .         .         .       V .
 17.833     10.2340      0.92  Q         .         .         .       V .
 17.850     10.2353      0.92  Q         .         .         .       V .
 17.867     10.2365      0.91  Q         .         .         .       V .
 17.883     10.2378      0.91  Q         .         .         .       V .
 17.900     10.2390      0.91  Q         .         .         .       V .
 17.917     10.2403      0.90  Q         .         .         .       V .
 17.933     10.2415      0.90  Q         .         .         .       V .
 17.950     10.2428      0.90  Q         .         .         .       V .
 17.967     10.2440      0.89  Q         .         .         .       V .
 17.983     10.2452      0.89  Q         .         .         .       V .
 18.000     10.2464      0.89  Q         .         .         .       V .
=====================================================================

 END OF FLOODSCx ROUTING ANALYSIS
```

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****************************************************************************

              F L O O D    R O U T I N G    A N A L Y S I S
          USING COUNTY HYDROLOGY MANUAL OF SAN BERNARDINO(1986)
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                          Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* SPRING TRAILS                JUNE, 2011                  J - 13565-C     *
* BASIN 3 - PRE PROJECT              25 YR PRECIPITATION WITH AMC-II       *
* FOR DETENTION BASIN SIZING (100-YEAR)                                    *
 ****************************************************************************

  FILE NAME: ST3_H_E.DAT
  TIME/DATE OF STUDY: 17:57 06/06/2011


                          ** INPUT SUMMARY **


****************************************************************************
  FLOW PROCESS FROM NODE    301.10 TO NODE    303.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #1<<<<<
============================================================================
  WATERSHED AREA =      18.900 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.127 HOURS
  VALLEY(UNDEVELOPED)/DESERT S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.860; LOW LOSS FRACTION = 0.990
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.27; 30-MINUTE =  0.82;  1-HOUR =  1.32
    3-HOUR =  2.65;    6-HOUR =  4.10; 24-HOUR = 10.70
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.999; 30-MINUTE = 0.999;  1-HOUR = 0.999
    3-HOUR = 1.000;    6-HOUR = 1.000; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE    201.10 TO NODE    210.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERSHED AREA =     179.400 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.100 HOURS
  FOOTHILL S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.760; LOW LOSS FRACTION = 0.990
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.27; 30-MINUTE =  0.82;  1-HOUR =  1.32
    3-HOUR =  2.65;    6-HOUR =  4.10; 24-HOUR = 10.70
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.992; 30-MINUTE = 0.992;  1-HOUR = 0.992
    3-HOUR = 0.999;    6-HOUR = 0.999; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE    210.00 TO NODE    210.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    210.00 TO NODE    210.00 IS CODE =  11
```

```
-----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
=============================================================================
=============================================================================
```

```
+-----------------------------------------------------------------------------------------------------------------------+
|                                    * AES FLOODSCx PROGRAM RESULTS SUMMARY *                                           |
|INPUT FILENAME: [ST3_H_E.DAT    ]                                                                   Page:   1 of    |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|UPSTREAM  DOWNSTREAM|                               | UPSTREAM   DOWNSTREAM| TIME(2) TO | MAX. STORAGE|           |
| NODE #     NODE #  | HYDROLOGIC/HYDRAULIC PROCESS  |PEAK (CFS)  PEAK (CFS)| PEAK (HR)  | MODELED (AF)| FOOTNOTES |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|   301.10     303.00| Subarea (UH) Added to Stream #1|       0.0        25.6|     16.100 |             |           |
|   201.10     210.00| Subarea (UH) Added to Stream #2|       0.0       306.5|     16.100 |             |           |
|   210.00     210.00| Stream #2 Added to:   Stream #1|      25.6       332.0|     16.100 |             |           |
|   210.00     210.00| View:                 Stream #1|                 332.0|     16.100 |        10.62|     3     |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|Notes: 1 = BASIN MODEL VOLUME EXCEEDED; 2 = TIME IS AT END OF 1-MINUTE UNIT INTERVAL                                   |
|       3 = RUNOFF ESTIMATES DO NOT EXTEND PAST 2 DAYS AFTER THE PEAK DAY OF THE DESIGN STORM                            |
+-----------------------------------------------------------------------------------------------------------------------+

  END OF FLOODSCx ROUTING ANALYSIS
```

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

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             Ver. 8.0  Release Date: 01/01/2003  License ID 1261

                           Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* SPRING TRAILS                JUNE, 2011                  J - 13565-C     *
* BASIN 3 - POST PROJECT           100-YR PRECIPITATION WITH AMC-III       *
* FOR DETENTION BASIN SIZING (100-YEAR)                                    *
 ****************************************************************************

  FILE NAME: ST3_H_P.DAT
  TIME/DATE OF STUDY: 10:42 06/10/2011


****************************************************************************
  FLOW PROCESS FROM NODE    300.10 TO NODE   3311.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
============================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERSHED AREA =      88.600 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.207 HOURS
         VALLEY(DEVELOPED) S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.200
         LOW LOSS FRACTION = 0.520
         *HYDROGRAPH MODEL #7 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.32
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  1.04
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.60
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  3.25
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  5.00
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) = 14.00

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
           5-MINUTE FACTOR = 0.996
          30-MINUTE FACTOR = 0.996
           1-HOUR FACTOR = 0.996
           3-HOUR FACTOR = 0.999
           6-HOUR FACTOR = 1.000
          24-HOUR FACTOR = 1.000

         UNIT HYDROGRAPH TIME UNIT =   1.000 MINUTES
         UNIT INTERVAL PERCENTAGE OF LAG-TIME =   8.052


         RUNOFF HYDROGRAPH LISTING LIMITS:
         MODEL TIME(HOURS) FOR BEGINNING OF RESULTS =  14.00
         MODEL TIME(HOURS) FOR END OF RESULTS =  18.00


============================================================================
                        UNIT HYDROGRAPH DETERMINATION

----------------------------------------------------------------------------
     INTERVAL          "S" GRAPH          UNIT HYDROGRAPH
      NUMBER          MEAN VALUES          ORDINATES(CFS)
```

1	0.460	24.649
2	1.380	49.299
3	2.464	58.084
4	3.951	79.629
5	6.472	135.081
6	10.241	201.948
7	14.615	234.300
8	19.331	252.701
9	24.565	280.414
10	29.732	276.778
11	35.919	331.505
12	42.578	356.720
13	50.151	405.744
14	56.292	328.996
15	63.274	374.089
16	69.148	314.679
17	74.324	277.292
18	78.401	218.457
19	82.041	194.990
20	85.311	175.198
21	87.874	137.347
22	89.831	104.840
23	91.555	92.357
24	93.135	84.657
25	94.445	70.166
26	95.468	54.831
27	96.303	44.720
28	96.935	33.829
29	97.566	33.836
30	98.039	25.330
31	98.198	8.532
32	98.349	8.103
33	98.500	8.077
34	98.651	8.103
35	98.802	8.084
36	98.953	8.083
37	99.104	8.084
38	99.255	8.083
39	99.406	8.083
40	99.557	8.083
41	99.708	8.083
42	99.858	8.083
43	100.000	7.582

```
----------------------------------------------------------------------------
    TOTAL SOIL-LOSS VOLUME(ACRE-FEET) =      35.4404
    TOTAL STORM RUNOFF VOLUME(ACRE-FEET) =      67.8727
----------------------------------------------------------------------------
```

```
============================================================================

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

============================================================================
               HYDROGRAPH IN  ONE-MINUTE UNIT INTERVALS(CFS)
        (Notes: Time indicated is at END of Each Unit Intervals.
                Peak 5-minute rainfall intensity is modeled as
                a constant value for entire 5-minute period.)
----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.       75.0     150.0     225.0     300.0
----------------------------------------------------------------------------
  14.000     31.4664     39.84 .    Q    .       V .         .         .
  14.017     31.5215     40.02 .    Q    .       V .         .         .
  14.033     31.5769     40.20 .    Q    .       V .         .         .
  14.050     31.6326     40.40 .    Q    .       V .         .         .
  14.067     31.6885     40.61 .    Q    .       V .         .         .
  14.083     31.7447     40.84 .    Q    .       V .         .         .
  14.100     31.8014     41.11 .    Q    .       V .         .         .
  14.117     31.8584     41.40 .    Q    .       V .         .         .
  14.133     31.9158     41.69 .    Q    .       V .         .         .
  14.150     31.9737     42.00 .    Q    .       V .         .         .
  14.167     32.0319     42.31 .    Q    .       V .         .         .
  14.183     32.0907     42.65 .    Q    .       V .         .         .
  14.200     32.1499     43.00 .    Q    .       V .         .         .
  14.217     32.2097     43.38 .    Q    .       V .         .         .
  14.233     32.2699     43.72 .    Q    .        V.         .         .
  14.250     32.3306     44.08 .    Q    .        V.         .         .
  14.267     32.3918     44.42 .    Q    .        V.         .         .
  14.283     32.4534     44.74 .    Q    .        V.         .         .
  14.300     32.5154     45.04 .     Q   .        V.         .         .
  14.317     32.5779     45.33 .     Q   .        V.         .         .
  14.333     32.6407     45.61 .     Q   .        V.         .         .
  14.350     32.7039     45.87 .     Q   .        V.         .         .
  14.367     32.7674     46.12 .     Q   .        V.         .         .
  14.383     32.8313     46.37 .     Q   .        V.         .         .
  14.400     32.8955     46.62 .     Q   .        V.         .         .
  14.417     32.9600     46.86 .     Q   .        V.         .         .
  14.433     33.0249     47.10 .     Q   .        V.         .         .
  14.450     33.0901     47.34 .     Q   .        V.         .         .
  14.467     33.1556     47.57 .     Q   .        V.         .         .
  14.483     33.2215     47.80 .     Q   .        V.         .         .
  14.500     33.2876     48.04 .     Q   .        V.         .         .
  14.517     33.3541     48.27 .     Q   .        V.         .         .
  14.533     33.4209     48.50 .     Q   .        V.         .         .
  14.550     33.4881     48.74 .     Q   .        V.         .         .
  14.567     33.5555     48.97 .     Q   .        V.         .         .
  14.583     33.6233     49.22 .     Q   .        V.         .         .
  14.600     33.6914     49.46 .     Q   .        V.         .         .
  14.617     33.7599     49.71 .     Q   .        V.         .         .
  14.633     33.8287     49.96 .     Q   .        V.         .         .
  14.650     33.8979     50.22 .     Q   .        V.         .         .
  14.667     33.9674     50.48 .     Q   .         V         .         .
  14.683     34.0373     50.74 .     Q   .         V         .         .
  14.700     34.1076     51.01 .     Q   .         V         .         .
  14.717     34.1782     51.28 .     Q   .         V         .         .
  14.733     34.2492     51.55 .     Q   .         V         .         .
  14.750     34.3206     51.83 .     Q   .         V         .         .
  14.767     34.3924     52.10 .     Q   .         V         .         .
  14.783     34.4646     52.39 .     Q   .         V         .         .
  14.800     34.5371     52.68 .      Q  .         V         .         .
  14.817     34.6101     52.97 .      Q  .         V         .         .
  14.833     34.6834     53.27 .      Q  .         V         .         .
  14.850     34.7572     53.57 .      Q  .         V         .         .
  14.867     34.8315     53.88 .      Q  .         V         .         .
  14.883     34.9061     54.19 .      Q  .         V         .         .
  14.900     34.9812     54.51 .      Q  .         V         .         .
  14.917     35.0567     54.84 .      Q  .         V         .         .
  14.933     35.1327     55.16 .      Q  .         V         .         .
  14.950     35.2091     55.50 .      Q  .         V         .         .
  14.967     35.2860     55.84 .      Q  .         V         .         .
  14.983     35.3634     56.19 .      Q  .         V         .         .
  15.000     35.4413     56.54 .      Q  .         V         .         .
  15.017     35.5197     56.90 .      Q  .         V         .         .
  15.033     35.5986     57.27 .      Q  .         V         .         .
  15.050     35.6780     57.65 .      Q  .         .V        .         .
  15.067     35.7579     58.02 .      Q  .         .V        .         .
  15.083     35.8384     58.42 .      Q  .         .V        .         .
  15.100     35.9194     58.81 .      Q  .         .V        .         .
  15.117     36.0010     59.22 .      Q  .         .V        .         .
  15.133     36.0831     59.63 .      Q  .         .V        .         .
  15.150     36.1658     60.06 .       Q .         .V        .         .
  15.167     36.2491     60.49 .       Q .         .V        .         .
  15.183     36.3331     60.93 .       Q .         .V        .         .
  15.200     36.4176     61.38 .       Q .         .V        .         .
  15.217     36.5028     61.84 .       Q .         .V        .         .
  15.233     36.5886     62.31 .       Q .         .V        .         .
  15.250     36.6751     62.80 .       Q .         .V        .         .
  15.267     36.7623     63.29 .       Q .         .V        .         .
  15.283     36.8502     63.80 .       Q .         .V        .         .
  15.300     36.9387     64.31 .       Q .         .V        .         .
  15.317     37.0281     64.85 .       Q .         .V        .         .
  15.333     37.1181     65.39 .       Q .         .V        .         .
  15.350     37.2090     65.94 .       Q .         .V        .         .
  15.367     37.3005     66.47 .       Q .         .V        .         .
  15.383     37.3928     67.03 .       Q .         . V       .         .
  15.400     37.4859     67.57 .        Q.         . V       .         .
  15.417     37.5797     68.11 .        Q.         . V       .         .
  15.433     37.6742     68.60 .        Q.         . V       .         .
  15.450     37.7694     69.11 .        Q.         . V       .         .
  15.467     37.8653     69.61 .        Q.         . V       .         .
  15.483     37.9619     70.13 .        Q.         . V       .         .
  15.500     38.0592     70.66 .        Q.         . V       .         .
  15.517     38.1573     71.19 .        Q.         . V       .         .
  15.533     38.2561     71.72 .        Q.         . V       .         .
  15.550     38.3556     72.25 .        Q.         . V       .         .
  15.567     38.4559     72.86 .        Q.         . V       .         .
  15.583     38.5571     73.48 .        Q.         . V       .         .
  15.600     38.6593     74.16 .        Q.         . V       .         .
  15.617     38.7625     74.93 .        Q.         . V       .         .
  15.633     38.8669     75.76 .         Q         . V       .         .
  15.650     38.9725     76.66 .         Q         . V       .         .
  15.667     39.0794     77.61 .         Q         .  V      .         .
  15.683     39.1877     78.69 .         Q         .  V      .         .
  15.700     39.2977     79.85 .         Q         .  V      .         .
  15.717     39.4094     81.10 .         Q         .  V      .         .
  15.733     39.5230     82.43 .         Q         .  V      .         .
  15.750     39.6386     83.93 .         .Q        .  V      .         .
  15.767     39.7565     85.57 .         .Q        .  V      .         .
  15.783     39.8768     87.37 .         .Q        .  V      .         .
  15.800     39.9997     89.25 .         .Q        .  V      .         .
  15.817     40.1255     91.29 .         . Q       .  V      .         .
  15.833     40.2541     93.41 .         . Q       .  V      .         .
  15.850     40.3860     95.76 .         . Q       .  V      .         .
  15.867     40.5214     98.25 .         .  Q      .  V      .         .
  15.883     40.6605    100.99 .         .  Q      .  V      .         .
  15.900     40.8034    103.78 .         .  Q      .   V     .         .
  15.917     40.9506    106.88 .         .   Q     .   V     .         .
  15.933     41.1023    110.12 .         .   Q     .   V     .         .
  15.950     41.2589    113.69 .         .    Q    .   V     .         .
  15.967     41.4215    118.04 .         .    Q    .   V     .         .
  15.983     41.5913    123.28 .         .     Q   .   V     .         .
  16.000     41.7690    129.00 .         .      Q  .   V     .         .
  16.017     41.9558    135.63 .         .       Q .   V     .         .
  16.033     42.1538    143.76 .         .        Q.   V     .         .
  16.050     42.3646    153.03 .         .         Q   V     .         .
  16.067     42.5881    162.26 .         .         .Q   V    .         .
  16.083     42.8245    171.64 .         .         . Q  V    .         .
  16.100     43.0735    180.76 .         .         .   QV    .         .
  16.117     43.3328    188.29 .         .         .    Q    .         .
```

```
16.133     43.6010    194.68  .         .         .    Q    .         .
16.150     43.8766    200.11  .         .         .    VQ   .         .
16.167     44.1589    204.96  .         .         .     VQ  .         .
16.183     44.4434    206.53  .         .         .     VQ  .         .
16.200     44.7300    208.08  .         .         .     VQ  .         .
16.217     45.0137    206.00  .         .         .     VQ  .         .
16.233     45.2911    201.33  .         .         .     Q   .         .
16.250     45.5571    193.12  .         .         .    QV   .         .
16.267     45.8123    185.27  .         .         .   Q V   .         .
16.283     46.0538    175.34  .         .         .  Q   V  .         .
16.300     46.2816    165.38  .         .         . Q    V  .         .
16.317     46.4956    155.41  .         .         Q      V  .         .
16.333     46.6976    146.59  .         .        Q.      V  .         .
16.350     46.8881    138.29  .         .       Q .      V  .         .
16.367     47.0675    130.28  .         .     Q  .      V  .         .
16.383     47.2369    122.97  .         .    Q   .      V  .         .
16.400     47.3975    116.61  .         .   Q    .      V  .         .
16.417     47.5499    110.62  .         .  Q     .       V .         .
16.433     47.6948    105.20  .         .  Q     .       V .         .
16.450     47.8328    100.21  .         . Q      .       V .         .
16.467     47.9645     95.57  .         . Q      .       V .         .
16.483     48.0905     91.50  .         . Q      .       V .         .
16.500     48.2117     87.97  .         .Q       .       V .         .
16.517     48.3284     84.76  .         .Q       .       V .         .
16.533     48.4414     82.01  .         Q        .       V .         .
16.550     48.5515     79.93  .         Q        .       V .         .
16.567     48.6589     78.03  .         Q        .       V .         .
16.583     48.7641     76.35  .         Q        .       V .         .
16.600     48.8671     74.79  .        Q.        .       V .         .
16.617     48.9681     73.32  .        Q.        .       V .         .
16.633     49.0672     71.91  .        Q.        .       V .         .
16.650     49.1643     70.56  .        Q.        .       V .         .
16.667     49.2597     69.24  .        Q.        .        V.         .
16.683     49.3531     67.81  .        Q.        .        V.         .
16.700     49.4446     66.42  .       Q .        .        V.         .
16.717     49.5342     65.08  .       Q .        .        V.         .
16.733     49.6221     63.78  .       Q .        .        V.         .
16.750     49.7082     62.53  .       Q .        .        V.         .
16.767     49.7929     61.50  .       Q .        .        V.         .
16.783     49.8763     60.55  .       Q .        .        V.         .
16.800     49.9585     59.64  .      Q  .        .        V.         .
16.817     50.0394     58.78  .      Q  .        .        V.         .
16.833     50.1193     57.96  .      Q  .        .        V.         .
16.850     50.1980     57.17  .      Q  .        .        V.         .
16.867     50.2757     56.41  .      Q  .        .        V.         .
16.883     50.3524     55.68  .      Q  .        .        V.         .
16.900     50.4282     54.99  .      Q  .        .        V.         .
16.917     50.5030     54.33  .      Q  .        .        V.         .
16.933     50.5770     53.69  .      Q  .        .        V.         .
16.950     50.6501     53.08  .      Q  .        .        V.         .
16.967     50.7224     52.48  .     Q   .        .        V.         .
16.983     50.7939     51.91  .     Q   .        .        V.         .
17.000     50.8646     51.35  .     Q   .        .        V.         .
17.017     50.9346     50.81  .     Q   .        .         V         .
17.033     51.0038     50.26  .     Q   .        .         V         .
17.050     51.0723     49.73  .     Q   .        .         V         .
17.067     51.1401     49.20  .     Q   .        .         V         .
17.083     51.2071     48.65  .     Q   .        .         V         .
17.100     51.2733     48.09  .     Q   .        .         V         .
17.117     51.3388     47.52  .     Q   .        .         V         .
17.133     51.4035     46.96  .     Q   .        .         V         .
17.150     51.4674     46.39  .     Q   .        .         V         .
17.167     51.5305     45.84  .     Q   .        .         V         .
17.183     51.5929     45.27  .     Q   .        .         V         .
17.200     51.6544     44.69  .    Q    .        .         V         .
17.217     51.7152     44.11  .    Q    .        .         V         .
17.233     51.7752     43.57  .    Q    .        .         V         .
17.250     51.8344     43.01  .    Q    .        .         V         .
17.267     51.8930     42.49  .    Q    .        .         V         .
17.283     51.9508     42.00  .    Q    .        .         V         .
17.300     52.0080     41.54  .    Q    .        .         V         .
17.317     52.0646     41.10  .    Q    .        .         V         .
17.333     52.1207     40.68  .    Q    .        .         V         .
17.350     52.1762     40.28  .    Q    .        .         V         .
17.367     52.2311     39.91  .    Q    .        .         V         .
17.383     52.2856     39.54  .    Q    .        .         V         .
17.400     52.3396     39.19  .    Q    .        .         V         .
17.417     52.3931     38.85  .    Q    .        .         V         .
17.433     52.4461     38.52  .    Q    .        .         V         .
17.450     52.4988     38.20  .    Q    .        .         V         .
17.467     52.5510     37.90  .    Q    .        .         V         .
17.483     52.6027     37.59  .    Q    .        .         .V        .
17.500     52.6541     37.30  .   Q     .        .         .V        .
17.517     52.7051     37.02  .   Q     .        .         .V        .
17.533     52.7557     36.75  .   Q     .        .         .V        .
17.550     52.8060     36.48  .   Q     .        .         .V        .
17.567     52.8559     36.22  .   Q     .        .         .V        .
17.583     52.9054     35.96  .   Q     .        .         .V        .
17.600     52.9546     35.70  .   Q     .        .         .V        .
17.617     53.0034     35.45  .   Q     .        .         .V        .
17.633     53.0519     35.20  .   Q     .        .         .V        .
17.650     53.1000     34.96  .   Q     .        .         .V        .
17.667     53.1479     34.72  .   Q     .        .         .V        .
17.683     53.1954     34.49  .   Q     .        .         .V        .
17.700     53.2425     34.25  .   Q     .        .         .V        .
17.717     53.2894     34.03  .   Q     .        .         .V        .
17.733     53.3360     33.81  .   Q     .        .         .V        .
17.750     53.3822     33.59  .   Q     .        .         .V        .
17.767     53.4282     33.38  .   Q     .        .         .V        .
17.783     53.4739     33.16  .   Q     .        .         .V        .
17.800     53.5193     32.96  .   Q     .        .         .V        .
17.817     53.5644     32.75  .   Q     .        .         .V        .
17.833     53.6092     32.55  .   Q     .        .         .V        .
17.850     53.6538     32.35  .   Q     .        .         .V        .
17.867     53.6981     32.16  .   Q     .        .         .V        .
17.883     53.7421     31.96  .   Q     .        .         .V        .
17.900     53.7859     31.77  .   Q     .        .         .V        .
17.917     53.8294     31.59  .   Q     .        .         .V        .
17.933     53.8726     31.40  .   Q     .        .         .V        .
17.950     53.9156     31.22  .   Q     .        .         .V        .
17.967     53.9584     31.04  .   Q     .        .         .V        .
17.983     54.0009     30.86  .   Q     .        .         .V        .
18.000     54.0432     30.68  .   Q     .        .         .V        .
```

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*****************************************************************************
  FLOW PROCESS FROM NODE   3311.00 TO NODE   3311.00 IS CODE = 3.2
-----------------------------------------------------------------------------
  >>>>>FLOW-THROUGH DETENTION BASIN ROUTING MODEL APPLIED TO STREAM #1<<<<<
=============================================================================

                    INFLOW
                  (STREAM 1)
                      |
                      |
                      V                 __effective depth
                 -----------            |   (and volume)
                |           |    |    |
                |           |    |....V........
                | detention |<-->|           outflow
                |   basin   |    |.........______
                 -----------      |    ^    |  \
                      |           |  dead   |   basin outlet
                      V           | storage |
                    OUTFLOW        ---------
                  (STREAM 1)


          ROUTE RUNOFF HYDROGRAPH FROM STREAM NUMBER 1
          THROUGH A FLOW-THROUGH DETENTION BASIN
          SPECIFIED BASIN CONDITIONS ARE AS FOLLOWS:
```

DEAD STORAGE(AF) = 0.000
SPECIFIED DEAD STORAGE(AF) FILLED = 0.000
SPECIFIED EFFECTIVE VOLUME(AF) FILLED ABOVE OUTLET = 0.000
DETENTION BASIN CONSTANT LOSS RATE(CFS) = 0.00

BASIN DEPTH VERSUS OUTFLOW AND STORAGE INFORMATION:

INTERVAL NUMBER	DEPTH (FT)	OUTFLOW (CFS)	STORAGE (AF)
1	0.00	0.00	0.000
2	2.00	3.56	7.070
3	3.00	168.00	9.660
4	4.00	300.00	14.000

==========

MODIFIED-PULS BASIN ROUTING MODEL RESULTS(1-MINUTE COMPUTATION INTERVALS):
(Note: Computed EFFECTIVE DEPTH and VOLUME are estimated at the clock time;
MEAN OUTFLOW is the average value during the unit interval.)

CLOCK TIME (HRS)	DEAD-STORAGE FILLED(AF)	INFLOW (CFS)	LOSS (CFS)	EFFECTIVE DEPTH(FT)	MEAN OUTFLOW (CFS)	EFFECTIVE VOLUME(AF)
14.017	0.000	40.02	0.00	2.21	38.3	7.618
14.033	0.000	40.20	0.00	2.21	38.5	7.621
14.050	0.000	40.40	0.00	2.21	38.6	7.623
14.067	0.000	40.61	0.00	2.21	38.8	7.626
14.083	0.000	40.84	0.00	2.22	38.9	7.628
14.100	0.000	41.11	0.00	2.22	39.1	7.631
14.117	0.000	41.40	0.00	2.22	39.3	7.634
14.133	0.000	41.69	0.00	2.22	39.5	7.637
14.150	0.000	42.00	0.00	2.22	39.7	7.640
14.167	0.000	42.31	0.00	2.22	39.9	7.644
14.183	0.000	42.65	0.00	2.22	40.1	7.647
14.200	0.000	43.00	0.00	2.22	40.3	7.651
14.217	0.000	43.38	0.00	2.23	40.6	7.655
14.233	0.000	43.72	0.00	2.23	40.8	7.659
14.250	0.000	44.08	0.00	2.23	41.1	7.663
14.267	0.000	44.42	0.00	2.23	41.3	7.667
14.283	0.000	44.74	0.00	2.23	41.6	7.671
14.300	0.000	45.04	0.00	2.23	41.9	7.676
14.317	0.000	45.33	0.00	2.24	42.2	7.680
14.333	0.000	45.61	0.00	2.24	42.4	7.685
14.350	0.000	45.87	0.00	2.24	42.7	7.689
14.367	0.000	46.12	0.00	2.24	43.0	7.693
14.383	0.000	46.37	0.00	2.24	43.3	7.697
14.400	0.000	46.62	0.00	2.24	43.5	7.702
14.417	0.000	46.86	0.00	2.25	43.8	7.706
14.433	0.000	47.10	0.00	2.25	44.1	7.710
14.450	0.000	47.34	0.00	2.25	44.3	7.714
14.467	0.000	47.57	0.00	2.25	44.6	7.718
14.483	0.000	47.80	0.00	2.25	44.9	7.722
14.500	0.000	48.04	0.00	2.25	45.1	7.726
14.517	0.000	48.27	0.00	2.25	45.4	7.730
14.533	0.000	48.50	0.00	2.26	45.6	7.734
14.550	0.000	48.74	0.00	2.26	45.9	7.738
14.567	0.000	48.97	0.00	2.26	46.1	7.742
14.583	0.000	49.22	0.00	2.26	46.4	7.746
14.600	0.000	49.46	0.00	2.26	46.6	7.750
14.617	0.000	49.71	0.00	2.26	46.9	7.754
14.633	0.000	49.96	0.00	2.27	47.1	7.758
14.650	0.000	50.22	0.00	2.27	47.4	7.762
14.667	0.000	50.48	0.00	2.27	47.6	7.766
14.683	0.000	50.74	0.00	2.27	47.9	7.770
14.700	0.000	51.01	0.00	2.27	48.1	7.774
14.717	0.000	51.28	0.00	2.27	48.4	7.778
14.733	0.000	51.55	0.00	2.27	48.6	7.782
14.750	0.000	51.83	0.00	2.28	48.9	7.786
14.767	0.000	52.10	0.00	2.28	49.1	7.790
14.783	0.000	52.39	0.00	2.28	49.4	7.794
14.800	0.000	52.68	0.00	2.28	49.7	7.798
14.817	0.000	52.97	0.00	2.28	49.9	7.802
14.833	0.000	53.27	0.00	2.28	50.2	7.807
14.850	0.000	53.57	0.00	2.29	50.5	7.811
14.867	0.000	53.88	0.00	2.29	50.7	7.815
14.883	0.000	54.19	0.00	2.29	51.0	7.820
14.900	0.000	54.51	0.00	2.29	51.3	7.824
14.917	0.000	54.84	0.00	2.29	51.6	7.829
14.933	0.000	55.16	0.00	2.29	51.9	7.833
14.950	0.000	55.50	0.00	2.30	52.2	7.838
14.967	0.000	55.84	0.00	2.30	52.4	7.842
14.983	0.000	56.19	0.00	2.30	52.7	7.847
15.000	0.000	56.54	0.00	2.30	53.1	7.852
15.017	0.000	56.90	0.00	2.30	53.4	7.857
15.033	0.000	57.27	0.00	2.31	53.7	7.862
15.050	0.000	57.65	0.00	2.31	54.0	7.867
15.067	0.000	58.02	0.00	2.31	54.3	7.872
15.083	0.000	58.42	0.00	2.31	54.6	7.877
15.100	0.000	58.81	0.00	2.31	55.0	7.882
15.117	0.000	59.22	0.00	2.32	55.3	7.888
15.133	0.000	59.63	0.00	2.32	55.7	7.893
15.150	0.000	60.06	0.00	2.32	56.0	7.899
15.167	0.000	60.49	0.00	2.32	56.4	7.905
15.183	0.000	60.93	0.00	2.32	56.7	7.910
15.200	0.000	61.38	0.00	2.33	57.1	7.916
15.217	0.000	61.84	0.00	2.33	57.5	7.922
15.233	0.000	62.31	0.00	2.33	57.9	7.928
15.250	0.000	62.80	0.00	2.33	58.3	7.935
15.267	0.000	63.29	0.00	2.34	58.7	7.941
15.283	0.000	63.80	0.00	2.34	59.1	7.947
15.300	0.000	64.31	0.00	2.34	59.5	7.954
15.317	0.000	64.85	0.00	2.34	59.9	7.961
15.333	0.000	65.39	0.00	2.35	60.3	7.968
15.350	0.000	65.94	0.00	2.35	60.8	7.975
15.367	0.000	66.47	0.00	2.35	61.2	7.982
15.383	0.000	67.03	0.00	2.36	61.7	7.990
15.400	0.000	67.57	0.00	2.36	62.2	7.997
15.417	0.000	68.11	0.00	2.36	62.7	8.004
15.433	0.000	68.60	0.00	2.36	63.1	8.012
15.450	0.000	69.11	0.00	2.37	63.6	8.020
15.467	0.000	69.61	0.00	2.37	64.1	8.027
15.483	0.000	70.13	0.00	2.37	64.6	8.035
15.500	0.000	70.66	0.00	2.38	65.1	8.043
15.517	0.000	71.19	0.00	2.38	65.6	8.050
15.533	0.000	71.72	0.00	2.38	66.0	8.058
15.550	0.000	72.25	0.00	2.38	66.5	8.066
15.567	0.000	72.86	0.00	2.39	67.0	8.074
15.583	0.000	73.48	0.00	2.39	67.6	8.082
15.600	0.000	74.16	0.00	2.39	68.1	8.090
15.617	0.000	74.93	0.00	2.40	68.6	8.099
15.633	0.000	75.76	0.00	2.40	69.2	8.108
15.650	0.000	76.66	0.00	2.40	69.8	8.118
15.667	0.000	77.61	0.00	2.41	70.4	8.128
15.683	0.000	78.69	0.00	2.41	71.0	8.138
15.700	0.000	79.85	0.00	2.42	71.7	8.149
15.717	0.000	81.10	0.00	2.42	72.5	8.161
15.733	0.000	82.43	0.00	2.43	73.2	8.174
15.750	0.000	83.93	0.00	2.43	74.1	8.187
15.767	0.000	85.57	0.00	2.44	75.0	8.202
15.783	0.000	87.37	0.00	2.44	75.9	8.218
15.800	0.000	89.25	0.00	2.45	77.0	8.235
15.817	0.000	91.29	0.00	2.46	78.1	8.253
15.833	0.000	93.41	0.00	2.46	79.3	8.272
15.850	0.000	95.76	0.00	2.47	80.6	8.293
15.867	0.000	98.25	0.00	2.48	81.9	8.316
15.883	0.000	100.99	0.00	2.49	83.4	8.340
15.900	0.000	103.78	0.00	2.50	85.0	8.366
15.917	0.000	106.88	0.00	2.51	86.7	8.394
15.933	0.000	110.12	0.00	2.52	88.5	8.423
15.950	0.000	113.69	0.00	2.53	90.5	8.455

15.967	0.000	118.04	0.00	2.55	92.6	8.490
15.983	0.000	123.28	0.00	2.56	95.0	8.529
16.000	0.000	129.00	0.00	2.58	97.6	8.573
16.017	0.000	135.63	0.00	2.60	100.5	8.621
16.033	0.000	143.76	0.00	2.62	103.8	8.676
16.050	0.000	153.03	0.00	2.64	107.5	8.739
16.067	0.000	162.26	0.00	2.67	111.7	8.808
16.083	0.000	171.64	0.00	2.70	116.3	8.884
16.100	0.000	180.76	0.00	2.73	121.4	8.966
16.117	0.000	188.29	0.00	2.76	126.7	9.051
16.133	0.000	194.68	0.00	2.80	132.1	9.137
16.150	0.000	200.11	0.00	2.83	137.6	9.224
16.167	0.000	204.96	0.00	2.86	143.0	9.309
16.183	0.000	206.53	0.00	2.90	148.3	9.389
16.200	0.000	208.08	0.00	2.92	153.2	9.465
16.217	0.000	206.00	0.00	2.95	157.7	9.531
16.233	0.000	201.33	0.00	2.97	161.6	9.586
16.250	0.000	193.12	0.00	2.99	164.6	9.625
16.267	0.000	185.27	0.00	3.00	166.6	9.651
16.283	0.000	175.34	0.00	3.00	167.7	9.662
16.300	0.000	165.38	0.00	3.00	168.0	9.658
16.317	0.000	155.41	0.00	2.99	167.4	9.642
16.333	0.000	146.59	0.00	2.98	166.0	9.615
16.350	0.000	138.29	0.00	2.97	164.0	9.579
16.367	0.000	130.28	0.00	2.95	161.5	9.536
16.383	0.000	122.97	0.00	2.93	158.6	9.487
16.400	0.000	116.61	0.00	2.91	155.3	9.434
16.417	0.000	110.62	0.00	2.89	151.8	9.377
16.433	0.000	105.20	0.00	2.87	148.2	9.318
16.450	0.000	100.21	0.00	2.84	144.4	9.257
16.467	0.000	95.57	0.00	2.82	140.5	9.195
16.483	0.000	91.50	0.00	2.80	136.5	9.133
16.500	0.000	87.97	0.00	2.77	132.6	9.072
16.517	0.000	84.76	0.00	2.75	128.7	9.011
16.533	0.000	82.01	0.00	2.73	124.9	8.952
16.550	0.000	79.93	0.00	2.70	121.3	8.895
16.567	0.000	78.03	0.00	2.68	117.7	8.841
16.583	0.000	76.35	0.00	2.66	114.3	8.788
16.600	0.000	74.79	0.00	2.64	111.1	8.738
16.617	0.000	73.32	0.00	2.63	108.0	8.691
16.633	0.000	71.91	0.00	2.61	105.0	8.645
16.650	0.000	70.56	0.00	2.59	102.2	8.601
16.667	0.000	69.24	0.00	2.58	99.5	8.560
16.683	0.000	67.81	0.00	2.56	96.9	8.520
16.700	0.000	66.42	0.00	2.54	94.4	8.481
16.717	0.000	65.08	0.00	2.53	92.0	8.444
16.733	0.000	63.78	0.00	2.52	89.7	8.409
16.750	0.000	62.53	0.00	2.50	87.5	8.374
16.767	0.000	61.50	0.00	2.49	85.3	8.341
16.783	0.000	60.55	0.00	2.48	83.3	8.310
16.800	0.000	59.64	0.00	2.47	81.3	8.280
16.817	0.000	58.78	0.00	2.46	79.5	8.252
16.833	0.000	57.96	0.00	2.45	77.7	8.224
16.850	0.000	57.17	0.00	2.44	76.0	8.198
16.867	0.000	56.41	0.00	2.43	74.4	8.174
16.883	0.000	55.68	0.00	2.42	72.9	8.150
16.900	0.000	54.99	0.00	2.41	71.4	8.127
16.917	0.000	54.33	0.00	2.40	70.0	8.106
16.933	0.000	53.69	0.00	2.39	68.7	8.085
16.950	0.000	53.08	0.00	2.38	67.4	8.065
16.967	0.000	52.48	0.00	2.38	66.2	8.047
16.983	0.000	51.91	0.00	2.37	65.0	8.029
17.000	0.000	51.35	0.00	2.36	63.9	8.011
17.017	0.000	50.81	0.00	2.36	62.8	7.995
17.033	0.000	50.26	0.00	2.35	61.8	7.979
17.050	0.000	49.73	0.00	2.35	60.8	7.964
17.067	0.000	49.20	0.00	2.34	59.8	7.949
17.083	0.000	48.65	0.00	2.33	58.9	7.935
17.100	0.000	48.09	0.00	2.33	58.0	7.921
17.117	0.000	47.52	0.00	2.32	57.2	7.908
17.133	0.000	46.96	0.00	2.32	56.3	7.895
17.150	0.000	46.39	0.00	2.31	55.5	7.882
17.167	0.000	45.84	0.00	2.31	54.7	7.870
17.183	0.000	45.27	0.00	2.30	54.0	7.858
17.200	0.000	44.69	0.00	2.30	53.2	7.846
17.217	0.000	44.11	0.00	2.30	52.5	7.835
17.233	0.000	43.57	0.00	2.29	51.8	7.824
17.250	0.000	43.01	0.00	2.29	51.0	7.812
17.267	0.000	42.49	0.00	2.28	50.4	7.802
17.283	0.000	42.00	0.00	2.28	49.7	7.791
17.300	0.000	41.54	0.00	2.27	49.0	7.781
17.317	0.000	41.10	0.00	2.27	48.4	7.771
17.333	0.000	40.68	0.00	2.27	47.7	7.761
17.350	0.000	40.28	0.00	2.26	47.1	7.752
17.367	0.000	39.91	0.00	2.26	46.5	7.742
17.383	0.000	39.54	0.00	2.26	46.0	7.734
17.400	0.000	39.19	0.00	2.25	45.4	7.725
17.417	0.000	38.85	0.00	2.25	44.9	7.717
17.433	0.000	38.52	0.00	2.25	44.4	7.709
17.450	0.000	38.20	0.00	2.24	43.9	7.701
17.467	0.000	37.90	0.00	2.24	43.4	7.693
17.483	0.000	37.59	0.00	2.24	42.9	7.686
17.500	0.000	37.30	0.00	2.24	42.4	7.679
17.517	0.000	37.02	0.00	2.23	42.0	7.672
17.533	0.000	36.75	0.00	2.23	41.6	7.665
17.550	0.000	36.48	0.00	2.23	41.2	7.659
17.567	0.000	36.22	0.00	2.22	40.8	7.653
17.583	0.000	35.96	0.00	2.22	40.4	7.647
17.600	0.000	35.70	0.00	2.22	40.0	7.641
17.617	0.000	35.45	0.00	2.22	39.6	7.635
17.633	0.000	35.20	0.00	2.22	39.3	7.629
17.650	0.000	34.96	0.00	2.21	38.9	7.624
17.667	0.000	34.72	0.00	2.21	38.6	7.619
17.683	0.000	34.49	0.00	2.21	38.2	7.614
17.700	0.000	34.25	0.00	2.21	37.9	7.608
17.717	0.000	34.03	0.00	2.21	37.6	7.604
17.733	0.000	33.81	0.00	2.20	37.3	7.599
17.750	0.000	33.59	0.00	2.20	37.0	7.594
17.767	0.000	33.38	0.00	2.20	36.7	7.590
17.783	0.000	33.16	0.00	2.20	36.4	7.585
17.800	0.000	32.96	0.00	2.20	36.1	7.581
17.817	0.000	32.75	0.00	2.20	35.9	7.576
17.833	0.000	32.55	0.00	2.19	35.6	7.572
17.850	0.000	32.35	0.00	2.19	35.3	7.568
17.867	0.000	32.16	0.00	2.19	35.1	7.564
17.883	0.000	31.96	0.00	2.19	34.8	7.560
17.900	0.000	31.77	0.00	2.19	34.6	7.556
17.917	0.000	31.59	0.00	2.19	34.3	7.553
17.933	0.000	31.40	0.00	2.18	34.1	7.549
17.950	0.000	31.22	0.00	2.18	33.9	7.545
17.967	0.000	31.04	0.00	2.18	33.6	7.542
17.983	0.000	30.86	0.00	2.18	33.4	7.538
18.000	0.000	30.68	0.00	2.18	33.2	7.535

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---------------------------------------------------------------------------
  PROCESS SUMMARY OF STORAGE:
    INFLOW  VOLUME =     67.873 AF
    BASIN  STORAGE =      0.018 AF (WITH      0.000 AF INITIALLY FILLED)
    OUTFLOW VOLUME =     67.854 AF
    LOSS    VOLUME =      0.000 AF


***************************************************************************
  FLOW PROCESS FROM NODE    319.11 TO NODE    327.00 IS CODE =   1
---------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
===========================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #2)

         WATERSHED AREA =     119.500 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.100 HOURS
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FOOTHILL S-GRAPH SELECTED
MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.720
LOW LOSS FRACTION = 0.990
*HYDROGRAPH MODEL #7 SPECIFIED*

SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.27
SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.82
SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.32
SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  2.65
SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  4.10
SPECIFIED PEAK 24-HOUR RAINFALL(INCH) = 10.70

PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE FACTOR = 0.995
 30-MINUTE FACTOR = 0.995
  1-HOUR FACTOR = 0.995
  3-HOUR FACTOR = 0.999
  6-HOUR FACTOR = 1.000
 24-HOUR FACTOR = 1.000

UNIT HYDROGRAPH TIME UNIT =   1.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME =  16.667


RUNOFF HYDROGRAPH LISTING LIMITS:
MODEL TIME(HOURS) FOR BEGINNING OF RESULTS =  14.00
MODEL TIME(HOURS) FOR END OF RESULTS =  18.00
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UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	1.088	78.613
2	3.867	200.824
3	8.030	300.846
4	13.512	396.071
5	22.070	618.394
6	38.303	1173.014
7	55.310	1228.920
8	63.640	601.962
9	69.177	400.112
10	73.775	332.226
11	77.638	279.150
12	80.673	219.329
13	83.521	205.770
14	85.876	170.207
15	87.919	147.597
16	89.627	123.451
17	91.182	112.319
18	92.568	100.150
19	93.783	87.830
20	94.757	70.352
21	95.655	64.907
22	96.333	49.012
23	96.871	38.843
24	97.409	38.860
25	97.910	36.234
26	98.078	12.101
27	98.164	6.232
28	98.250	6.232
29	98.336	6.232
30	98.423	6.232
31	98.509	6.232
32	98.595	6.232
33	98.681	6.216
34	98.767	6.232
35	98.854	6.249
36	98.940	6.215
37	99.026	6.232
38	99.112	6.215
39	99.198	6.215
40	99.284	6.215
41	99.370	6.215
42	99.456	6.215
43	99.542	6.215
44	99.628	6.215
45	99.714	6.215
46	99.800	6.215
47	99.886	6.215
48	99.972	6.215
49	100.000	2.011

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 99.4491
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 7.0753

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

============================================================================
               HYDROGRAPH IN  ONE-MINUTE UNIT INTERVALS(CFS)
        (Notes: Time indicated is at END of Each Unit Intervals.
                Peak 5-minute rainfall intensity is modeled as
                a constant value for entire 5-minute period.)
----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.        75.0      150.0      225.0      300.0
----------------------------------------------------------------------------
  14.000      0.5266      0.65  Q V       .         .         .         .
  14.017      0.5275      0.65  Q V       .         .         .         .
  14.033      0.5284      0.66  Q V       .         .         .         .
  14.050      0.5293      0.66  Q V       .         .         .         .
  14.067      0.5302      0.66  Q V       .         .         .         .
  14.083      0.5312      0.66  Q  V      .         .         .         .
  14.100      0.5321      0.67  Q  V      .         .         .         .
  14.117      0.5330      0.67  Q  V      .         .         .         .
  14.133      0.5339      0.67  Q  V      .         .         .         .
  14.150      0.5349      0.68  Q  V      .         .         .         .
  14.167      0.5358      0.68  Q  V      .         .         .         .
  14.183      0.5367      0.68  Q  V      .         .         .         .
  14.200      0.5377      0.68  Q  V      .         .         .         .
  14.217      0.5386      0.69  Q  V      .         .         .         .
  14.233      0.5396      0.69  Q  V      .         .         .         .
  14.250      0.5405      0.69  Q  V      .         .         .         .
  14.267      0.5415      0.69  Q  V      .         .         .         .
  14.283      0.5424      0.70  Q  V      .         .         .         .
  14.300      0.5434      0.70  Q  V      .         .         .         .
  14.317      0.5444      0.70  Q  V      .         .         .         .
  14.333      0.5453      0.70  Q  V      .         .         .         .
  14.350      0.5463      0.71  Q  V      .         .         .         .
  14.367      0.5473      0.71  Q  V      .         .         .         .
  14.383      0.5483      0.71  Q  V      .         .         .         .
  14.400      0.5492      0.71  Q  V      .         .         .         .
  14.417      0.5502      0.72  Q  V      .         .         .         .
  14.433      0.5512      0.72  Q  V      .         .         .         .
  14.450      0.5522      0.72  Q  V      .         .         .         .
  14.467      0.5532      0.72  Q  V      .         .         .         .
  14.483      0.5542      0.73  Q  V      .         .         .         .
  14.500      0.5552      0.73  Q  V      .         .         .         .
  14.517      0.5562      0.73  Q  V      .         .         .         .
  14.533      0.5572      0.73  Q  V      .         .         .         .
  14.550      0.5582      0.74  Q  V      .         .         .         .
  14.567      0.5593      0.74  Q  V      .         .         .         .
  14.583      0.5603      0.74  Q  V      .         .         .         .
  14.600      0.5613      0.75  Q  V      .         .         .         .
  14.617      0.5623      0.75  Q  V      .         .         .         .
  14.633      0.5634      0.75  Q  V      .         .         .         .
  14.650      0.5644      0.75  Q  V      .         .         .         .
  14.667      0.5654      0.76  Q  V      .         .         .         .
  14.683      0.5665      0.76  Q  V      .         .         .         .
  14.700      0.5675      0.76  Q  V      .         .         .         .
  14.717      0.5686      0.77  Q  V      .         .         .         .
  14.733      0.5697      0.77  Q  V      .         .         .         .
  14.750      0.5707      0.77  Q  V      .         .         .         .
  14.767      0.5718      0.78  Q  V      .         .         .         .
  14.783      0.5729      0.78  Q  V      .         .         .         .
  14.800      0.5739      0.78  Q  V      .         .         .         .
  14.817      0.5750      0.79  Q  V      .         .         .         .
  14.833      0.5761      0.79  Q  V      .         .         .         .
  14.850      0.5772      0.79  Q  V      .         .         .         .
  14.867      0.5783      0.80  Q  V      .         .         .         .
  14.883      0.5794      0.80  Q  V      .         .         .         .
  14.900      0.5805      0.81  Q  V      .         .         .         .
  14.917      0.5816      0.81  Q  V      .         .         .         .
  14.933      0.5828      0.81  Q  V      .         .         .         .
  14.950      0.5839      0.82  Q  V      .         .         .         .
  14.967      0.5850      0.82  Q  V      .         .         .         .
  14.983      0.5862      0.83  Q  V      .         .         .         .
  15.000      0.5873      0.83  Q  V      .         .         .         .
  15.017      0.5885      0.84  Q  V      .         .         .         .
  15.033      0.5896      0.84  Q  V      .         .         .         .
  15.050      0.5908      0.86  Q  V      .         .         .         .
  15.067      0.5920      0.89  Q  V      .         .         .         .
  15.083      0.5933      0.95  Q  V      .         .         .         .
  15.100      0.5948      1.05  Q  V      .         .         .         .
  15.117      0.5965      1.21  Q  V      .         .         .         .
  15.133      0.5985      1.47  Q  V      .         .         .         .
  15.150      0.6010      1.81  Q  V      .         .         .         .
  15.167      0.6040      2.19  Q  V      .         .         .         .
  15.183      0.6076      2.61  Q  V      .         .         .         .
  15.200      0.6118      3.06  Q  V      .         .         .         .
  15.217      0.6167      3.55  Q  V      .         .         .         .
  15.233      0.6223      4.06  Q  V      .         .         .         .
  15.250      0.6286      4.60  Q  V      .         .         .         .
  15.267      0.6357      5.16  Q  V      .         .         .         .
  15.283      0.6436      5.75  Q  V      .         .         .         .
  15.300      0.6524      6.36  Q  V      .         .         .         .
  15.317      0.6621      7.01  Q  V      .         .         .         .
  15.333      0.6726      7.67  .Q V      .         .         .         .
  15.350      0.6843      8.45  .Q V      .         .         .         .
  15.367      0.6972      9.37  .Q V      .         .         .         .
  15.383      0.7115     10.43  .Q  V     .         .         .         .
  15.400      0.7275     11.61  .Q  V     .         .         .         .
  15.417      0.7455     13.06  .Q  V     .         .         .         .
  15.433      0.7663     15.10  . Q V     .         .         .         .
  15.450      0.7900     17.23  . Q V     .         .         .         .
  15.467      0.8158     18.71  . Q V     .         .         .         .
  15.483      0.8434     20.01  . Q V     .         .         .         .
  15.500      0.8727     21.26  . Q V     .         .         .         .
  15.517      0.9036     22.48  . Q  V    .         .         .         .
  15.533      0.9362     23.67  .  Q V    .         .         .         .
  15.550      0.9705     24.89  .  Q V    .         .         .         .
  15.567      1.0065     26.10  .  Q V    .         .         .         .
  15.583      1.0441     27.33  .  Q V    .         .         .         .
  15.600      1.0835     28.58  .  Q  V   .         .         .         .
  15.617      1.1246     29.87  .  Q  V   .         .         .         .
  15.633      1.1676     31.18  .   Q V   .         .         .         .
  15.650      1.2124     32.56  .   Q V   .         .         .         .
  15.667      1.2592     33.96  .   Q  V  .         .         .         .
  15.683      1.3078     35.29  .   Q  V  .         .         .         .
  15.700      1.3580     36.45  .   Q  V  .         .         .         .
  15.717      1.4097     37.51  .    Q V  .         .         .         .
  15.733      1.4627     38.48  .    Q  V .         .         .         .
  15.750      1.5166     39.18  .    Q  V .         .         .         .
  15.767      1.5703     38.95  .    Q  V .         .         .         .
  15.783      1.6237     38.80  .    Q   V.         .         .         .
  15.800      1.6788     39.95  .    Q   V.         .         .         .
  15.817      1.7362     41.68  .    Q   V.         .         .         .
  15.833      1.7964     43.73  .    Q    V         .         .         .
  15.850      1.8600     46.14  .     Q   V         .         .         .
  15.867      1.9273     48.92  .     Q   V         .         .         .
  15.883      1.9991     52.08  .     Q   .V        .         .         .
  15.900      2.0758     55.68  .      Q  .V        .         .         .
  15.917      2.1582     59.85  .      Q  . V       .         .         .
  15.933      2.2472     64.64  .       Q . V       .         .         .
  15.950      2.3441     70.30  .        Q.  V      .         .         .
  15.967      2.4522     78.53  .         Q  V      .         .         .
  15.983      2.5764     90.15  .         . Q V     .         .         .
  16.000      2.7204    104.56  .         .  Q V    .         .         .
  16.017      2.8880    121.66  .         .     Q   .         .         .
  16.033      3.0862    143.85  .         .      V Q.         .         .
  16.050      3.3270    174.85  .         .       V .  Q      .         .
  16.067      3.6038    200.94  .         .         V     Q   .         .
  16.083      3.8921    209.35  .         .         . V    Q  .         .
  16.100      4.1810    209.75  .         .         .  V   Q  .         .
  16.117      4.4593    202.04  .         .         .    VQ   .         .
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16.133      4.7046    178.09  .         .         .  Q  V   .         .
16.150      4.9084    147.94  .         .        Q.      V  .         .
16.167      5.0867    129.47  .         .      Q  .       V .         .
16.183      5.2460    115.64  .         .    Q    .        V.         .
16.200      5.3892    103.95  .         .  Q     .         V         .
16.217      5.5184     93.83  .         . Q      .         .V        .
16.233      5.6363     85.59  .         .Q       .         .V        .
16.250      5.7442     78.36  .         Q        .         . V       .
16.267      5.8449     73.09  .        Q.        .         .  V      .
16.283      5.9393     68.52  .        Q.        .         .  V      .
16.300      6.0269     63.60  .       Q .        .         .   V     .
16.317      6.1076     58.58  .      Q  .        .         .   V     .
16.333      6.1816     53.77  .      Q  .        .         .   V     .
16.350      6.2496     49.31  .     Q   .        .         .    V    .
16.367      6.3117     45.14  .     Q   .        .         .    V    .
16.383      6.3678     40.69  .    Q    .        .         .    V    .
16.400      6.4181     36.55  .   Q     .        .         .     V   .
16.417      6.4630     32.61  .   Q     .        .         .     V   .
16.433      6.5020     28.25  .  Q      .        .         .     V   .
16.450      6.5350     24.02  .  Q      .        .         .     V   .
16.467      6.5642     21.14  . Q       .        .         .      V  .
16.483      6.5901     18.82  . Q       .        .         .      V  .
16.500      6.6131     16.72  . Q       .        .         .      V  .
16.517      6.6335     14.82  .Q        .        .         .      V  .
16.533      6.6516     13.10  .Q        .        .         .      V  .
16.550      6.6674     11.51  .Q        .        .         .      V  .
16.567      6.6813     10.09  .Q        .        .         .      V  .
16.583      6.6935      8.84  .Q        .        .         .      V  .
16.600      6.7042      7.76  .Q        .        .         .      V  .
16.617      6.7137      6.90  Q         .        .         .      V  .
16.633      6.7223      6.21  Q         .        .         .       V .
16.650      6.7300      5.63  Q         .        .         .       V .
16.667      6.7371      5.14  Q         .        .         .       V .
16.683      6.7436      4.71  Q         .        .         .       V .
16.700      6.7496      4.33  Q         .        .         .       V .
16.717      6.7551      4.00  Q         .        .         .       V .
16.733      6.7602      3.70  Q         .        .         .       V .
16.750      6.7649      3.41  Q         .        .         .       V .
16.767      6.7691      3.07  Q         .        .         .       V .
16.783      6.7728      2.72  Q         .        .         .       V .
16.800      6.7761      2.39  Q         .        .         .       V .
16.817      6.7790      2.07  Q         .        .         .       V .
16.833      6.7814      1.77  Q         .        .         .       V .
16.850      6.7836      1.57  Q         .        .         .       V .
16.867      6.7856      1.45  Q         .        .         .       V .
16.883      6.7875      1.36  Q         .        .         .       V .
16.900      6.7892      1.28  Q         .        .         .       V .
16.917      6.7909      1.22  Q         .        .         .       V .
16.933      6.7925      1.17  Q         .        .         .       V .
16.950      6.7941      1.12  Q         .        .         .       V .
16.967      6.7955      1.08  Q         .        .         .       V .
16.983      6.7970      1.04  Q         .        .         .       V .
17.000      6.7983      1.00  Q         .        .         .       V .
17.017      6.7997      0.96  Q         .        .         .       V .
17.033      6.8009      0.92  Q         .        .         .       V .
17.050      6.8021      0.88  Q         .        .         .       V .
17.067      6.8033      0.85  Q         .        .         .       V .
17.083      6.8044      0.82  Q         .        .         .       V .
17.100      6.8055      0.79  Q         .        .         .       V .
17.117      6.8066      0.76  Q         .        .         .       V .
17.133      6.8076      0.74  Q         .        .         .       V .
17.150      6.8086      0.72  Q         .        .         .       V .
17.167      6.8096      0.71  Q         .        .         .       V .
17.183      6.8105      0.69  Q         .        .         .       V .
17.200      6.8115      0.68  Q         .        .         .       V .
17.217      6.8124      0.67  Q         .        .         .       V .
17.233      6.8133      0.66  Q         .        .         .       V .
17.250      6.8142      0.65  Q         .        .         .       V .
17.267      6.8151      0.65  Q         .        .         .       V .
17.283      6.8160      0.64  Q         .        .         .       V .
17.300      6.8169      0.64  Q         .        .         .       V .
17.317      6.8177      0.63  Q         .        .         .       V .
17.333      6.8186      0.63  Q         .        .         .       V .
17.350      6.8195      0.63  Q         .        .         .       V .
17.367      6.8203      0.62  Q         .        .         .       V .
17.383      6.8212      0.62  Q         .        .         .       V .
17.400      6.8220      0.62  Q         .        .         .       V .
17.417      6.8229      0.62  Q         .        .         .       V .
17.433      6.8237      0.61  Q         .        .         .       V .
17.450      6.8246      0.61  Q         .        .         .       V .
17.467      6.8254      0.61  Q         .        .         .       V .
17.483      6.8262      0.60  Q         .        .         .       V .
17.500      6.8271      0.60  Q         .        .         .       V .
17.517      6.8279      0.60  Q         .        .         .       V .
17.533      6.8287      0.60  Q         .        .         .       V .
17.550      6.8295      0.59  Q         .        .         .       V .
17.567      6.8303      0.59  Q         .        .         .       V .
17.583      6.8312      0.59  Q         .        .         .       V .
17.600      6.8320      0.58  Q         .        .         .       V .
17.617      6.8328      0.58  Q         .        .         .       V .
17.633      6.8336      0.58  Q         .        .         .       V .
17.650      6.8344      0.58  Q         .        .         .       V .
17.667      6.8351      0.58  Q         .        .         .       V .
17.683      6.8359      0.57  Q         .        .         .       V .
17.700      6.8367      0.57  Q         .        .         .       V .
17.717      6.8375      0.57  Q         .        .         .       V .
17.733      6.8383      0.57  Q         .        .         .       V .
17.750      6.8391      0.56  Q         .        .         .       V .
17.767      6.8398      0.56  Q         .        .         .       V .
17.783      6.8406      0.56  Q         .        .         .       V .
17.800      6.8414      0.56  Q         .        .         .       V .
17.817      6.8421      0.56  Q         .        .         .       V .
17.833      6.8429      0.55  Q         .        .         .       V .
17.850      6.8437      0.55  Q         .        .         .       V .
17.867      6.8444      0.55  Q         .        .         .       V .
17.883      6.8452      0.55  Q         .        .         .       V .
17.900      6.8459      0.55  Q         .        .         .       V .
17.917      6.8467      0.54  Q         .        .         .       V .
17.933      6.8474      0.54  Q         .        .         .       V .
17.950      6.8482      0.54  Q         .        .         .       V .
17.967      6.8489      0.54  Q         .        .         .       V .
17.983      6.8496      0.54  Q         .        .         .       V .
18.000      6.8504      0.53  Q         .        .         .       V .

*****************************************************************************
  FLOW PROCESS FROM NODE   3311.00 TO NODE    327.00 IS CODE =   7
-----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
=============================================================================

*****************************************************************************
  FLOW PROCESS FROM NODE    327.00 TO NODE    327.00 IS CODE =  11
-----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
=============================================================================

            STREAM HYDROGRAPH IN  ONE-MINUTE UNIT INTERVALS(CFS)
        (Notes: Time indicated is at END of Each Unit Intervals.
                Peak 5-minute rainfall intensity is modeled as
                a constant value for entire 5-minute period.)
-----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.      100.0     200.0     300.0     400.0
-----------------------------------------------------------------------------
  14.000     24.3768     38.81  .  Q      .  V      .         .         .
  14.017     24.4305     38.96  .  Q      .  V      .         .         .
  14.033     24.4844     39.11  .  Q      .  V      .         .         .
  14.050     24.5385     39.27  .  Q      .  V      .         .         .
  14.067     24.5928     39.43  .  Q      .  V      .         .         .
  14.083     24.6473     39.60  .  Q      .  V      .         .         .
  14.100     24.7021     39.77  .  Q      .  V      .         .         .
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14.117	24.7572	39.96	. Q . V . . .
14.133	24.8125	40.15	. Q . V . . .
14.150	24.8680	40.35	. Q . V . . .
14.167	24.9239	40.56	. Q . V . . .
14.183	24.9801	40.78	. Q . V . . .
14.200	25.0366	41.01	. Q . V . . .
14.217	25.0934	41.25	. Q . V . . .
14.233	25.1506	41.50	. Q . V . . .
14.250	25.2081	41.77	. Q . V . . .
14.267	25.2660	42.03	. Q . V . . .
14.283	25.3243	42.31	. Q . V . . .
14.300	25.3829	42.58	. Q . V . . .
14.317	25.4419	42.86	. Q . V . . .
14.333	25.5014	43.14	. Q . V . . .
14.350	25.5612	43.42	. Q . V . . .
14.367	25.6214	43.70	. Q . V . . .
14.383	25.6819	43.97	. Q . V . . .
14.400	25.7429	44.25	. Q . V . . .
14.417	25.8042	44.52	. Q . V . . .
14.433	25.8659	44.79	. Q . V . . .
14.450	25.9280	45.05	. Q . V . . .
14.467	25.9904	45.32	. Q . V . . .
14.483	26.0532	45.58	. Q . V . . .
14.500	26.1163	45.84	. Q . V . . .
14.517	26.1798	46.10	. Q . V . . .
14.533	26.2436	46.35	. Q . V . . .
14.550	26.3078	46.61	. Q . V . . .
14.567	26.3724	46.86	. Q . V . . .
14.583	26.4373	47.11	. Q . V . . .
14.600	26.5025	47.36	. Q . V . . .
14.617	26.5681	47.61	. Q . V . . .
14.633	26.6340	47.87	. Q . V . . .
14.650	26.7003	48.12	. Q . V . . .
14.667	26.7669	48.37	. Q . V . . .
14.683	26.8339	48.63	. Q . V . . .
14.700	26.9012	48.88	. Q . V . . .
14.717	26.9689	49.14	. Q . V . . .
14.733	27.0370	49.40	. Q . V . . .
14.750	27.1054	49.66	. Q . V . . .
14.767	27.1741	49.92	. Q . V . . .
14.783	27.2432	50.18	. Q . V . . .
14.800	27.3127	50.45	. Q . V . . .
14.817	27.3826	50.72	. Q . V . . .
14.833	27.4528	50.99	. Q . V . . .
14.850	27.5234	51.26	. Q . V . . .
14.867	27.5944	51.54	. Q . V . . .
14.883	27.6658	51.82	. Q . V . . .
14.900	27.7375	52.10	. Q . V . . .
14.917	27.8097	52.39	. Q . V . . .
14.933	27.8823	52.68	. Q . V . . .
14.950	27.9552	52.97	. Q . V . . .
14.967	28.0286	53.27	. Q . V . . .
14.983	28.1024	53.57	. Q . V . . .
15.000	28.1766	53.88	. Q . V . . .
15.017	28.2513	54.19	. Q . V . . .
15.033	28.3264	54.51	. Q . V . . .
15.050	28.4019	54.85	. Q . V . . .
15.067	28.4779	55.20	. Q . V . . .
15.083	28.5545	55.59	. Q . V . . .
15.100	28.6317	56.02	. Q . V . . .
15.117	28.7095	56.52	. Q . V . . .
15.133	28.7882	57.13	. Q . V . . .
15.150	28.8679	57.82	. Q . V . . .
15.167	28.9485	58.56	. Q . V . . .
15.183	29.0302	59.34	. Q . V . . .
15.200	29.1131	60.16	. Q . V . . .
15.217	29.1972	61.02	. Q . V . . .
15.233	29.2825	61.92	. Q . V . . .
15.250	29.3690	62.85	. Q . V . . .
15.267	29.4569	63.81	. Q . V . . .
15.283	29.5462	64.82	. Q . V . . .

15.300	29.6369	65.85	. Q . V . . .
15.317	29.7291	66.92	. Q . V . . .
15.333	29.8228	68.02	. Q . V . . .
15.350	29.9181	69.24	. Q . V . . .
15.367	30.0154	70.62	. Q . V . . .
15.383	30.1148	72.14	. Q . V . . .
15.400	30.2164	73.79	. Q . V . . .
15.417	30.3207	75.71	. Q . V . . .
15.433	30.4284	78.23	. Q . V . . .
15.450	30.5398	80.84	. Q . V . . .
15.467	30.6538	82.80	. Q . V . . .
15.483	30.7703	84.58	. Q . V . . .
15.500	30.8892	86.32	. Q . V . . .
15.517	31.0105	88.04	. Q . V . . .
15.533	31.1341	89.72	. Q . V . . .
15.550	31.2600	91.43	. Q. V . . .
15.567	31.3883	93.15	. Q. V . . .
15.583	31.5190	94.89	. Q. V . . .
15.600	31.6522	96.66	. Q. V . . .
15.617	31.7878	98.49	. Q. V . . .
15.633	31.9261	100.37	. Q V . . .
15.650	32.0670	102.33	. Q V . . .
15.667	32.2108	104.35	. Q V . . .
15.683	32.3573	106.34	. Q V . . .
15.700	32.5063	108.18	. Q V . . .
15.717	32.6577	109.98	. Q V . . .
15.733	32.8116	111.73	. .Q V . . .
15.750	32.9676	113.26	. .Q V . . .
15.767	33.1246	113.93	. .Q V . . .
15.783	33.2826	114.74	. .Q V . . .
15.800	33.4437	116.93	. .Q V . . .
15.817	33.6086	119.77	. .Q V . . .
15.833	33.7781	123.01	. . Q V . . .
15.850	33.9526	126.70	. . Q V . . .
15.867	34.1328	130.86	. . Q V . . .
15.883	34.3195	135.50	. . Q V . . .
15.900	34.5133	140.69	. . Q V . . .
15.917	34.7151	146.56	. . Q V . . .
15.933	34.9261	153.18	. . Q V . . .
15.950	35.1476	160.80	. . Q V . . .
15.967	35.3834	171.15	. . QV . . .
15.983	35.6384	185.12	. . QV. . .
16.000	35.9168	202.15	. . VQ . .
16.017	36.2228	222.15	. . V. Q . .
16.033	36.5639	247.63	. . V. Q . .
16.050	36.9528	282.36	. . V. Q . .
16.067	37.3834	312.65	. . V. .Q .
16.083	37.8321	325.70	. . V . Q .
16.100	38.2881	331.11	. . V . Q .
16.117	38.7409	328.69	. . V . Q .
16.133	39.1681	310.17	. . V .Q .
16.150	39.5613	285.49	. . .V Q . .
16.167	39.9366	272.47	. . .V Q . .
16.183	40.3001	263.89	. . .V Q . .
16.200	40.6543	257.15	. . .V Q . .
16.217	41.0008	251.54	. . .V Q . .
16.233	41.3412	247.15	. . . V Q . .
16.250	41.6758	242.91	. . . V Q . .
16.267	42.0060	239.71	. . . VQ . .
16.283	42.3314	236.26	. . . VQ . .
16.300	42.6504	231.56	. . . VQ . .
16.317	42.9616	225.93	. . . Q . .
16.333	43.2643	219.75	. . .Q V . .
16.350	43.5581	213.31	. . .Q V . .
16.367	43.8427	206.65	. . Q V . .
16.383	44.1172	199.29	. . Q. V . .
16.400	44.3815	191.90	. . Q. V . .
16.417	44.6356	184.46	. . Q . V . .
16.433	44.8786	176.41	. . Q . V . .
16.450	45.1105	168.38	. . Q . V . .
16.467	45.3331	161.61	. . Q . V . .

```
16.483     45.5471    155.35  .          .    Q    .   V     .          .
16.500     45.7528    149.33  .          .   Q     .   V     .          .
16.517     45.9506    143.56  .          .   Q     .   V     .          .
16.533     46.1407    138.04  .          .  Q      .   V     .          .
16.550     46.3236    132.76  .          .  Q      .   V     .          .
16.567     46.4996    127.80  .          . Q       .   V     .          .
16.583     46.6692    123.16  .          . Q       .   V     .          .
16.600     46.8329    118.83  .          .Q        .    V    .          .
16.617     46.9911    114.87  .          .Q        .    V    .          .
16.633     47.1443    111.22  .          .Q        .    V    .          .
16.650     47.2928    107.81  .          Q         .    V    .          .
16.667     47.4369    104.61  .          Q         .    V    .          .
16.683     47.5768    101.58  .          Q         .    V    .          .
16.700     47.7128     98.72  .         Q.         .    V    .          .
16.717     47.8450     95.99  .         Q.         .    V    .          .
16.733     47.9736     93.37  .         Q.         .    V    .          .
16.750     48.0988     90.86  .         Q.         .    V    .          .
16.767     48.2205     88.40  .        Q .         .    V    .          .
16.783     48.3390     86.01  .        Q .         .    V    .          .
16.800     48.4543     83.73  .        Q .         .    V    .          .
16.817     48.5667     81.56  .        Q .         .    V    .          .
16.833     48.6762     79.49  .       Q  .         .    V    .          .
16.850     48.7831     77.60  .       Q  .         .     V   .          .
16.867     48.8876     75.87  .       Q  .         .     V   .          .
16.883     48.9898     74.24  .       Q  .         .     V   .          .
16.900     49.0900     72.69  .       Q  .         .     V   .          .
16.917     49.1881     71.22  .       Q  .         .     V   .          .
16.933     49.2842     69.83  .      Q   .         .     V   .          .
16.950     49.3786     68.51  .      Q   .         .     V   .          .
16.967     49.4712     67.24  .      Q   .         .     V   .          .
16.983     49.5622     66.03  .      Q   .         .     V   .          .
17.000     49.6515     64.87  .      Q   .         .     V   .          .
17.017     49.7393     63.76  .      Q   .         .     V   .          .
17.033     49.8257     62.69  .      Q   .         .     V   .          .
17.050     49.9106     61.67  .      Q   .         .     V   .          .
17.067     49.9942     60.69  .      Q   .         .     V   .          .
17.083     50.0765     59.74  .    Q     .         .     V   .          .
17.100     50.1576     58.83  .    Q     .         .     V   .          .
17.117     50.2374     57.95  .    Q     .         .     V   .          .
17.133     50.3160     57.09  .    Q     .         .     V   .          .
17.150     50.3935     56.26  .    Q     .         .     V   .          .
17.167     50.4699     55.45  .    Q     .         .     V   .          .
17.183     50.5452     54.67  .    Q     .         .     V   .          .
17.200     50.6194     53.90  .    Q     .         .      V  .          .
17.217     50.6926     53.16  .    Q     .         .      V  .          .
17.233     50.7648     52.42  .    Q     .         .      V  .          .
17.250     50.8361     51.70  .    Q     .         .      V  .          .
17.267     50.9063     51.00  .    Q     .         .      V  .          .
17.283     50.9756     50.32  .    Q     .         .      V  .          .
17.300     51.0440     49.65  .   Q      .         .      V  .          .
17.317     51.1115     49.00  .   Q      .         .      V  .          .
17.333     51.1781     48.37  .   Q      .         .      V  .          .
17.350     51.2439     47.76  .   Q      .         .      V  .          .
17.367     51.3089     47.17  .   Q      .         .      V  .          .
17.383     51.3731     46.59  .   Q      .         .      V  .          .
17.400     51.4365     46.04  .   Q      .         .      V  .          .
17.417     51.4992     45.50  .   Q      .         .      V  .          .
17.433     51.5611     44.98  .   Q      .         .      V  .          .
17.450     51.6224     44.47  .   Q      .         .      V  .          .
17.467     51.6829     43.98  .   Q      .         .      V  .          .
17.483     51.7429     43.50  .   Q      .         .      V  .          .
17.500     51.8022     43.05  .   Q      .         .      V  .          .
17.517     51.8608     42.60  .   Q      .         .      V  .          .
17.533     51.9189     42.17  .   Q      .         .      V  .          .
17.550     51.9764     41.75  .   Q      .         .      V  .          .
17.567     52.0334     41.34  .   Q      .         .      V  .          .
17.583     52.0898     40.95  .   Q      .         .      V  .          .
17.600     52.1457     40.57  .   Q      .         .      V  .          .
17.617     52.2010     40.20  .   Q      .         .      V  .          .
17.633     52.2559     39.83  .  Q       .         .      V  .          .
17.650     52.3103     39.48  .  Q       .         .      V  .          .
17.667     52.3642     39.14  .  Q       .         .      V  .          .
17.683     52.4176     38.81  .  Q       .         .      V  .          .
17.700     52.4706     38.48  .  Q       .         .       V .          .
17.717     52.5232     38.16  .  Q       .         .       V .          .
17.733     52.5753     37.85  .  Q       .         .       V .          .
17.750     52.6271     37.55  .  Q       .         .       V .          .
17.767     52.6784     37.25  .  Q       .         .       V .          .
17.783     52.7293     36.96  .  Q       .         .       V .          .
17.800     52.7798     36.68  .  Q       .         .       V .          .
17.817     52.8300     36.41  .  Q       .         .       V .          .
17.833     52.8797     36.14  .  Q       .         .       V .          .
17.850     52.9291     35.87  .  Q       .         .       V .          .
17.867     52.9782     35.61  .  Q       .         .       V .          .
17.883     53.0269     35.36  .  Q       .         .       V .          .
17.900     53.0753     35.11  .  Q       .         .       V .          .
17.917     53.1233     34.87  .  Q       .         .       V .          .
17.933     53.1710     34.63  .  Q       .         .       V .          .
17.950     53.2184     34.39  .  Q       .         .       V .          .
17.967     53.2654     34.16  .  Q       .         .       V .          .
17.983     53.3122     33.94  .  Q       .         .       V .          .
18.000     53.3586     33.71  .  Q       .         .       V .          .
=====================================================================

END OF FLOODSCx ROUTING ANALYSIS
```

D. PRE-PROJECT HYDROLOGY (RATIONAL METHOD)

- 100-yr 1hr (Drainage Area A)
- 100-yr 1hr (Drainage Area B)
- 100-yr 1hr (Drainage Area C)
- 100-yr 1hr (Drainage Area D)
- PRE-PROJECT CONDITION 100YR 1HR HYDROLOGY MAP (400 Scale)
- CABLE CANYON WEST FORK AMC II SUH BACK UP FOR RATIONAL METHOD CODE 7

```
****************************************************************************
              RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
         (c) Copyright 1983-2003 Advanced Engineering Software (aes)
             Ver. 8.0  Release Date: 01/01/2003  License ID 1261

                          Analysis prepared by:



 ************************* DESCRIPTION OF STUDY *************************
* Spring TRails Tract 15576                                              *
* Pre-Project Condition 100yr 1 hr Cable Canyon Watershed #1 AMCII       *
* 13565c REC LAF 11-18-08,6-07-11                                        *
 ************************************************************************

  FILE NAME: 565PREH1.DAT
  TIME/DATE OF STUDY: 09:36 06/07/2011
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                     --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*
  10-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.100
  100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.600
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =  100.00   1-HOUR INTENSITY(INCH/HOUR) = 1.6000
  SLOPE OF INTENSITY DURATION CURVE = 0.6000

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

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
  FLOW PROCESS FROM NODE    101.10 TO NODE    101.20 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   504.00
  ELEVATION DATA: UPSTREAM(FEET) =   5598.00  DOWNSTREAM(FEET) =   5400.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.255
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.618
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                D        1.80      0.33     1.000    83   10.25
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      6.95
  TOTAL AREA(ACRES) =      1.80   PEAK FLOW RATE(CFS) =      6.95

****************************************************************************
  FLOW PROCESS FROM NODE    101.20 TO NODE    101.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   612.00
  ELEVATION DATA: UPSTREAM(FEET) =   5400.00  DOWNSTREAM(FEET) =   5000.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.010
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.685
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                D        8.20      0.33     1.000    83   10.01
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    8.20   INITIAL SUBAREA RUNOFF(CFS) =   32.17

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  10.25
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.618
  SUBAREA AREA(ACRES) =    8.20      SUBAREA RUNOFF(CFS) =   31.67
  EFFECTIVE AREA(ACRES) =     10.00   AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.33  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     10.00       PEAK FLOW RATE(CFS) =      38.63

****************************************************************************
  FLOW PROCESS FROM NODE    101.00 TO NODE    102.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   892.00
  ELEVATION DATA: UPSTREAM(FEET) =   5000.00  DOWNSTREAM(FEET) =   4560.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.312
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.138
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                D       25.80      0.33     1.000    83   12.31
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   25.80   INITIAL SUBAREA RUNOFF(CFS) =   88.52

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  10.25
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.618
  SUBAREA AREA(ACRES) =   25.80      SUBAREA RUNOFF(CFS) =   99.66
  EFFECTIVE AREA(ACRES) =     35.80   AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.33  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     35.80       PEAK FLOW RATE(CFS) =     138.29

****************************************************************************
  FLOW PROCESS FROM NODE    102.00 TO NODE    103.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   985.00
  ELEVATION DATA: UPSTREAM(FEET) =   4560.00  DOWNSTREAM(FEET) =   4200.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.602
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.898
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                D       56.50      0.33     1.000    83   13.60
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   56.50   INITIAL SUBAREA RUNOFF(CFS) =  181.64

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  10.25
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.618
  SUBAREA AREA(ACRES) =   56.50      SUBAREA RUNOFF(CFS) =  218.25
  EFFECTIVE AREA(ACRES) =     92.30   AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.33  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     92.30       PEAK FLOW RATE(CFS) =     356.54

****************************************************************************
  FLOW PROCESS FROM NODE    103.00 TO NODE    104.00 IS CODE =  82
----------------------------------------------------------------------------
```

```
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  2340.00
  ELEVATION DATA: UPSTREAM(FEET) =   4200.00  DOWNSTREAM(FEET) =   3600.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   20.640
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.035
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"              D      131.80      0.33     1.000    83   20.64
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =  131.80   INITIAL SUBAREA RUNOFF(CFS) =  321.37

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  10.25
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.618
  SUBAREA AREA(ACRES) =  131.80      SUBAREA RUNOFF(CFS) =  509.12
  EFFECTIVE AREA(ACRES) =    224.10   AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.33  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    224.10       PEAK FLOW RATE(CFS) =     865.65

****************************************************************************
  FLOW PROCESS FROM NODE    104.00 TO NODE    104.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  10.25
  RAINFALL INTENSITY(INCH/HR) =   4.62
  AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.33
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =   224.10
  TOTAL STREAM AREA(ACRES) =   224.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    865.65

****************************************************************************
  FLOW PROCESS FROM NODE    105.10 TO NODE    105.20 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   503.00
  ELEVATION DATA: UPSTREAM(FEET) =   5300.00  DOWNSTREAM(FEET) =   5040.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.700
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.775
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"              D        1.90      0.33     1.000    83    9.70
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      7.61
  TOTAL AREA(ACRES) =      1.90   PEAK FLOW RATE(CFS) =      7.61

****************************************************************************
  FLOW PROCESS FROM NODE    105.20 TO NODE    105.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   731.00
  ELEVATION DATA: UPSTREAM(FEET) =   5040.00  DOWNSTREAM(FEET) =   4600.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.926
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.446
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"              D        8.00      0.33     1.000    83   10.93
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    8.00   INITIAL SUBAREA RUNOFF(CFS) =   29.66

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =   9.70
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.775
  SUBAREA AREA(ACRES) =    8.00      SUBAREA RUNOFF(CFS) =   32.03
  EFFECTIVE AREA(ACRES) =      9.90   AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.33  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      9.90       PEAK FLOW RATE(CFS) =      39.64

****************************************************************************
  FLOW PROCESS FROM NODE    105.00 TO NODE    104.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  2360.00
  ELEVATION DATA: UPSTREAM(FEET) =   4600.00  DOWNSTREAM(FEET) =   3600.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   18.731
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.217
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"              D       38.90      0.33     1.000    83   18.73
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   38.90   INITIAL SUBAREA RUNOFF(CFS) =  101.22

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =   9.70
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.775
  SUBAREA AREA(ACRES) =   38.90      SUBAREA RUNOFF(CFS) =  155.75
  EFFECTIVE AREA(ACRES) =     48.80   AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.33  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     48.80       PEAK FLOW RATE(CFS) =     195.39

****************************************************************************
  FLOW PROCESS FROM NODE    104.00 TO NODE    104.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.70
  RAINFALL INTENSITY(INCH/HR) =   4.77
  AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.33
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =    48.80
  TOTAL STREAM AREA(ACRES) =    48.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    195.39

****************************************************************************
  FLOW PROCESS FROM NODE    107.10 TO NODE    107.20 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   507.00
  ELEVATION DATA: UPSTREAM(FEET) =   5099.00  DOWNSTREAM(FEET) =   4720.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.038
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.982
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"              D        5.10      0.33     1.000    83    9.04
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     21.37
  TOTAL AREA(ACRES) =      5.10   PEAK FLOW RATE(CFS) =     21.37

****************************************************************************
  FLOW PROCESS FROM NODE    107.20 TO NODE    107.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
==============================================================================
```

```
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   248.00
  ELEVATION DATA: UPSTREAM(FEET) =   4720.00  DOWNSTREAM(FEET) =   4600.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.407
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.613
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                D        4.30      0.33     1.000    83    7.41
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    4.30   INITIAL SUBAREA RUNOFF(CFS) =   20.46

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =   9.04
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.982
  SUBAREA AREA(ACRES) =    4.30      SUBAREA RUNOFF(CFS) =   18.02
  EFFECTIVE AREA(ACRES) =      9.40   AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.33  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      9.40       PEAK FLOW RATE(CFS) =      39.39

****************************************************************************
  FLOW PROCESS FROM NODE    107.00 TO NODE    108.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1067.00
  ELEVATION DATA: UPSTREAM(FEET) =   4600.00  DOWNSTREAM(FEET) =   4180.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.837
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.858
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                D       22.80      0.33     1.000    83   13.84
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   22.80   INITIAL SUBAREA RUNOFF(CFS) =   72.48

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =   9.04
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.982
  SUBAREA AREA(ACRES) =   22.80      SUBAREA RUNOFF(CFS) =   95.53
  EFFECTIVE AREA(ACRES) =     32.20   AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.33  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     32.20       PEAK FLOW RATE(CFS) =     134.92

****************************************************************************
  FLOW PROCESS FROM NODE    108.00 TO NODE    104.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1258.00
  ELEVATION DATA: UPSTREAM(FEET) =   4180.00  DOWNSTREAM(FEET) =   3600.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   14.319
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.780
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                D       38.50      0.33     1.000    83   14.32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   38.50   INITIAL SUBAREA RUNOFF(CFS) =  119.67

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =   9.04
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.982
  SUBAREA AREA(ACRES) =   38.50      SUBAREA RUNOFF(CFS) =  161.31
  EFFECTIVE AREA(ACRES) =     70.70   AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.33  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     70.70       PEAK FLOW RATE(CFS) =     296.23

****************************************************************************
  FLOW PROCESS FROM NODE    104.00 TO NODE    104.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.04
  RAINFALL INTENSITY(INCH/HR) =   4.98
  AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.33
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =    70.70
  TOTAL STREAM AREA(ACRES) =    70.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    296.23

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    865.65  10.25    4.618  0.33( 0.33) 1.00   224.1     101.10
      2    195.39   9.70    4.775  0.33( 0.33) 1.00    48.8     105.10
      3    296.23   9.04    4.982  0.33( 0.33) 1.00    70.7     107.10

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

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1   1314.33   9.04    4.982  0.33( 0.33) 1.00   313.7     107.10
      2   1327.17   9.70    4.775  0.33( 0.33) 1.00   331.5     105.10
      3   1327.25  10.25    4.618  0.33( 0.33) 1.00   343.6     101.10

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =   1327.25    Tc(MIN.) =    10.25
  EFFECTIVE AREA(ACRES) =   343.60   AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.33  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    343.60
  LONGEST FLOWPATH FROM NODE    107.10 TO NODE    104.00 =   507.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    104.00 TO NODE    110.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1364.00
  ELEVATION DATA: UPSTREAM(FEET) =   3600.00  DOWNSTREAM(FEET) =   3360.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   17.933
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.302
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                D       79.20      0.33     1.000    83   17.93
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   79.20   INITIAL SUBAREA RUNOFF(CFS) =  212.15

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  10.25
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.618
  SUBAREA AREA(ACRES) =   79.20      SUBAREA RUNOFF(CFS) =  305.93
  EFFECTIVE AREA(ACRES) =    422.80   AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.33  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    422.80       PEAK FLOW RATE(CFS) =    1633.19

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1   1646.17   9.04    4.982  0.33( 0.33) 1.00   392.9     107.10
      2   1644.29   9.70    4.775  0.33( 0.33) 1.00   410.7     105.10
      3   1633.19  10.25    4.618  0.33( 0.33) 1.00   422.8     101.10
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =   1646.17  Tc(MIN.) =   9.04
  AREA-AVERAGED Fm(INCH/HR) =  0.33  AREA-AVERAGED Fp(INCH/HR) =  0.33
  AREA-AVERAGED Ap =  1.00  EFFECTIVE AREA(ACRES) =    392.88

****************************************************************************
  FLOW PROCESS FROM NODE    110.00 TO NODE    111.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
```

```
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  3182.00
  ELEVATION DATA: UPSTREAM(FEET) =   3360.00  DOWNSTREAM(FEET) =   2755.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   24.778
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.720
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                D      101.00      0.33     1.000    83   24.78
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        4.80      0.86     1.000    46   24.78
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.35
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =  105.80   INITIAL SUBAREA RUNOFF(CFS) =  225.65

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =   9.04
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.982
  SUBAREA AREA(ACRES) =  105.80      SUBAREA RUNOFF(CFS) =  440.99
  EFFECTIVE AREA(ACRES) =    498.68   AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.33  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    528.60       PEAK FLOW RATE(CFS) =    2087.17

****************************************************************************
  FLOW PROCESS FROM NODE    111.00 TO NODE    111.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.04
  RAINFALL INTENSITY(INCH/HR) =   4.98
  AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.33
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =   498.68
  TOTAL STREAM AREA(ACRES) =   528.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   2087.17

****************************************************************************
  FLOW PROCESS FROM NODE    112.10 TO NODE    112.20 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   476.00
  ELEVATION DATA: UPSTREAM(FEET) =   4040.00  DOWNSTREAM(FEET) =   3840.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.889
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.720
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                D        1.60      0.33     1.000    83    9.89
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      6.33
  TOTAL AREA(ACRES) =      1.60   PEAK FLOW RATE(CFS) =      6.33

****************************************************************************
  FLOW PROCESS FROM NODE    112.00 TO NODE    112.30 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   641.00
  ELEVATION DATA: UPSTREAM(FEET) =   3840.00  DOWNSTREAM(FEET) =   3600.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.399
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.334
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                D        7.90      0.33     1.000    83   11.40
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    7.90   INITIAL SUBAREA RUNOFF(CFS) =   28.50

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =   9.89
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.720
  SUBAREA AREA(ACRES) =    7.90      SUBAREA RUNOFF(CFS) =   31.24
  EFFECTIVE AREA(ACRES) =      9.50   AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.33  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      9.50       PEAK FLOW RATE(CFS) =      37.57

****************************************************************************
  FLOW PROCESS FROM NODE    112.30 TO NODE    111.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1664.00
  ELEVATION DATA: UPSTREAM(FEET) =   3600.00  DOWNSTREAM(FEET) =   2755.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   15.708
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.575
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                D       19.20      0.33     1.000    83   15.71
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        2.70      0.86     1.000    46   15.71
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.39
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   21.90   INITIAL SUBAREA RUNOFF(CFS) =   62.75

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =   9.89
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.720
  SUBAREA AREA(ACRES) =   21.90      SUBAREA RUNOFF(CFS) =   85.30
  EFFECTIVE AREA(ACRES) =     31.40   AREA-AVERAGED Fm(INCH/HR) =  0.37
  AREA-AVERAGED Fp(INCH/HR) =  0.37  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     31.40       PEAK FLOW RATE(CFS) =     122.87

****************************************************************************
  FLOW PROCESS FROM NODE    111.00 TO NODE    111.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.89
  RAINFALL INTENSITY(INCH/HR) =   4.72
  AREA-AVERAGED Fm(INCH/HR) =  0.37
  AREA-AVERAGED Fp(INCH/HR) =  0.37
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =    31.40
  TOTAL STREAM AREA(ACRES) =    31.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    122.87

  ** CONFLUENCE DATA **
   STREAM     Q      Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1   2087.17   9.04    4.982  0.33( 0.33) 1.00   498.7     107.10
      1   2065.60   9.70    4.775  0.33( 0.33) 1.00   516.5     105.10
      1   2039.56  10.25    4.618  0.33( 0.33) 1.00   528.6     101.10
      2    122.87   9.89    4.720  0.37( 0.37) 1.00    31.4     112.10

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

  ** PEAK FLOW RATE TABLE **
   STREAM     Q      Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1   2206.22   9.04    4.982  0.33( 0.33) 1.00   527.4     107.10
      2   2187.64   9.70    4.775  0.33( 0.33) 1.00   547.3     105.10
      3   2179.57   9.89    4.720  0.33( 0.33) 1.00   552.0     112.10
      4   2159.56  10.25    4.618  0.33( 0.33) 1.00   560.0     101.10

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =   2206.22    Tc(MIN.) =     9.04
  EFFECTIVE AREA(ACRES) =   527.38   AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.33  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    560.00
```

```
  LONGEST FLOWPATH FROM NODE    107.10 TO NODE    111.00 =   507.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    111.00 TO NODE    113.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1766.00
  ELEVATION DATA: UPSTREAM(FEET) =   2755.00  DOWNSTREAM(FEET) =   2555.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   21.717
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.944
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A       16.00      0.86     1.000    46   21.72
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        1.80      0.61     1.000    66   21.72
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.84
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   17.80   INITIAL SUBAREA RUNOFF(CFS) =   33.78

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =   9.04
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.982
  SUBAREA AREA(ACRES) =   17.80      SUBAREA RUNOFF(CFS) =   66.43
  EFFECTIVE AREA(ACRES) =    545.18   AREA-AVERAGED Fm(INCH/HR) =  0.35
  AREA-AVERAGED Fp(INCH/HR) =  0.35  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    577.80       PEAK FLOW RATE(CFS) =    2272.65

****************************************************************************
  FLOW PROCESS FROM NODE    113.00 TO NODE    113.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.04
  RAINFALL INTENSITY(INCH/HR) =   4.98
  AREA-AVERAGED Fm(INCH/HR) =  0.35
  AREA-AVERAGED Fp(INCH/HR) =  0.35
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =   545.18
  TOTAL STREAM AREA(ACRES) =   577.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   2272.65

****************************************************************************
  FLOW PROCESS FROM NODE    113.00 TO NODE    113.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN.) =  15.50   RAINFALL INTENSITY(INCH/HR) =  3.60
  EFFECTIVE AREA(ACRES) =   916.57
  TOTAL AREA(ACRES) =   940.10        PEAK FLOW RATE(CFS) =   3779.50
  AREA-AVERAGED Fm(INCH/HR) =   0.07  AREA-AVERAGED Fp(INCH/HR) =   0.07
  AREA-AVERAGED Ap =  1.00
  NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
        CONFLUENCE ANALYSES.

****************************************************************************
  FLOW PROCESS FROM NODE    113.10 TO NODE    113.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  2283.00
  ELEVATION DATA: UPSTREAM(FEET) =   2818.00  DOWNSTREAM(FEET) =   2550.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   23.894
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.780
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        1.20      0.86     1.000    46   23.89
  NATURAL FAIR COVER
  "OPEN BRUSH"                B       39.80      0.61     1.000    66   23.89
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.62
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   41.00   INITIAL SUBAREA RUNOFF(CFS) =   79.66

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  15.50
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.604
  SUBAREA AREA(ACRES) =   41.00      SUBAREA RUNOFF(CFS) =  110.07
  EFFECTIVE AREA(ACRES) =    957.57   AREA-AVERAGED Fm(INCH/HR) =  0.09
  AREA-AVERAGED Fp(INCH/HR) =  0.09  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    981.10       PEAK FLOW RATE(CFS) =    3779.50
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE    113.00 TO NODE    113.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  15.50
  RAINFALL INTENSITY(INCH/HR) =   3.60
  AREA-AVERAGED Fm(INCH/HR) =  0.09
  AREA-AVERAGED Fp(INCH/HR) =  0.09
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =   957.57
  TOTAL STREAM AREA(ACRES) =   981.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   3779.50

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1   2272.65   9.04    4.982  0.35( 0.35) 1.00   545.2     107.10
      1   2250.76   9.70    4.775  0.35( 0.35) 1.00   565.1     105.10
      1   2241.45   9.89    4.720  0.35( 0.35) 1.00   569.8     112.10
      1   2220.16  10.25    4.618  0.35( 0.35) 1.00   577.8     101.10
      2   3779.50  15.50    3.604  0.09( 0.09) 1.00   957.6     113.00

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

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1   5341.13   9.04    4.982  0.22( 0.22) 1.00  1103.6     107.10
      2   5404.54   9.70    4.775  0.22( 0.22) 1.00  1164.3     105.10
      3   5419.02   9.89    4.720  0.22( 0.22) 1.00  1180.8     112.10
      4   5442.77  10.25    4.618  0.22( 0.22) 1.00  1211.3     101.10
      5   5472.48  15.50    3.604  0.19( 0.19) 1.00  1535.4     113.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =   5472.48    Tc(MIN.) =    15.50
  EFFECTIVE AREA(ACRES) =  1535.37   AREA-AVERAGED Fm(INCH/HR) =  0.19
  AREA-AVERAGED Fp(INCH/HR) =  0.19  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =   1558.90
  LONGEST FLOWPATH FROM NODE    107.10 TO NODE    113.00 =   507.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    113.00 TO NODE    113.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    117.10 TO NODE    117.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   508.00
  ELEVATION DATA: UPSTREAM(FEET) =   5040.00  DOWNSTREAM(FEET) =   4880.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.752
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.489
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                D        4.10      0.33     1.000    83   10.75
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     15.36
```

```
  TOTAL AREA(ACRES) =      4.10   PEAK FLOW RATE(CFS) =     15.36

****************************************************************************
  FLOW PROCESS FROM NODE    117.00 TO NODE    118.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1926.00
  ELEVATION DATA: UPSTREAM(FEET) =   4800.00  DOWNSTREAM(FEET) =   3600.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   15.987
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.538
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                D       28.10      0.33     1.000    83   15.99
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   28.10   INITIAL SUBAREA RUNOFF(CFS) =   81.23

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  10.75
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.489
  SUBAREA AREA(ACRES) =   28.10      SUBAREA RUNOFF(CFS) =  105.27
  EFFECTIVE AREA(ACRES) =     32.20   AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.33  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     32.20       PEAK FLOW RATE(CFS) =     120.63

****************************************************************************
  FLOW PROCESS FROM NODE    118.00 TO NODE    118.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  10.75
  RAINFALL INTENSITY(INCH/HR) =   4.49
  AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.33
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =    32.20
  TOTAL STREAM AREA(ACRES) =    32.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    120.63

****************************************************************************
  FLOW PROCESS FROM NODE    119.10 TO NODE    119.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   569.00
  ELEVATION DATA: UPSTREAM(FEET) =   4880.00  DOWNSTREAM(FEET) =   4320.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.958
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.008
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                D        9.20      0.33     1.000    83    8.96
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     38.77
  TOTAL AREA(ACRES) =      9.20   PEAK FLOW RATE(CFS) =     38.77

****************************************************************************
  FLOW PROCESS FROM NODE    119.00 TO NODE    118.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1475.00
  ELEVATION DATA: UPSTREAM(FEET) =   4320.00  DOWNSTREAM(FEET) =   3600.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   15.087
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.663
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                D       22.90      0.33     1.000    83   15.09
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   22.90   INITIAL SUBAREA RUNOFF(CFS) =   68.78

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =   8.96
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.008
  SUBAREA AREA(ACRES) =   22.90      SUBAREA RUNOFF(CFS) =   96.50
  EFFECTIVE AREA(ACRES) =     32.10   AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.33  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     32.10       PEAK FLOW RATE(CFS) =     135.26

****************************************************************************
  FLOW PROCESS FROM NODE    118.00 TO NODE    118.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   8.96
  RAINFALL INTENSITY(INCH/HR) =   5.01
  AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.33
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =    32.10
  TOTAL STREAM AREA(ACRES) =    32.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    135.26

****************************************************************************
  FLOW PROCESS FROM NODE    121.00 TO NODE    121.10 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   424.00
  ELEVATION DATA: UPSTREAM(FEET) =   4720.00  DOWNSTREAM(FEET) =   4440.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.626
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.123
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                D        2.40      0.33     1.000    83    8.63
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     10.36
  TOTAL AREA(ACRES) =      2.40   PEAK FLOW RATE(CFS) =     10.36

****************************************************************************
  FLOW PROCESS FROM NODE    121.00 TO NODE    118.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1989.00
  ELEVATION DATA: UPSTREAM(FEET) =   4440.00  DOWNSTREAM(FEET) =   3600.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   17.504
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.351
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                D       16.10      0.33     1.000    83   17.50
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   16.10   INITIAL SUBAREA RUNOFF(CFS) =   43.83

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =   8.63
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.123
  SUBAREA AREA(ACRES) =   16.10      SUBAREA RUNOFF(CFS) =   69.51
  EFFECTIVE AREA(ACRES) =     18.50   AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.33  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     18.50       PEAK FLOW RATE(CFS) =      79.87

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

```
  FLOW PROCESS FROM NODE    118.00 TO NODE    118.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   8.63
  RAINFALL INTENSITY(INCH/HR) =   5.12
  AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.33
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =    18.50
  TOTAL STREAM AREA(ACRES) =    18.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     79.87

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    120.63  10.75    4.489  0.33( 0.33) 1.00    32.2     117.10
      2    135.26   8.96    5.008  0.33( 0.33) 1.00    32.1     119.10
      3     79.87   8.63    5.123  0.33( 0.33) 1.00    18.5     121.00

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

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    324.84   8.63    5.123  0.33( 0.33) 1.00    75.2     121.00
      2    326.27   8.96    5.008  0.33( 0.33) 1.00    77.4     119.10
      3    310.20  10.75    4.489  0.33( 0.33) 1.00    82.8     117.10

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    326.27    Tc(MIN.) =     8.96
  EFFECTIVE AREA(ACRES) =    77.43   AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.33  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     82.80
  LONGEST FLOWPATH FROM NODE    119.10 TO NODE    118.00 =   569.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    118.00 TO NODE    122.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1040.00
  ELEVATION DATA: UPSTREAM(FEET) =   3600.00  DOWNSTREAM(FEET) =   3240.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   14.053
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.823
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                D       18.80      0.33     1.000    83   14.05
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   18.80   INITIAL SUBAREA RUNOFF(CFS) =   59.16

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =   8.96
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.008
  SUBAREA AREA(ACRES) =   18.80      SUBAREA RUNOFF(CFS) =   79.22
  EFFECTIVE AREA(ACRES) =     96.23   AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.33  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    101.60       PEAK FLOW RATE(CFS) =     405.49

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    406.01   8.63    5.123  0.33( 0.33) 1.00    94.0     121.00
      2    405.49   8.96    5.008  0.33( 0.33) 1.00    96.2     119.10
      3    380.63  10.75    4.489  0.33( 0.33) 1.00   101.6     117.10
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    406.01  Tc(MIN.) =   8.63
  AREA-AVERAGED Fm(INCH/HR) =  0.33  AREA-AVERAGED Fp(INCH/HR) =  0.33
  AREA-AVERAGED Ap =  1.00  EFFECTIVE AREA(ACRES) =     94.04

****************************************************************************
  FLOW PROCESS FROM NODE    122.00 TO NODE    122.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   8.63
  RAINFALL INTENSITY(INCH/HR) =   5.12
  AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.33
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =    94.04
  TOTAL STREAM AREA(ACRES) =   101.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    406.01

****************************************************************************
  FLOW PROCESS FROM NODE    123.10 TO NODE    123.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   594.00
  ELEVATION DATA: UPSTREAM(FEET) =   4755.00  DOWNSTREAM(FEET) =   4400.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.070
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.669
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                D        9.50      0.33     1.000    83   10.07
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     37.13
  TOTAL AREA(ACRES) =      9.50   PEAK FLOW RATE(CFS) =     37.13

****************************************************************************
  FLOW PROCESS FROM NODE    123.00 TO NODE    124.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   873.00
  ELEVATION DATA: UPSTREAM(FEET) =   4400.00  DOWNSTREAM(FEET) =   3800.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.423
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.329
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                D       22.50      0.33     1.000    83   11.42
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   22.50   INITIAL SUBAREA RUNOFF(CFS) =   81.05

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  10.07
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.669
  SUBAREA AREA(ACRES) =   22.50      SUBAREA RUNOFF(CFS) =   87.94
  EFFECTIVE AREA(ACRES) =     32.00   AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.33  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     32.00       PEAK FLOW RATE(CFS) =     125.07

****************************************************************************
  FLOW PROCESS FROM NODE    124.00 TO NODE    122.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1750.00
  ELEVATION DATA: UPSTREAM(FEET) =   3800.00  DOWNSTREAM(FEET) =   3240.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   17.579
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.342
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                D       36.80      0.33     1.000    83   17.58
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
```

```
  SUBAREA AREA(ACRES) =   36.80   INITIAL SUBAREA RUNOFF(CFS) =   99.89

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  10.07
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.669
  SUBAREA AREA(ACRES) =   36.80      SUBAREA RUNOFF(CFS) =  143.83
  EFFECTIVE AREA(ACRES) =     68.80   AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.33  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     68.80       PEAK FLOW RATE(CFS) =     268.90

****************************************************************************
  FLOW PROCESS FROM NODE    122.00 TO NODE    122.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  10.07
  RAINFALL INTENSITY(INCH/HR) =   4.67
  AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.33
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =    68.80
  TOTAL STREAM AREA(ACRES) =    68.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    268.90

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    406.01   8.63    5.123  0.33( 0.33) 1.00    94.0     121.00
      1    405.49   8.96    5.008  0.33( 0.33) 1.00    96.2     119.10
      1    380.63  10.75    4.489  0.33( 0.33) 1.00   101.6     117.10
      2    268.90  10.07    4.669  0.33( 0.33) 1.00    68.8     123.10

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

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    660.44   8.63    5.123  0.33( 0.33) 1.00   153.0     121.00
      2    663.40   8.96    5.008  0.33( 0.33) 1.00   157.4     119.10
      3    658.98  10.07    4.669  0.33( 0.33) 1.00   168.4     123.10
      4    638.38  10.75    4.489  0.33( 0.33) 1.00   170.4     117.10

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    663.40    Tc(MIN.) =     8.96
  EFFECTIVE AREA(ACRES) =   157.43   AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.33  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    170.40
  LONGEST FLOWPATH FROM NODE    123.10 TO NODE    122.00 =   594.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    122.00 TO NODE    126.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1195.00
  ELEVATION DATA: UPSTREAM(FEET) =   3240.00  DOWNSTREAM(FEET) =   3000.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   16.565
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.463
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                D       25.00      0.33     1.000    83   16.56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   25.00   INITIAL SUBAREA RUNOFF(CFS) =   70.59

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =   8.96
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.008
  SUBAREA AREA(ACRES) =   25.00      SUBAREA RUNOFF(CFS) =  105.35
  EFFECTIVE AREA(ACRES) =    182.43   AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.33  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    195.40       PEAK FLOW RATE(CFS) =     768.75

****************************************************************************
  FLOW PROCESS FROM NODE    126.00 TO NODE    126.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    127.10 TO NODE    127.20 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   437.00
  ELEVATION DATA: UPSTREAM(FEET) =   4560.00  DOWNSTREAM(FEET) =   4280.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.783
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.068
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                D        2.30      0.33     1.000    83    8.78
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      9.82
  TOTAL AREA(ACRES) =      2.30   PEAK FLOW RATE(CFS) =      9.82

****************************************************************************
  FLOW PROCESS FROM NODE    127.20 TO NODE    127.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   368.00
  ELEVATION DATA: UPSTREAM(FEET) =   4280.00  DOWNSTREAM(FEET) =   4040.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.171
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.292
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                D        5.30      0.33     1.000    83    8.17
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    5.30   INITIAL SUBAREA RUNOFF(CFS) =   23.69

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =   8.78
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.068
  SUBAREA AREA(ACRES) =    5.30      SUBAREA RUNOFF(CFS) =   22.62
  EFFECTIVE AREA(ACRES) =      7.60   AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.33  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      7.60       PEAK FLOW RATE(CFS) =      32.43

****************************************************************************
  FLOW PROCESS FROM NODE    127.00 TO NODE    128.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1386.00
  ELEVATION DATA: UPSTREAM(FEET) =   4040.00  DOWNSTREAM(FEET) =   3350.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   14.659
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.727
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                D       20.90      0.33     1.000    83   14.66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   20.90   INITIAL SUBAREA RUNOFF(CFS) =   63.97

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =   8.78
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.068
  SUBAREA AREA(ACRES) =   20.90      SUBAREA RUNOFF(CFS) =   89.19
  EFFECTIVE AREA(ACRES) =     28.50   AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.33  AREA-AVERAGED Ap =  1.00
```

```
  TOTAL AREA(ACRES) =     28.50       PEAK FLOW RATE(CFS) =     121.63

****************************************************************************
  FLOW PROCESS FROM NODE    128.00 TO NODE    128.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   8.78
  RAINFALL INTENSITY(INCH/HR) =   5.07
  AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.33
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =    28.50
  TOTAL STREAM AREA(ACRES) =    28.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    121.63

****************************************************************************
  FLOW PROCESS FROM NODE    129.10 TO NODE    129.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   519.00
  ELEVATION DATA: UPSTREAM(FEET) =   4200.00  DOWNSTREAM(FEET) =   3920.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.738
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.764
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                D        4.50      0.33     1.000    83    9.74
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     17.97
  TOTAL AREA(ACRES) =      4.50   PEAK FLOW RATE(CFS) =     17.97

****************************************************************************
  FLOW PROCESS FROM NODE    129.00 TO NODE    128.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1035.00
  ELEVATION DATA: UPSTREAM(FEET) =   3920.00  DOWNSTREAM(FEET) =   3350.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.782
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.046
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                D       13.10      0.33     1.000    83   12.78
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   13.10   INITIAL SUBAREA RUNOFF(CFS) =   43.86

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =   9.74
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.764
  SUBAREA AREA(ACRES) =   13.10      SUBAREA RUNOFF(CFS) =   52.32
  EFFECTIVE AREA(ACRES) =     17.60   AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.33  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     17.60       PEAK FLOW RATE(CFS) =      70.29

****************************************************************************
  FLOW PROCESS FROM NODE    128.00 TO NODE    128.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.74
  RAINFALL INTENSITY(INCH/HR) =   4.76
  AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.33
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =    17.60
  TOTAL STREAM AREA(ACRES) =    17.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     70.29

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    121.63   8.78    5.068  0.33( 0.33) 1.00    28.5     127.10
      2     70.29   9.74    4.764  0.33( 0.33) 1.00    17.6     129.10

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

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    189.37   8.78    5.068  0.33( 0.33) 1.00    44.4     127.10
      2    184.11   9.74    4.764  0.33( 0.33) 1.00    46.1     129.10

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    189.37    Tc(MIN.) =      8.78
  EFFECTIVE AREA(ACRES) =    44.37   AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.33  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     46.10
  LONGEST FLOWPATH FROM NODE    129.10 TO NODE    128.00 =   519.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    128.00 TO NODE    126.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1102.00
  ELEVATION DATA: UPSTREAM(FEET) =   3350.00  DOWNSTREAM(FEET) =   3000.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   14.632
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.731
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                D       20.10      0.33     1.000    83   14.63
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   20.10   INITIAL SUBAREA RUNOFF(CFS) =   61.60

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =   8.78
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.068
  SUBAREA AREA(ACRES) =   20.10      SUBAREA RUNOFF(CFS) =   85.78
  EFFECTIVE AREA(ACRES) =     64.47   AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.33  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     66.20       PEAK FLOW RATE(CFS) =     275.15

****************************************************************************
  FLOW PROCESS FROM NODE    126.00 TO NODE    126.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    275.15   8.78    5.068  0.33( 0.33) 1.00    64.5     127.10
      2    264.39   9.74    4.764  0.33( 0.33) 1.00    66.2     129.10
  LONGEST FLOWPATH FROM NODE    129.10 TO NODE    126.00 =   519.00 FEET.

  ** MEMORY BANK #  3 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    768.37   8.63    5.123  0.33( 0.33) 1.00   178.0     121.00
      2    768.75   8.96    5.008  0.33( 0.33) 1.00   182.4     119.10
      3    755.72  10.07    4.669  0.33( 0.33) 1.00   193.4     123.10
      4    732.04  10.75    4.489  0.33( 0.33) 1.00   195.4     117.10
  LONGEST FLOWPATH FROM NODE    123.10 TO NODE    126.00 =   594.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1   1041.74   8.63    5.123  0.33( 0.33) 1.00   241.3     121.00
      2   1043.70   8.78    5.068  0.33( 0.33) 1.00   244.6     127.10
      3   1041.93   8.96    5.008  0.33( 0.33) 1.00   247.2     119.10
      4   1023.99   9.74    4.764  0.33( 0.33) 1.00   256.3     129.10
```

```
      5   1014.45  10.07    4.669  0.33( 0.33) 1.00   259.6     123.10
      6    980.04  10.75    4.489  0.33( 0.33) 1.00   261.6     117.10
    TOTAL AREA(ACRES) =    261.60

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     1043.70  Tc(MIN.) =    8.783
  EFFECTIVE AREA(ACRES) =    244.56  AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.33  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     261.60
  LONGEST FLOWPATH FROM NODE    123.10 TO NODE    126.00 =   594.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    126.00 TO NODE    116.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  2326.00
  ELEVATION DATA: UPSTREAM(FEET) =   3000.00  DOWNSTREAM(FEET) =   2640.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   22.778
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.861
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                D       42.80      0.33     1.000    83   22.78
  NATURAL FAIR COVER
  "OPEN BRUSH"                A       16.00      0.86     1.000    46   22.78
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.47
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   58.80   INITIAL SUBAREA RUNOFF(CFS) =  126.46

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =   8.78
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.068
  SUBAREA AREA(ACRES) =   58.80      SUBAREA RUNOFF(CFS) =  243.24
  EFFECTIVE AREA(ACRES) =    303.36   AREA-AVERAGED Fm(INCH/HR) =  0.35
  AREA-AVERAGED Fp(INCH/HR) =  0.35  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    320.40       PEAK FLOW RATE(CFS) =    1286.92

  ** PEAK FLOW RATE TABLE **
   STREAM      Q       Tc    Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER    (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1   1287.91   8.63    5.123  0.35( 0.35) 1.00   300.1     121.00
      2   1286.92   8.78    5.068  0.35( 0.35) 1.00   303.4     127.10
      3   1281.86   8.96    5.008  0.35( 0.35) 1.00   306.0     119.10
      4   1250.72   9.74    4.764  0.35( 0.35) 1.00   315.1     129.10
      5   1236.58  10.07    4.669  0.35( 0.35) 1.00   318.4     123.10
      6   1192.64  10.75    4.489  0.35( 0.35) 1.00   320.4     117.10
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =   1287.91  Tc(MIN.) =   8.63
  AREA-AVERAGED Fm(INCH/HR) =  0.35  AREA-AVERAGED Fp(INCH/HR) =  0.35
  AREA-AVERAGED Ap =  1.00  EFFECTIVE AREA(ACRES) =    300.09

****************************************************************************
  FLOW PROCESS FROM NODE    116.00 TO NODE    116.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   8.63
  RAINFALL INTENSITY(INCH/HR) =   5.12
  AREA-AVERAGED Fm(INCH/HR) =  0.35
  AREA-AVERAGED Fp(INCH/HR) =  0.35
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =   300.09
  TOTAL STREAM AREA(ACRES) =   320.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   1287.91

****************************************************************************
  FLOW PROCESS FROM NODE    115.10 TO NODE    115.20 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   512.00
  ELEVATION DATA: UPSTREAM(FEET) =   3600.00  DOWNSTREAM(FEET) =   3230.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.135
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.950
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                D        1.60      0.33     1.000    83    9.14
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =       6.66
  TOTAL AREA(ACRES) =      1.60   PEAK FLOW RATE(CFS) =      6.66

****************************************************************************
  FLOW PROCESS FROM NODE    115.20 TO NODE    115.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   790.00
  ELEVATION DATA: UPSTREAM(FEET) =   3230.00  DOWNSTREAM(FEET) =   2900.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.125
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.176
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                D        9.70      0.33     1.000    83   12.12
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    9.70   INITIAL SUBAREA RUNOFF(CFS) =   33.61

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =   9.14
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.950
  SUBAREA AREA(ACRES) =    9.70      SUBAREA RUNOFF(CFS) =   40.36
  EFFECTIVE AREA(ACRES) =     11.30   AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.33  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     11.30       PEAK FLOW RATE(CFS) =      47.02

****************************************************************************
  FLOW PROCESS FROM NODE    115.00 TO NODE    116.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1372.00
  ELEVATION DATA: UPSTREAM(FEET) =   2900.00  DOWNSTREAM(FEET) =   2640.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   17.710
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.327
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A       16.70      0.86     1.000    46   17.71
  NATURAL FAIR COVER
  "OPEN BRUSH"                D        6.50      0.33     1.000    83   17.71
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.71
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   23.20   INITIAL SUBAREA RUNOFF(CFS) =   54.64

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =   9.14
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.950
  SUBAREA AREA(ACRES) =   23.20      SUBAREA RUNOFF(CFS) =   88.52
  EFFECTIVE AREA(ACRES) =     34.50   AREA-AVERAGED Fm(INCH/HR) =  0.58
  AREA-AVERAGED Fp(INCH/HR) =  0.58  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     34.50       PEAK FLOW RATE(CFS) =     135.54

****************************************************************************
  FLOW PROCESS FROM NODE    116.00 TO NODE    116.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.14
  RAINFALL INTENSITY(INCH/HR) =   4.95
  AREA-AVERAGED Fm(INCH/HR) =  0.58
  AREA-AVERAGED Fp(INCH/HR) =  0.58
```

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AREA-AVERAGED Ap =  1.00
EFFECTIVE STREAM AREA(ACRES) =    34.50
TOTAL STREAM AREA(ACRES) =    34.50
PEAK FLOW RATE(CFS) AT CONFLUENCE =    135.54

** CONFLUENCE DATA **
 STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
    1   1287.91   8.63    5.123  0.35( 0.35) 1.00   300.1     121.00
    1   1286.92   8.78    5.068  0.35( 0.35) 1.00   303.4     127.10
    1   1281.86   8.96    5.008  0.35( 0.35) 1.00   306.0     119.10
    1   1250.72   9.74    4.764  0.35( 0.35) 1.00   315.1     129.10
    1   1236.58  10.07    4.669  0.35( 0.35) 1.00   318.4     123.10
    1   1192.64  10.75    4.489  0.35( 0.35) 1.00   320.4     117.10
    2    135.54   9.14    4.950  0.58( 0.58) 1.00    34.5     115.10

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

** PEAK FLOW RATE TABLE **
 STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
    1   1420.98   8.63    5.123  0.38( 0.38) 1.00   332.7     121.00
    2   1420.76   8.78    5.068  0.38( 0.38) 1.00   336.5     127.10
    3   1416.55   8.96    5.008  0.38( 0.38) 1.00   339.9     119.10
    4   1410.33   9.14    4.950  0.38( 0.38) 1.00   342.6     115.10
    5   1380.48   9.74    4.764  0.38( 0.38) 1.00   349.6     129.10
    6   1363.39  10.07    4.669  0.38( 0.38) 1.00   352.9     123.10
    7   1313.86  10.75    4.489  0.38( 0.38) 1.00   354.9     117.10

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =   1420.98    Tc(MIN.) =     8.63
EFFECTIVE AREA(ACRES) =   332.66   AREA-AVERAGED Fm(INCH/HR) =  0.38
AREA-AVERAGED Fp(INCH/HR) =  0.38  AREA-AVERAGED Ap =  1.00
TOTAL AREA(ACRES) =    354.90
LONGEST FLOWPATH FROM NODE    123.10 TO NODE    116.00 =   594.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    116.00 TO NODE    113.00 IS CODE =  82
----------------------------------------------------------------------------
>>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
>>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
INITIAL SUBAREA FLOW-LENGTH(FEET) =   556.00
ELEVATION DATA: UPSTREAM(FEET) =   2640.00  DOWNSTREAM(FEET) =   2550.00

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.735
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.055
SUBAREA Tc AND LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS   Tc
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
NATURAL FAIR COVER
"OPEN BRUSH"                 A        4.10      0.86     1.000   46   12.74
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
SUBAREA AREA(ACRES) =    4.10   INITIAL SUBAREA RUNOFF(CFS) =   11.79

** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
MAINLINE Tc(MIN) =   8.63
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.123
SUBAREA AREA(ACRES) =    4.10      SUBAREA RUNOFF(CFS) =   15.73
EFFECTIVE AREA(ACRES) =    336.76   AREA-AVERAGED Fm(INCH/HR) =  0.38
AREA-AVERAGED Fp(INCH/HR) =  0.38  AREA-AVERAGED Ap =  1.00
TOTAL AREA(ACRES) =    359.00       PEAK FLOW RATE(CFS) =    1436.71

****************************************************************************
FLOW PROCESS FROM NODE    113.00 TO NODE    113.00 IS CODE =  11
----------------------------------------------------------------------------
>>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

** MAIN STREAM CONFLUENCE DATA **
 STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
    1   1436.71   8.63    5.123  0.38( 0.38) 1.00   336.8     121.00
    2   1436.29   8.78    5.068  0.38( 0.38) 1.00   340.6     127.10
    3   1431.86   8.96    5.008  0.38( 0.38) 1.00   344.0     119.10
    4   1424.96   9.14    4.950  0.38( 0.38) 1.00   346.7     115.10
    5   1394.89   9.74    4.764  0.38( 0.38) 1.00   353.7     129.10
    6   1377.44  10.07    4.669  0.38( 0.38) 1.00   357.0     123.10
    7   1327.25  10.75    4.489  0.38( 0.38) 1.00   359.0     117.10
LONGEST FLOWPATH FROM NODE    123.10 TO NODE    113.00 =   594.00 FEET.

** MEMORY BANK #  1 CONFLUENCE DATA **
 STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
    1   5341.13   9.04    4.982  0.22( 0.22) 1.00  1103.6     107.10
    2   5404.54   9.70    4.775  0.22( 0.22) 1.00  1164.3     105.10
    3   5419.02   9.89    4.720  0.22( 0.22) 1.00  1180.8     112.10
    4   5442.77  10.25    4.618  0.22( 0.22) 1.00  1211.3     101.10
    5   5472.48  15.50    3.604  0.19( 0.19) 1.00  1535.4     113.00
LONGEST FLOWPATH FROM NODE    107.10 TO NODE    113.00 =   507.00 FEET.

** PEAK FLOW RATE TABLE **
 STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
    1   6685.66   8.63    5.123  0.26( 0.26) 1.00  1389.9     121.00
    2   6720.82   8.78    5.068  0.26( 0.26) 1.00  1413.1     127.10
    3   6755.40   8.96    5.008  0.26( 0.26) 1.00  1437.8     119.10
    4   6769.88   9.04    4.982  0.26( 0.26) 1.00  1448.7     107.10
    5   6775.41   9.14    4.950  0.26( 0.26) 1.00  1459.2     115.10
    6   6801.35   9.70    4.775  0.26( 0.26) 1.00  1517.5     105.10
    7   6802.36   9.74    4.764  0.26( 0.26) 1.00  1521.3     129.10
    8   6805.96   9.89    4.720  0.25( 0.25) 1.00  1535.9     112.10
    9   6808.21  10.07    4.669  0.25( 0.25) 1.00  1552.8     123.10
   10   6806.62  10.25    4.618  0.25( 0.25) 1.00  1568.8     101.10
   11   6772.84  10.75    4.489  0.25( 0.25) 1.00  1601.1     117.10
   12   6513.99  15.50    3.604  0.23( 0.23) 1.00  1894.4     113.00
  TOTAL AREA(ACRES) =   1917.90

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     6808.21  Tc(MIN.) =   10.070
EFFECTIVE AREA(ACRES) =   1552.83  AREA-AVERAGED Fm(INCH/HR) =  0.25
AREA-AVERAGED Fp(INCH/HR) =  0.26  AREA-AVERAGED Ap =  1.00
TOTAL AREA(ACRES) =   1917.90
LONGEST FLOWPATH FROM NODE    123.10 TO NODE    113.00 =   594.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    113.00 TO NODE    136.00 IS CODE =  82
----------------------------------------------------------------------------
>>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
>>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
INITIAL SUBAREA FLOW-LENGTH(FEET) =   256.00
ELEVATION DATA: UPSTREAM(FEET) =   2550.00  DOWNSTREAM(FEET) =   2520.00

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.961
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.699
SUBAREA Tc AND LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS   Tc
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
NATURAL FAIR COVER
"OPEN BRUSH"                 A        1.80      0.86     1.000   46    9.96
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
SUBAREA AREA(ACRES) =    1.80   INITIAL SUBAREA RUNOFF(CFS) =    6.22

** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
MAINLINE Tc(MIN) =  10.07
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.669
SUBAREA AREA(ACRES) =    1.80      SUBAREA RUNOFF(CFS) =    6.17
EFFECTIVE AREA(ACRES) =   1554.63   AREA-AVERAGED Fm(INCH/HR) =  0.25
AREA-AVERAGED Fp(INCH/HR) =  0.25  AREA-AVERAGED Ap =  1.00
TOTAL AREA(ACRES) =   1919.70       PEAK FLOW RATE(CFS) =    6808.21
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
FLOW PROCESS FROM NODE    136.00 TO NODE    136.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =  10.07
RAINFALL INTENSITY(INCH/HR) =   4.67
AREA-AVERAGED Fm(INCH/HR) =  0.25
AREA-AVERAGED Fp(INCH/HR) =  0.25
AREA-AVERAGED Ap =  1.00
EFFECTIVE STREAM AREA(ACRES) =  1554.63
TOTAL STREAM AREA(ACRES) =  1919.70
PEAK FLOW RATE(CFS) AT CONFLUENCE =   6808.21

****************************************************************************
FLOW PROCESS FROM NODE    135.10 TO NODE    135.00 IS CODE =  21
```

```
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   943.00
  ELEVATION DATA: UPSTREAM(FEET) =   3031.70  DOWNSTREAM(FEET) =   2640.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.029
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.000
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        4.80      0.86     1.000    46   13.03
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     13.56
  TOTAL AREA(ACRES) =      4.80   PEAK FLOW RATE(CFS) =     13.56

****************************************************************************
  FLOW PROCESS FROM NODE    135.00 TO NODE    136.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   497.00
  ELEVATION DATA: UPSTREAM(FEET) =   2640.00  DOWNSTREAM(FEET) =   2520.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.240
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.371
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        2.00      0.86     1.000    46   11.24
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    2.00   INITIAL SUBAREA RUNOFF(CFS) =    6.32

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  13.03
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.000
  SUBAREA AREA(ACRES) =    2.00     SUBAREA RUNOFF(CFS) =    5.65
  EFFECTIVE AREA(ACRES) =      6.80   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      6.80       PEAK FLOW RATE(CFS) =      19.22

****************************************************************************
  FLOW PROCESS FROM NODE    136.00 TO NODE    136.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  13.03
  RAINFALL INTENSITY(INCH/HR) =   4.00
  AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =     6.80
  TOTAL STREAM AREA(ACRES) =     6.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     19.22

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1   6685.66   8.63    5.123  0.26( 0.26) 1.00  1391.7     121.00
      1   6720.82   8.78    5.068  0.26( 0.26) 1.00  1414.9     127.10
      1   6755.40   8.96    5.008  0.26( 0.26) 1.00  1439.6     119.10
      1   6769.88   9.04    4.982  0.26( 0.26) 1.00  1450.5     107.10
      1   6775.41   9.14    4.950  0.26( 0.26) 1.00  1461.0     115.10
      1   6801.35   9.70    4.775  0.26( 0.26) 1.00  1519.3     105.10
      1   6802.36   9.74    4.764  0.26( 0.26) 1.00  1523.1     129.10
      1   6805.96   9.89    4.720  0.26( 0.26) 1.00  1537.7     112.10
      1   6808.21  10.07    4.669  0.25( 0.25) 1.00  1554.6     123.10
      1   6806.62  10.25    4.618  0.25( 0.25) 1.00  1570.6     101.10
      1   6772.84  10.75    4.489  0.25( 0.25) 1.00  1602.9     117.10
      1   6513.99  15.50    3.604  0.23( 0.23) 1.00  1896.2     113.00
      2     19.22  13.03    4.000  0.86( 0.86) 1.00     6.8     135.10
```

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

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1   6702.93   8.63    5.123  0.26( 0.26) 1.00  1396.2     121.00
      2   6738.18   8.78    5.068  0.26( 0.26) 1.00  1419.5     127.10
      3   6772.86   8.96    5.008  0.26( 0.26) 1.00  1444.3     119.10
      4   6787.38   9.04    4.982  0.26( 0.26) 1.00  1455.3     107.10
      5   6792.96   9.14    4.950  0.26( 0.26) 1.00  1465.7     115.10
      6   6819.18   9.70    4.775  0.26( 0.26) 1.00  1524.4     105.10
      7   6820.22   9.74    4.764  0.26( 0.26) 1.00  1528.2     129.10
      8   6823.89   9.89    4.720  0.26( 0.26) 1.00  1542.9     112.10
      9   6826.22  10.07    4.669  0.26( 0.26) 1.00  1559.9     123.10
     10   6824.72  10.25    4.618  0.26( 0.26) 1.00  1576.0     101.10
     11   6791.17  10.75    4.489  0.25( 0.25) 1.00  1608.5     117.10
     12   6667.91  13.03    4.000  0.24( 0.24) 1.00  1750.3     135.10
     13   6530.78  15.50    3.604  0.23( 0.23) 1.00  1903.0     113.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =   6826.22    Tc(MIN.) =    10.07
  EFFECTIVE AREA(ACRES) =  1559.89   AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.26  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =   1926.50
  LONGEST FLOWPATH FROM NODE    135.10 TO NODE    136.00 =   943.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    136.00 TO NODE    138.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   948.00
  ELEVATION DATA: UPSTREAM(FEET) =   2520.00  DOWNSTREAM(FEET) =   2400.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   16.560
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.464
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A       10.60      0.86     1.000    46   16.56
  NATURAL FAIR COVER
  "OPEN BRUSH"                B       11.50      0.61     1.000    66   16.56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.73
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   22.10   INITIAL SUBAREA RUNOFF(CFS) =   54.34

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  10.07
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.669
  SUBAREA AREA(ACRES) =   22.10      SUBAREA RUNOFF(CFS) =   78.30
  EFFECTIVE AREA(ACRES) =   1581.99   AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.26  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =   1948.60       PEAK FLOW RATE(CFS) =    6826.22
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE    138.00 TO NODE    138.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  10.07
  RAINFALL INTENSITY(INCH/HR) =   4.67
  AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.26
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =  1581.99
  TOTAL STREAM AREA(ACRES) =  1948.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   6826.22

****************************************************************************
  FLOW PROCESS FROM NODE    403.10 TO NODE    403.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   707.00
  ELEVATION DATA: UPSTREAM(FEET) =   2810.00  DOWNSTREAM(FEET) =   2686.00
```

```
  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.797
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.865
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        1.70      0.86     1.000    46   13.80
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      4.60
  TOTAL AREA(ACRES) =      1.70   PEAK FLOW RATE(CFS) =      4.60

****************************************************************************
  FLOW PROCESS FROM NODE    403.00 TO NODE    404.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1599.00
  ELEVATION DATA: UPSTREAM(FEET) =   2686.00  DOWNSTREAM(FEET) =   2445.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   19.711
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.120
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               A       13.20      0.86     1.000    46   19.71
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   13.20   INITIAL SUBAREA RUNOFF(CFS) =   26.85

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  13.80
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.865
  SUBAREA AREA(ACRES) =   13.20      SUBAREA RUNOFF(CFS) =   35.70
  EFFECTIVE AREA(ACRES) =     14.90   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     14.90       PEAK FLOW RATE(CFS) =      40.30

****************************************************************************
  FLOW PROCESS FROM NODE    404.00 TO NODE    138.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   380.00
  ELEVATION DATA: UPSTREAM(FEET) =   2445.00  DOWNSTREAM(FEET) =   2400.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.642
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.279
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        2.60      0.86     1.000    46   11.64
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    2.60   INITIAL SUBAREA RUNOFF(CFS) =    8.00

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  13.80
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.865
  SUBAREA AREA(ACRES) =    2.60      SUBAREA RUNOFF(CFS) =    7.03
  EFFECTIVE AREA(ACRES) =     17.50   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     17.50       PEAK FLOW RATE(CFS) =      47.33

****************************************************************************
  FLOW PROCESS FROM NODE    138.00 TO NODE    138.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  13.80
  RAINFALL INTENSITY(INCH/HR) =   3.86
  AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =    17.50
  TOTAL STREAM AREA(ACRES) =    17.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     47.33

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1   6702.93   8.63    5.123  0.27( 0.27) 1.00  1418.3     121.00
      1   6738.18   8.78    5.068  0.27( 0.27) 1.00  1441.6     127.10
      1   6772.86   8.96    5.008  0.27( 0.27) 1.00  1466.4     119.10
      1   6787.38   9.04    4.982  0.27( 0.27) 1.00  1477.4     107.10
      1   6792.96   9.14    4.950  0.27( 0.27) 1.00  1487.8     115.10
      1   6819.18   9.70    4.775  0.27( 0.27) 1.00  1546.5     105.10
      1   6820.22   9.74    4.764  0.27( 0.27) 1.00  1550.3     129.10
      1   6823.89   9.89    4.720  0.26( 0.26) 1.00  1565.0     112.10
      1   6826.22  10.07    4.669  0.26( 0.26) 1.00  1582.0     123.10
      1   6824.72  10.25    4.618  0.26( 0.26) 1.00  1598.1     101.10
      1   6791.17  10.75    4.489  0.26( 0.26) 1.00  1630.6     117.10
      1   6667.91  13.03    4.000  0.25( 0.25) 1.00  1772.4     135.10
      1   6530.78  15.50    3.604  0.23( 0.23) 1.00  1925.1     113.00
      2     47.33  13.80    3.865  0.86( 0.86) 1.00    17.5     403.10

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

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1   6744.91   8.63    5.123  0.27( 0.27) 1.00  1429.3     121.00
      2   6780.38   8.78    5.068  0.27( 0.27) 1.00  1452.7     127.10
      3   6815.28   8.96    5.008  0.27( 0.27) 1.00  1477.7     119.10
      4   6829.90   9.04    4.982  0.27( 0.27) 1.00  1488.8     107.10
      5   6835.61   9.14    4.950  0.27( 0.27) 1.00  1499.4     115.10
      6   6862.53   9.70    4.775  0.27( 0.27) 1.00  1558.8     105.10
      7   6863.61   9.74    4.764  0.27( 0.27) 1.00  1562.7     129.10
      8   6867.46   9.89    4.720  0.27( 0.27) 1.00  1577.5     112.10
      9   6870.00  10.07    4.669  0.27( 0.27) 1.00  1594.8     123.10
     10   6868.71  10.25    4.618  0.27( 0.27) 1.00  1611.1     101.10
     11   6835.71  10.75    4.489  0.26( 0.26) 1.00  1644.2     117.10
     12   6714.62  13.03    4.000  0.25( 0.25) 1.00  1789.0     135.10
     13   6672.65  13.80    3.865  0.25( 0.25) 1.00  1837.3     403.10
     14   6574.01  15.50    3.604  0.24( 0.24) 1.00  1942.6     113.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =   6870.00    Tc(MIN.) =    10.07
  EFFECTIVE AREA(ACRES) =  1594.76   AREA-AVERAGED Fm(INCH/HR) =  0.27
  AREA-AVERAGED Fp(INCH/HR) =  0.27  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =   1966.10
  LONGEST FLOWPATH FROM NODE    135.10 TO NODE    138.00 =   943.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    138.00 TO NODE    139.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   323.00
  ELEVATION DATA: UPSTREAM(FEET) =   2400.00  DOWNSTREAM(FEET) =   2373.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.696
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.268
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        1.00      0.86     1.000    46   11.70
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    1.00   INITIAL SUBAREA RUNOFF(CFS) =    3.07

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  10.07
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.669
  SUBAREA AREA(ACRES) =    1.00      SUBAREA RUNOFF(CFS) =    3.43
  EFFECTIVE AREA(ACRES) =   1595.76   AREA-AVERAGED Fm(INCH/HR) =  0.27
  AREA-AVERAGED Fp(INCH/HR) =  0.27  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =   1967.10       PEAK FLOW RATE(CFS) =    6870.00
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

```
  FLOW PROCESS FROM NODE    139.00 TO NODE    139.00 IS CODE =   1
 ----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 ============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  10.07
  RAINFALL INTENSITY(INCH/HR) =   4.67
  AREA-AVERAGED Fm(INCH/HR) =  0.27
  AREA-AVERAGED Fp(INCH/HR) =  0.27
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =  1595.76
  TOTAL STREAM AREA(ACRES) =  1967.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   6870.00

****************************************************************************
  FLOW PROCESS FROM NODE    140.10 TO NODE    140.00 IS CODE =  21
 ----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
 ============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   565.00
  ELEVATION DATA: UPSTREAM(FEET) =   2720.00  DOWNSTREAM(FEET) =   2450.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.322
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.600
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        3.30      0.86     1.000    46   10.32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     11.11
  TOTAL AREA(ACRES) =      3.30   PEAK FLOW RATE(CFS) =     11.11

****************************************************************************
  FLOW PROCESS FROM NODE    140.00 TO NODE    139.00 IS CODE =  82
 ----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
 ============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   705.00
  ELEVATION DATA: UPSTREAM(FEET) =   2450.00  DOWNSTREAM(FEET) =   2373.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   15.150
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.654
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        2.10      0.86     1.000    46   15.15
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        2.70      0.61     1.000    66   15.15
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.72
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    4.80   INITIAL SUBAREA RUNOFF(CFS) =   12.67

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  10.32
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.600
  SUBAREA AREA(ACRES) =    4.80      SUBAREA RUNOFF(CFS) =   16.75
  EFFECTIVE AREA(ACRES) =      8.10   AREA-AVERAGED Fm(INCH/HR) =  0.78
  AREA-AVERAGED Fp(INCH/HR) =  0.78  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      8.10       PEAK FLOW RATE(CFS) =      27.86

****************************************************************************
  FLOW PROCESS FROM NODE    139.00 TO NODE    139.00 IS CODE =   1
 ----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
 ============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  10.32
  RAINFALL INTENSITY(INCH/HR) =   4.60
  AREA-AVERAGED Fm(INCH/HR) =  0.78
  AREA-AVERAGED Fp(INCH/HR) =  0.78
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =     8.10
  TOTAL STREAM AREA(ACRES) =     8.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     27.86

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1   6744.91   8.63    5.123  0.27( 0.27) 1.00  1430.3     121.00
      1   6780.38   8.78    5.068  0.27( 0.27) 1.00  1453.7     127.10
      1   6815.28   8.96    5.008  0.27( 0.27) 1.00  1478.7     119.10
      1   6829.90   9.04    4.982  0.27( 0.27) 1.00  1489.8     107.10
      1   6835.61   9.14    4.950  0.27( 0.27) 1.00  1500.4     115.10
      1   6862.53   9.70    4.775  0.27( 0.27) 1.00  1559.8     105.10
      1   6863.61   9.74    4.764  0.27( 0.27) 1.00  1563.7     129.10
      1   6867.46   9.89    4.720  0.27( 0.27) 1.00  1578.5     112.10
      1   6870.00  10.07    4.669  0.27( 0.27) 1.00  1595.8     123.10
      1   6868.71  10.25    4.618  0.27( 0.27) 1.00  1612.1     101.10
      1   6835.71  10.75    4.489  0.27( 0.27) 1.00  1645.2     117.10
      1   6714.62  13.03    4.000  0.25( 0.25) 1.00  1790.0     135.10
      1   6672.65  13.80    3.865  0.25( 0.25) 1.00  1838.3     403.10
      1   6574.01  15.50    3.604  0.24( 0.24) 1.00  1943.6     113.00
      2     27.86  10.32    4.600  0.78( 0.78) 1.00     8.1     140.10

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

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1   6771.38   8.63    5.123  0.28( 0.28) 1.00  1437.1     121.00
      2   6806.99   8.78    5.068  0.28( 0.28) 1.00  1460.6     127.10
      3   6842.04   8.96    5.008  0.28( 0.28) 1.00  1485.7     119.10
      4   6856.74   9.04    4.982  0.28( 0.28) 1.00  1496.9     107.10
      5   6862.53   9.14    4.950  0.28( 0.28) 1.00  1507.6     115.10
      6   6889.91   9.70    4.775  0.27( 0.27) 1.00  1567.4     105.10
      7   6891.03   9.74    4.764  0.27( 0.27) 1.00  1571.3     129.10
      8   6894.99   9.89    4.720  0.27( 0.27) 1.00  1586.3     112.10
      9   6897.68  10.07    4.669  0.27( 0.27) 1.00  1603.7     123.10
     10   6896.52  10.25    4.618  0.27( 0.27) 1.00  1620.1     101.10
     11   6892.12  10.32    4.600  0.27( 0.27) 1.00  1624.7     140.10
     12   6862.76  10.75    4.489  0.27( 0.27) 1.00  1653.3     117.10
     13   6738.10  13.03    4.000  0.26( 0.26) 1.00  1798.1     135.10
     14   6695.16  13.80    3.865  0.25( 0.25) 1.00  1846.4     403.10
     15   6594.61  15.50    3.604  0.24( 0.24) 1.00  1951.7     113.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =   6897.68    Tc(MIN.) =    10.07
  EFFECTIVE AREA(ACRES) =  1603.66   AREA-AVERAGED Fm(INCH/HR) =  0.27
  AREA-AVERAGED Fp(INCH/HR) =  0.27  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =   1975.20
  LONGEST FLOWPATH FROM NODE    135.10 TO NODE    139.00 =   943.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    139.00 TO NODE    144.00 IS CODE =  82
 ----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
 ============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   908.00
  ELEVATION DATA: UPSTREAM(FEET) =   2373.00  DOWNSTREAM(FEET) =   2280.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   16.981
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.412
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        5.20      0.86     1.000    46   16.98
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    5.20   INITIAL SUBAREA RUNOFF(CFS) =   11.94

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  10.07
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.669
  SUBAREA AREA(ACRES) =    5.20      SUBAREA RUNOFF(CFS) =   17.82
  EFFECTIVE AREA(ACRES) =   1608.86   AREA-AVERAGED Fm(INCH/HR) =  0.27
  AREA-AVERAGED Fp(INCH/HR) =  0.27  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =   1980.40       PEAK FLOW RATE(CFS) =    6897.68
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE    144.00 TO NODE    144.00 IS CODE =   1
 ----------------------------------------------------------------------------
```

```
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  10.07
  RAINFALL INTENSITY(INCH/HR) =   4.67
  AREA-AVERAGED Fm(INCH/HR) =  0.27
  AREA-AVERAGED Fp(INCH/HR) =  0.27
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =  1608.86
  TOTAL STREAM AREA(ACRES) =  1980.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   6897.68

******************************************************************************
  FLOW PROCESS FROM NODE    143.10 TO NODE    143.00 IS CODE =  21
------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   465.00
  ELEVATION DATA: UPSTREAM(FEET) =   2543.00  DOWNSTREAM(FEET) =   2385.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.222
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.627
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        1.20      0.86     1.000    46   10.22
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        0.80      0.61     1.000    66   10.22
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.76
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      6.96
  TOTAL AREA(ACRES) =      2.00   PEAK FLOW RATE(CFS) =      6.96

******************************************************************************
  FLOW PROCESS FROM NODE    143.00 TO NODE    144.00 IS CODE =  82
------------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   885.00
  ELEVATION DATA: UPSTREAM(FEET) =   2385.00  DOWNSTREAM(FEET) =   2280.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   16.320
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.494
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        3.10      0.86     1.000    46   16.32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    3.10   INITIAL SUBAREA RUNOFF(CFS) =    7.35

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  10.22
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.627
  SUBAREA AREA(ACRES) =    3.10      SUBAREA RUNOFF(CFS) =   10.51
  EFFECTIVE AREA(ACRES) =      5.10   AREA-AVERAGED Fm(INCH/HR) =  0.82
  AREA-AVERAGED Fp(INCH/HR) =  0.82  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      5.10       PEAK FLOW RATE(CFS) =      17.47

******************************************************************************
  FLOW PROCESS FROM NODE    144.00 TO NODE    144.00 IS CODE =   1
------------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  10.22
  RAINFALL INTENSITY(INCH/HR) =   4.63
  AREA-AVERAGED Fm(INCH/HR) =  0.82
  AREA-AVERAGED Fp(INCH/HR) =  0.82
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =     5.10
  TOTAL STREAM AREA(ACRES) =     5.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     17.47

  ** CONFLUENCE DATA **
   STREAM     Q      Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1   6771.38   8.63    5.123  0.28( 0.28) 1.00  1442.3     121.00
      1   6806.99   8.78    5.068  0.28( 0.28) 1.00  1465.8     127.10
      1   6842.04   8.96    5.008  0.28( 0.28) 1.00  1490.9     119.10
      1   6856.74   9.04    4.982  0.28( 0.28) 1.00  1502.1     107.10
      1   6862.53   9.14    4.950  0.28( 0.28) 1.00  1512.8     115.10
      1   6889.91   9.70    4.775  0.27( 0.27) 1.00  1572.6     105.10
      1   6891.03   9.74    4.764  0.27( 0.27) 1.00  1576.5     129.10
      1   6894.99   9.89    4.720  0.27( 0.27) 1.00  1591.5     112.10
      1   6897.68  10.07    4.669  0.27( 0.27) 1.00  1608.9     123.10
      1   6896.52  10.25    4.618  0.27( 0.27) 1.00  1625.3     101.10
      1   6892.12  10.32    4.600  0.27( 0.27) 1.00  1629.9     140.10
      1   6862.76  10.75    4.489  0.27( 0.27) 1.00  1658.5     117.10
      1   6738.10  13.03    4.000  0.26( 0.26) 1.00  1803.3     135.10
      1   6695.16  13.80    3.865  0.25( 0.25) 1.00  1851.6     403.10
      1   6594.61  15.50    3.604  0.24( 0.24) 1.00  1956.9     113.00
      2     17.47  10.22    4.627  0.82( 0.82) 1.00     5.1     143.10

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

  ** PEAK FLOW RATE TABLE **
   STREAM     Q      Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1   6788.04   8.63    5.123  0.28( 0.28) 1.00  1446.6     121.00
      2   6823.73   8.78    5.068  0.28( 0.28) 1.00  1470.2     127.10
      3   6858.88   8.96    5.008  0.28( 0.28) 1.00  1495.4     119.10
      4   6873.62   9.04    4.982  0.28( 0.28) 1.00  1506.6     107.10
      5   6879.46   9.14    4.950  0.28( 0.28) 1.00  1517.3     115.10
      6   6907.13   9.70    4.775  0.28( 0.28) 1.00  1577.4     105.10
      7   6908.26   9.74    4.764  0.28( 0.28) 1.00  1581.4     129.10
      8   6912.30   9.89    4.720  0.28( 0.28) 1.00  1596.4     112.10
      9   6915.07  10.07    4.669  0.27( 0.27) 1.00  1613.9     123.10
     10   6914.19  10.22    4.627  0.27( 0.27) 1.00  1627.5     143.10
     11   6913.95  10.25    4.618  0.27( 0.27) 1.00  1630.4     101.10
     12   6909.47  10.32    4.600  0.27( 0.27) 1.00  1635.0     140.10
     13   6879.59  10.75    4.489  0.27( 0.27) 1.00  1663.6     117.10
     14   6752.69  13.03    4.000  0.26( 0.26) 1.00  1808.4     135.10
     15   6709.13  13.80    3.865  0.26( 0.26) 1.00  1856.7     403.10
     16   6607.38  15.50    3.604  0.25( 0.25) 1.00  1962.0     113.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =   6915.07    Tc(MIN.) =    10.07
  EFFECTIVE AREA(ACRES) =  1613.89   AREA-AVERAGED Fm(INCH/HR) =  0.27
  AREA-AVERAGED Fp(INCH/HR) =  0.27  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    1985.50
  LONGEST FLOWPATH FROM NODE    135.10 TO NODE    144.00 =   943.00 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE    144.00 TO NODE    144.00 IS CODE =  10
------------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
==============================================================================

******************************************************************************
  FLOW PROCESS FROM NODE    401.10 TO NODE    401.00 IS CODE =  21
------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   966.00
  ELEVATION DATA: UPSTREAM(FEET) =   2792.00  DOWNSTREAM(FEET) =   2630.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   15.772
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.567
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        2.30      0.86     1.000    46   15.77
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      5.60
  TOTAL AREA(ACRES) =      2.30   PEAK FLOW RATE(CFS) =      5.60

******************************************************************************
  FLOW PROCESS FROM NODE    401.00 TO NODE    402.00 IS CODE =  82
------------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
```

```
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1152.00
  ELEVATION DATA: UPSTREAM(FEET) =   2630.00  DOWNSTREAM(FEET) =   2472.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   17.618
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.338
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        7.10      0.86     1.000    46   17.62
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    7.10   INITIAL SUBAREA RUNOFF(CFS) =   15.83

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  15.77
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.567
  SUBAREA AREA(ACRES) =    7.10      SUBAREA RUNOFF(CFS) =   17.30
  EFFECTIVE AREA(ACRES) =      9.40   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      9.40       PEAK FLOW RATE(CFS) =      22.90

****************************************************************************
  FLOW PROCESS FROM NODE    402.00 TO NODE    502.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1067.00
  ELEVATION DATA: UPSTREAM(FEET) =   2472.00  DOWNSTREAM(FEET) =   2345.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   17.577
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.342
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        7.80      0.86     1.000    46   17.58
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    7.80   INITIAL SUBAREA RUNOFF(CFS) =   17.43

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  15.77
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.567
  SUBAREA AREA(ACRES) =    7.80      SUBAREA RUNOFF(CFS) =   19.00
  EFFECTIVE AREA(ACRES) =     17.20   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     17.20       PEAK FLOW RATE(CFS) =      41.90

****************************************************************************
  FLOW PROCESS FROM NODE    502.00 TO NODE    502.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  15.77
  RAINFALL INTENSITY(INCH/HR) =   3.57
  AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =    17.20
  TOTAL STREAM AREA(ACRES) =    17.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     41.90

****************************************************************************
  FLOW PROCESS FROM NODE    501.10 TO NODE    501.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1045.00
  ELEVATION DATA: UPSTREAM(FEET) =   2670.00  DOWNSTREAM(FEET) =   2552.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   17.616
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.338
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap     SCS   Tc
```

```
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        1.80      0.86     1.000    46   17.62
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      4.01
  TOTAL AREA(ACRES) =      1.80   PEAK FLOW RATE(CFS) =      4.01

****************************************************************************
  FLOW PROCESS FROM NODE    501.00 TO NODE    502.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1198.00
  ELEVATION DATA: UPSTREAM(FEET) =   2552.00  DOWNSTREAM(FEET) =   2425.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   18.842
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.206
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        9.60      0.86     1.000    46   18.84
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    9.60   INITIAL SUBAREA RUNOFF(CFS) =   20.27

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  17.62
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.338
  SUBAREA AREA(ACRES) =    9.60      SUBAREA RUNOFF(CFS) =   21.41
  EFFECTIVE AREA(ACRES) =     11.40   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     11.40       PEAK FLOW RATE(CFS) =      25.42

****************************************************************************
  FLOW PROCESS FROM NODE    502.00 TO NODE    502.10 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   635.00
  ELEVATION DATA: UPSTREAM(FEET) =   2425.00  DOWNSTREAM(FEET) =   2345.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   14.121
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.812
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        8.60      0.86     1.000    46   14.12
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    8.60   INITIAL SUBAREA RUNOFF(CFS) =   22.84

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  17.62
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.338
  SUBAREA AREA(ACRES) =    8.60      SUBAREA RUNOFF(CFS) =   19.18
  EFFECTIVE AREA(ACRES) =     20.00   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     20.00       PEAK FLOW RATE(CFS) =      44.60

****************************************************************************
  FLOW PROCESS FROM NODE    502.00 TO NODE    502.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  17.62
  RAINFALL INTENSITY(INCH/HR) =   3.34
  AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =    20.00
  TOTAL STREAM AREA(ACRES) =    20.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     44.60
```

```
** CONFLUENCE DATA **
 STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
    1     41.90  15.77    3.567  0.86( 0.86) 1.00    17.2     401.10
    2     44.60  17.62    3.338  0.86( 0.86) 1.00    20.0     501.10

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

** PEAK FLOW RATE TABLE **
 STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
    1     85.52  15.77    3.567  0.86( 0.86) 1.00    35.1     401.10
    2     82.96  17.62    3.338  0.86( 0.86) 1.00    37.2     501.10

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     85.52    Tc(MIN.) =    15.77
EFFECTIVE AREA(ACRES) =    35.11   AREA-AVERAGED Fm(INCH/HR) =  0.86
AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
TOTAL AREA(ACRES) =     37.20
LONGEST FLOWPATH FROM NODE    501.10 TO NODE    502.00 =  1045.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    502.00 TO NODE    503.00 IS CODE =  82
----------------------------------------------------------------------------
>>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
>>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
INITIAL SUBAREA FLOW-LENGTH(FEET) =   303.00
ELEVATION DATA: UPSTREAM(FEET) =   2345.00  DOWNSTREAM(FEET) =   2320.00

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.431
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.327
SUBAREA Tc AND LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
NATURAL FAIR COVER
"OPEN BRUSH"                B        0.40      0.61     1.000    66   11.43
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
SUBAREA AREA(ACRES) =    0.40   INITIAL SUBAREA RUNOFF(CFS) =    1.34

** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
MAINLINE Tc(MIN) =  15.77
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.567
SUBAREA AREA(ACRES) =    0.40      SUBAREA RUNOFF(CFS) =    1.06
EFFECTIVE AREA(ACRES) =     35.51   AREA-AVERAGED Fm(INCH/HR) =  0.86
AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
TOTAL AREA(ACRES) =     37.60       PEAK FLOW RATE(CFS) =      86.59

****************************************************************************
FLOW PROCESS FROM NODE    503.00 TO NODE    503.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =  15.77
RAINFALL INTENSITY(INCH/HR) =   3.57
AREA-AVERAGED Fm(INCH/HR) =  0.86
AREA-AVERAGED Fp(INCH/HR) =  0.86
AREA-AVERAGED Ap =  1.00
EFFECTIVE STREAM AREA(ACRES) =    35.51
TOTAL STREAM AREA(ACRES) =    37.60
PEAK FLOW RATE(CFS) AT CONFLUENCE =     86.59

****************************************************************************
FLOW PROCESS FROM NODE    504.10 TO NODE    503.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
INITIAL SUBAREA FLOW-LENGTH(FEET) =   945.00
ELEVATION DATA: UPSTREAM(FEET) =   2450.00  DOWNSTREAM(FEET) =   2320.00

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   16.266
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.501
SUBAREA Tc AND LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
NATURAL FAIR COVER
"OPEN BRUSH"                B        1.00      0.61     1.000    66   16.27
NATURAL FAIR COVER
"OPEN BRUSH"                A        0.80      0.86     1.000    46   16.27
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.72
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
SUBAREA RUNOFF(CFS) =      4.50
TOTAL AREA(ACRES) =      1.80   PEAK FLOW RATE(CFS) =      4.50

****************************************************************************
FLOW PROCESS FROM NODE    503.00 TO NODE    503.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =  16.27
RAINFALL INTENSITY(INCH/HR) =   3.50
AREA-AVERAGED Fm(INCH/HR) =  0.72
AREA-AVERAGED Fp(INCH/HR) =  0.72
AREA-AVERAGED Ap =  1.00
EFFECTIVE STREAM AREA(ACRES) =     1.80
TOTAL STREAM AREA(ACRES) =     1.80
PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.50

** CONFLUENCE DATA **
 STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
    1     86.59  15.77    3.567  0.86( 0.86) 1.00    35.5     401.10
    1     83.94  17.62    3.338  0.86( 0.86) 1.00    37.6     501.10
    2      4.50  16.27    3.501  0.72( 0.72) 1.00     1.8     504.10

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

** PEAK FLOW RATE TABLE **
 STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
    1     91.05  15.77    3.567  0.85( 0.85) 1.00    37.3     401.10
    2     90.38  16.27    3.501  0.85( 0.85) 1.00    37.9     504.10
    3     88.18  17.62    3.338  0.85( 0.85) 1.00    39.4     501.10

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     91.05    Tc(MIN.) =    15.77
EFFECTIVE AREA(ACRES) =    37.25   AREA-AVERAGED Fm(INCH/HR) =  0.85
AREA-AVERAGED Fp(INCH/HR) =  0.85  AREA-AVERAGED Ap =  1.00
TOTAL AREA(ACRES) =     39.40
LONGEST FLOWPATH FROM NODE    501.10 TO NODE    503.00 =  1045.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    503.00 TO NODE    505.00 IS CODE =  82
----------------------------------------------------------------------------
>>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
>>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
INITIAL SUBAREA FLOW-LENGTH(FEET) =   254.00
ELEVATION DATA: UPSTREAM(FEET) =   2320.00  DOWNSTREAM(FEET) =   2297.00

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.456
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.565
SUBAREA Tc AND LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
NATURAL FAIR COVER
"OPEN BRUSH"                A        0.50      0.86     1.000    46   10.46
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
SUBAREA AREA(ACRES) =    0.50   INITIAL SUBAREA RUNOFF(CFS) =    1.67

** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
MAINLINE Tc(MIN) =  15.77
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.567
SUBAREA AREA(ACRES) =    0.50      SUBAREA RUNOFF(CFS) =    1.22
EFFECTIVE AREA(ACRES) =     37.75   AREA-AVERAGED Fm(INCH/HR) =  0.85
AREA-AVERAGED Fp(INCH/HR) =  0.85  AREA-AVERAGED Ap =  1.00
TOTAL AREA(ACRES) =     39.90       PEAK FLOW RATE(CFS) =      92.27

****************************************************************************
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.) =  15.77
  RAINFALL INTENSITY(INCH/HR) =   3.57
  AREA-AVERAGED Fm(INCH/HR) =  0.85
  AREA-AVERAGED Fp(INCH/HR) =  0.85
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =    37.75
  TOTAL STREAM AREA(ACRES) =    39.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     92.27

****************************************************************************
  FLOW PROCESS FROM NODE    504.10 TO NODE    506.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   544.00
  ELEVATION DATA: UPSTREAM(FEET) =   2450.00  DOWNSTREAM(FEET) =   2405.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   14.438
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.761
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        1.30      0.61     1.000    66   14.44
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      3.68
  TOTAL AREA(ACRES) =      1.30   PEAK FLOW RATE(CFS) =      3.68

****************************************************************************
  FLOW PROCESS FROM NODE    506.00 TO NODE    505.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   497.00
  ELEVATION DATA: UPSTREAM(FEET) =   2405.00  DOWNSTREAM(FEET) =   2297.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.480
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.316
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        2.40      0.61     1.000    66   11.48
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        0.60      0.86     1.000    46   11.48
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.66
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    3.00   INITIAL SUBAREA RUNOFF(CFS) =    9.86

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  14.44
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.761
  SUBAREA AREA(ACRES) =    3.00      SUBAREA RUNOFF(CFS) =    8.36
  EFFECTIVE AREA(ACRES) =      4.30   AREA-AVERAGED Fm(INCH/HR) =  0.65
  AREA-AVERAGED Fp(INCH/HR) =  0.65  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      4.30        PEAK FLOW RATE(CFS) =      12.05

****************************************************************************
  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.) =  14.44
  RAINFALL INTENSITY(INCH/HR) =   3.76
  AREA-AVERAGED Fm(INCH/HR) =  0.65
  AREA-AVERAGED Fp(INCH/HR) =  0.65
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =     4.30
  TOTAL STREAM AREA(ACRES) =     4.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.05

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     92.27  15.77    3.567  0.85( 0.85) 1.00    37.8     401.10
      1     91.52  16.27    3.501  0.85( 0.85) 1.00    38.4     504.10
      1     89.29  17.62    3.338  0.85( 0.85) 1.00    39.9     501.10
      2     12.05  14.44    3.761  0.65( 0.65) 1.00     4.3     504.10

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

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    102.56  14.44    3.761  0.83( 0.83) 1.00    38.9     504.10
      2    103.57  15.77    3.567  0.83( 0.83) 1.00    42.1     401.10
      3    102.56  16.27    3.501  0.83( 0.83) 1.00    42.7     504.10
      4     99.70  17.62    3.338  0.83( 0.83) 1.00    44.2     501.10

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    103.57    Tc(MIN.) =    15.77
  EFFECTIVE AREA(ACRES) =    42.05   AREA-AVERAGED Fm(INCH/HR) =  0.83
  AREA-AVERAGED Fp(INCH/HR) =  0.83  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     44.20
  LONGEST FLOWPATH FROM NODE    501.10 TO NODE    505.00 =  1045.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    505.00 TO NODE    144.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   146.00
  ELEVATION DATA: UPSTREAM(FEET) =   2297.00  DOWNSTREAM(FEET) =   2280.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.968
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.373
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        0.20      0.86     1.000    46    7.97
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    0.20   INITIAL SUBAREA RUNOFF(CFS) =    0.81

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  15.77
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.567
  SUBAREA AREA(ACRES) =    0.20      SUBAREA RUNOFF(CFS) =    0.49
  EFFECTIVE AREA(ACRES) =     42.25   AREA-AVERAGED Fm(INCH/HR) =  0.83
  AREA-AVERAGED Fp(INCH/HR) =  0.83  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     44.40        PEAK FLOW RATE(CFS) =     104.05

****************************************************************************
  FLOW PROCESS FROM NODE    144.00 TO NODE    144.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    103.08  14.44    3.761  0.83( 0.83) 1.00    39.1     504.10
      2    104.05  15.77    3.567  0.83( 0.83) 1.00    42.3     401.10
      3    103.04  16.27    3.501  0.83( 0.83) 1.00    42.9     504.10
      4    100.15  17.62    3.338  0.83( 0.83) 1.00    44.4     501.10
  LONGEST FLOWPATH FROM NODE    501.10 TO NODE    144.00 =  1045.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1   6788.04   8.63    5.123  0.28( 0.28) 1.00  1446.6     121.00
      2   6823.73   8.78    5.068  0.28( 0.28) 1.00  1470.2     127.10
      3   6858.88   8.96    5.008  0.28( 0.28) 1.00  1495.4     119.10
      4   6873.62   9.04    4.982  0.28( 0.28) 1.00  1506.6     107.10
      5   6879.46   9.14    4.950  0.28( 0.28) 1.00  1517.3     115.10
      6   6907.13   9.70    4.775  0.28( 0.28) 1.00  1577.4     105.10
      7   6908.26   9.74    4.764  0.28( 0.28) 1.00  1581.4     129.10
      8   6912.30   9.89    4.720  0.28( 0.28) 1.00  1596.4     112.10
      9   6915.07  10.07    4.669  0.27( 0.27) 1.00  1613.9     123.10
     10   6914.19  10.22    4.627  0.27( 0.27) 1.00  1627.5     143.10
     11   6913.95  10.25    4.618  0.27( 0.27) 1.00  1630.4     101.10
     12   6909.47  10.32    4.600  0.27( 0.27) 1.00  1635.0     140.10
```

```
    13   6879.59  10.75    4.489  0.27( 0.27) 1.00  1663.6     117.10
    14   6752.69  13.03    4.000  0.26( 0.26) 1.00  1808.4     135.10
    15   6709.13  13.80    3.865  0.26( 0.26) 1.00  1856.7     403.10
    16   6607.38  15.50    3.604  0.25( 0.25) 1.00  1962.0     113.00
  LONGEST FLOWPATH FROM NODE    135.10 TO NODE    144.00 =   943.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM      Q      Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1   6878.23   8.63    5.123  0.29( 0.29) 1.00  1469.9     121.00
      2   6914.38   8.78    5.068  0.29( 0.29) 1.00  1493.9     127.10
      3   6950.04   8.96    5.008  0.29( 0.29) 1.00  1519.6     119.10
      4   6965.00   9.04    4.982  0.29( 0.29) 1.00  1531.1     107.10
      5   6971.12   9.14    4.950  0.29( 0.29) 1.00  1542.1     115.10
      6   7000.32   9.70    4.775  0.29( 0.29) 1.00  1603.7     105.10
      7   7001.55   9.74    4.764  0.29( 0.29) 1.00  1607.7     129.10
      8   7005.99   9.89    4.720  0.28( 0.28) 1.00  1623.2     112.10
      9   7009.22  10.07    4.669  0.28( 0.28) 1.00  1641.1     123.10
     10   7008.72  10.22    4.627  0.28( 0.28) 1.00  1655.2     143.10
     11   7008.56  10.25    4.618  0.28( 0.28) 1.00  1658.2     101.10
     12   7004.24  10.32    4.600  0.28( 0.28) 1.00  1662.9     140.10
     13   6975.40  10.75    4.489  0.28( 0.28) 1.00  1692.7     117.10
     14   6853.29  13.03    4.000  0.27( 0.27) 1.00  1843.6     135.10
     15   6811.12  13.80    3.865  0.27( 0.27) 1.00  1894.1     403.10
     16   6773.87  14.44    3.761  0.26( 0.26) 1.00  1935.5     504.10
     17   6711.24  15.50    3.604  0.26( 0.26) 1.00  2003.6     113.00
     18   6637.80  15.77    3.567  0.26( 0.26) 1.00  2004.2     401.10
     19   6508.19  16.27    3.501  0.26( 0.26) 1.00  2004.8     504.10
     20   6183.54  17.62    3.338  0.26( 0.26) 1.00  2006.4     501.10
    TOTAL AREA(ACRES) =   2029.90

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     7009.22  Tc(MIN.) =   10.070
  EFFECTIVE AREA(ACRES) =   1641.13  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.28  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =   2029.90
  LONGEST FLOWPATH FROM NODE    501.10 TO NODE    144.00 =  1045.00 FEET.
==============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =   2029.90  TC(MIN.) =     10.07
  EFFECTIVE AREA(ACRES) =   1641.13  AREA-AVERAGED Fm(INCH/HR)=  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.28  AREA-AVERAGED Ap = 1.000
  PEAK FLOW RATE(CFS)   =   7009.22

  ** PEAK FLOW RATE TABLE **
   STREAM      Q      Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1   6878.23   8.63    5.123  0.29( 0.29) 1.00  1469.9     121.00
      2   6914.38   8.78    5.068  0.29( 0.29) 1.00  1493.9     127.10
      3   6950.04   8.96    5.008  0.29( 0.29) 1.00  1519.6     119.10
      4   6965.00   9.04    4.982  0.29( 0.29) 1.00  1531.1     107.10
      5   6971.12   9.14    4.950  0.29( 0.29) 1.00  1542.1     115.10
      6   7000.32   9.70    4.775  0.29( 0.29) 1.00  1603.7     105.10
      7   7001.55   9.74    4.764  0.29( 0.29) 1.00  1607.7     129.10
      8   7005.99   9.89    4.720  0.28( 0.28) 1.00  1623.2     112.10
      9   7009.22  10.07    4.669  0.28( 0.28) 1.00  1641.1     123.10
     10   7008.72  10.22    4.627  0.28( 0.28) 1.00  1655.2     143.10
     11   7008.56  10.25    4.618  0.28( 0.28) 1.00  1658.2     101.10
     12   7004.24  10.32    4.600  0.28( 0.28) 1.00  1662.9     140.10
     13   6975.40  10.75    4.489  0.28( 0.28) 1.00  1692.7     117.10
     14   6853.29  13.03    4.000  0.27( 0.27) 1.00  1843.6     135.10
     15   6811.12  13.80    3.865  0.27( 0.27) 1.00  1894.1     403.10
     16   6773.87  14.44    3.761  0.26( 0.26) 1.00  1935.5     504.10
     17   6711.24  15.50    3.604  0.26( 0.26) 1.00  2003.6     113.00
     18   6637.80  15.77    3.567  0.26( 0.26) 1.00  2004.2     401.10
     19   6508.19  16.27    3.501  0.26( 0.26) 1.00  2004.8     504.10
     20   6183.54  17.62    3.338  0.26( 0.26) 1.00  2006.4     501.10
==============================================================================
==============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

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____________________________________________________________________________
****************************************************************************
              RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
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                           Analysis prepared by:

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                        Riverside, California 92507


 ************************* DESCRIPTION OF STUDY *************************
* Spring TRails Tract 15576                                              *
* Pre Project Condition 100yr 1hr Watershed #2 AMC II                    *
* 13565C REC LAF 11-04-08,4-21-11                                        *
 ************************************************************************

  FILE NAME: 565PREH2.DAT
  TIME/DATE OF STUDY: 14:24 04/21/2011
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*
  10-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.100
  100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.600
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =  100.00   1-HOUR INTENSITY(INCH/HOUR) = 1.6000
  SLOPE OF INTENSITY DURATION CURVE = 0.6000

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

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
  FLOW PROCESS FROM NODE    601.10 TO NODE    601.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   809.00
  ELEVATION DATA: UPSTREAM(FEET) =   2878.00  DOWNSTREAM(FEET) =   2740.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   14.642
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.730
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        1.80      0.86     1.000    46   14.64
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      4.65
  TOTAL AREA(ACRES) =      1.80   PEAK FLOW RATE(CFS) =      4.65

****************************************************************************
  FLOW PROCESS FROM NODE    601.00 TO NODE    602.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1779.00
  ELEVATION DATA: UPSTREAM(FEET) =   2740.00  DOWNSTREAM(FEET) =   2490.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   20.860
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.016
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               A       15.40      0.86     1.000    46   20.86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   15.40   INITIAL SUBAREA RUNOFF(CFS) =   29.88

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  14.64
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.730
  SUBAREA AREA(ACRES) =   15.40      SUBAREA RUNOFF(CFS) =   39.77
  EFFECTIVE AREA(ACRES) =     17.20   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     17.20       PEAK FLOW RATE(CFS) =      44.42

****************************************************************************
  FLOW PROCESS FROM NODE    602.00 TO NODE    603.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1474.00
  ELEVATION DATA: UPSTREAM(FEET) =   2490.00  DOWNSTREAM(FEET) =   2304.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   19.770
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.115
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               A       17.00      0.86     1.000    46   19.77
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.00      0.61     1.000    66   19.77
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.82
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   20.00   INITIAL SUBAREA RUNOFF(CFS) =   41.25

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  14.64
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.730
  SUBAREA AREA(ACRES) =   20.00      SUBAREA RUNOFF(CFS) =   52.32
  EFFECTIVE AREA(ACRES) =     37.20   AREA-AVERAGED Fm(INCH/HR) =  0.84
  AREA-AVERAGED Fp(INCH/HR) =  0.84  AREA-AVERAGED Ap =  1.00
```

```
  TOTAL AREA(ACRES) =     37.20       PEAK FLOW RATE(CFS) =      96.74

****************************************************************************
  FLOW PROCESS FROM NODE    701.10 TO NODE    701.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   725.00
  ELEVATION DATA: UPSTREAM(FEET) =   2446.00  DOWNSTREAM(FEET) =   2302.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.594
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.900
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        2.20      0.86     1.000    46   13.59
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      6.02
  TOTAL AREA(ACRES) =      2.20   PEAK FLOW RATE(CFS) =      6.02

****************************************************************************
  FLOW PROCESS FROM NODE    801.10 TO NODE    801.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   803.00
  ELEVATION DATA: UPSTREAM(FEET) =   2754.00  DOWNSTREAM(FEET) =   2620.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   14.663
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.726
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        2.00      0.86     1.000    46   14.66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      5.16
  TOTAL AREA(ACRES) =      2.00   PEAK FLOW RATE(CFS) =      5.16

****************************************************************************
  FLOW PROCESS FROM NODE    801.00 TO NODE    802.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   905.00
  ELEVATION DATA: UPSTREAM(FEET) =   2620.00  DOWNSTREAM(FEET) =   2510.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   16.388
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.486
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        5.80      0.86     1.000    46   16.39
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    5.80   INITIAL SUBAREA RUNOFF(CFS) =   13.71

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  14.66
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.726
  SUBAREA AREA(ACRES) =    5.80      SUBAREA RUNOFF(CFS) =   14.96
  EFFECTIVE AREA(ACRES) =      7.80   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      7.80       PEAK FLOW RATE(CFS) =      20.12

****************************************************************************
  FLOW PROCESS FROM NODE    802.00 TO NODE    803.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1465.00
  ELEVATION DATA: UPSTREAM(FEET) =   2510.00  DOWNSTREAM(FEET) =   2308.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   19.375
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.153
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               A       13.30      0.86     1.000    46   19.37
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.20      0.61     1.000    66   19.37
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.81
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   16.50   INITIAL SUBAREA RUNOFF(CFS) =   34.75

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  14.66
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.726
  SUBAREA AREA(ACRES) =   16.50      SUBAREA RUNOFF(CFS) =   43.27
  EFFECTIVE AREA(ACRES) =     24.30   AREA-AVERAGED Fm(INCH/HR) =  0.83
  AREA-AVERAGED Fp(INCH/HR) =  0.83  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     24.30       PEAK FLOW RATE(CFS) =      63.40
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =     24.30  TC(MIN.) =     14.66
  EFFECTIVE AREA(ACRES) =     24.30  AREA-AVERAGED Fm(INCH/HR)=  0.83
  AREA-AVERAGED Fp(INCH/HR) =  0.83  AREA-AVERAGED Ap = 1.000
  PEAK FLOW RATE(CFS)   =     63.40
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
____________________________________________________________________________
****************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
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             Ver. 8.0  Release Date: 01/01/2003  License ID 1261

                           Analysis prepared by:

                          Rick Engineering Company
                      1223 University Ave., Suite 240
                        Riverside, California 92507


 ************************* DESCRIPTION OF STUDY *************************
* Spring TRails Tract 15576                                              *
* Pre-Project Condition 100yr 1hr  Watershed #3 (AMC II)                 *
* 13565C REC LAR 11-04-08, 4-21-11                                       *
 ************************************************************************

  FILE NAME: 565PREH3.DAT
  TIME/DATE OF STUDY: 15:25 04/21/2011
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*
  10-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.100
  100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.600
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =  100.00   1-HOUR INTENSITY(INCH/HOUR) = 1.6000
  SLOPE OF INTENSITY DURATION CURVE = 0.6000

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

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
  FLOW PROCESS FROM NODE    301.10 TO NODE    301.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   447.00
  ELEVATION DATA: UPSTREAM(FEET) =   2486.00  DOWNSTREAM(FEET) =   2290.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.562
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.816
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        2.50      0.86     1.000    46    9.56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      8.90
  TOTAL AREA(ACRES) =      2.50   PEAK FLOW RATE(CFS) =      8.90

****************************************************************************
  FLOW PROCESS FROM NODE    301.00 TO NODE    302.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   455.00
  ELEVATION DATA: UPSTREAM(FEET) =   2290.00  DOWNSTREAM(FEET) =   2230.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.246
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.152
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        3.20      0.86     1.000    46   12.25
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    3.20   INITIAL SUBAREA RUNOFF(CFS) =    9.48

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =   9.56
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.816
  SUBAREA AREA(ACRES) =    3.20      SUBAREA RUNOFF(CFS) =   11.39
  EFFECTIVE AREA(ACRES) =      5.70   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      5.70       PEAK FLOW RATE(CFS) =      20.29

****************************************************************************
  FLOW PROCESS FROM NODE    302.00 TO NODE    303.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1604.00
  ELEVATION DATA: UPSTREAM(FEET) =   2230.00  DOWNSTREAM(FEET) =   2070.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   21.434
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.967
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A       13.20      0.86     1.000    46   21.43
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   13.20   INITIAL SUBAREA RUNOFF(CFS) =   25.03

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =   9.56
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.816
  SUBAREA AREA(ACRES) =   13.20      SUBAREA RUNOFF(CFS) =   47.00
  EFFECTIVE AREA(ACRES) =     18.90   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     18.90       PEAK FLOW RATE(CFS) =      67.29
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    201.10 TO NODE    201.20 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   452.00
  ELEVATION DATA: UPSTREAM(FEET) =   3400.00  DOWNSTREAM(FEET) =   3120.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.963
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.007
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                D        2.50      0.33     1.000    83    8.96
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     10.53
  TOTAL AREA(ACRES) =      2.50   PEAK FLOW RATE(CFS) =     10.53

****************************************************************************
  FLOW PROCESS FROM NODE    201.20 TO NODE    201.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   620.00
  ELEVATION DATA: UPSTREAM(FEET) =   3120.00  DOWNSTREAM(FEET) =   2840.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.834
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.468
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                D        7.00      0.33     1.000    83   10.83
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    7.00   INITIAL SUBAREA RUNOFF(CFS) =   26.10

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =   8.96
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.007
  SUBAREA AREA(ACRES) =    7.00      SUBAREA RUNOFF(CFS) =   29.49
  EFFECTIVE AREA(ACRES) =      9.50   AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.33  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      9.50       PEAK FLOW RATE(CFS) =      40.02

****************************************************************************
  FLOW PROCESS FROM NODE    201.00 TO NODE    202.10 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   752.00
  ELEVATION DATA: UPSTREAM(FEET) =   2840.00  DOWNSTREAM(FEET) =   2720.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   14.411
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.765
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                B       10.40      0.61     1.000    66   14.41
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   10.40   INITIAL SUBAREA RUNOFF(CFS) =   29.50

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =   8.96
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.007
  SUBAREA AREA(ACRES) =   10.40      SUBAREA RUNOFF(CFS) =   41.11
  EFFECTIVE AREA(ACRES) =     19.90   AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.48  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     19.90       PEAK FLOW RATE(CFS) =      81.13

****************************************************************************
  FLOW PROCESS FROM NODE    202.10 TO NODE    202.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1414.00
  ELEVATION DATA: UPSTREAM(FEET) =   2720.00  DOWNSTREAM(FEET) =   2480.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   18.324
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.260
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A       14.30      0.86     1.000    46   18.32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   14.30   INITIAL SUBAREA RUNOFF(CFS) =   30.89

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =   8.96
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.007
  SUBAREA AREA(ACRES) =   14.30      SUBAREA RUNOFF(CFS) =   53.37
  EFFECTIVE AREA(ACRES) =     34.20   AREA-AVERAGED Fm(INCH/HR) =  0.64
  AREA-AVERAGED Fp(INCH/HR) =  0.64  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     34.20       PEAK FLOW RATE(CFS) =     134.50

****************************************************************************
  FLOW PROCESS FROM NODE    202.00 TO NODE    202.00 IS 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) =   5.01
  AREA-AVERAGED Fm(INCH/HR) =  0.64
  AREA-AVERAGED Fp(INCH/HR) =  0.64
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =    34.20
  TOTAL STREAM AREA(ACRES) =    34.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    134.50

****************************************************************************
  FLOW PROCESS FROM NODE    203.10 TO NODE    203.20 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   200.00
  ELEVATION DATA: UPSTREAM(FEET) =   3285.00  DOWNSTREAM(FEET) =   3160.00
```

```
  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.457
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  6.095
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               D        1.90      0.33     1.000    83    6.46
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      9.87
  TOTAL AREA(ACRES) =      1.90   PEAK FLOW RATE(CFS) =      9.87

****************************************************************************
  FLOW PROCESS FROM NODE    203.20 TO NODE    203.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   629.00
  ELEVATION DATA: UPSTREAM(FEET) =   3160.00  DOWNSTREAM(FEET) =   2800.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.393
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.581
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               D        5.10      0.33     1.000    83   10.39
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        1.70      0.86     1.000    46   10.39
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.46
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    6.80   INITIAL SUBAREA RUNOFF(CFS) =   25.22

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =   6.46
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  6.095
  SUBAREA AREA(ACRES) =    6.80      SUBAREA RUNOFF(CFS) =   34.49
  EFFECTIVE AREA(ACRES) =      8.70   AREA-AVERAGED Fm(INCH/HR) =  0.43
  AREA-AVERAGED Fp(INCH/HR) =  0.43  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      8.70       PEAK FLOW RATE(CFS) =      44.36

****************************************************************************
  FLOW PROCESS FROM NODE    203.00 TO NODE    202.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  2020.00
  ELEVATION DATA: UPSTREAM(FEET) =   2800.00  DOWNSTREAM(FEET) =   2480.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   21.428
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.968
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               A       25.70      0.86     1.000    46   21.43
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   25.70   INITIAL SUBAREA RUNOFF(CFS) =   48.75

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =   6.46
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  6.095
  SUBAREA AREA(ACRES) =   25.70      SUBAREA RUNOFF(CFS) =  121.09
  EFFECTIVE AREA(ACRES) =     34.40   AREA-AVERAGED Fm(INCH/HR) =  0.75
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     34.40       PEAK FLOW RATE(CFS) =     165.45

****************************************************************************
  FLOW PROCESS FROM NODE    202.00 TO NODE    202.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   6.46
  RAINFALL INTENSITY(INCH/HR) =   6.10
  AREA-AVERAGED Fm(INCH/HR) =  0.75
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =    34.40
  TOTAL STREAM AREA(ACRES) =    34.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    165.45

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    134.50   8.96    5.007  0.64( 0.64) 1.00    34.2     201.10
      2    165.45   6.46    6.095  0.75( 0.75) 1.00    34.4     203.10

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

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    286.48   6.46    6.095  0.70( 0.70) 1.00    59.0     203.10
      2    266.24   8.96    5.007  0.69( 0.69) 1.00    68.6     201.10

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    286.48    Tc(MIN.) =     6.46
  EFFECTIVE AREA(ACRES) =    59.04   AREA-AVERAGED Fm(INCH/HR) =  0.70
  AREA-AVERAGED Fp(INCH/HR) =  0.70  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     68.60
  LONGEST FLOWPATH FROM NODE    201.10 TO NODE    202.00 =   452.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    202.00 TO NODE    205.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1504.00
  ELEVATION DATA: UPSTREAM(FEET) =   2480.00  DOWNSTREAM(FEET) =   2330.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   20.890
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.013
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        6.10      0.61     1.000    66   20.89
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        6.70      0.86     1.000    46   20.89
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   12.80   INITIAL SUBAREA RUNOFF(CFS) =   26.16
```

```
  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =   6.46
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  6.095
  SUBAREA AREA(ACRES) =   12.80      SUBAREA RUNOFF(CFS) =   61.66
  EFFECTIVE AREA(ACRES) =     71.84   AREA-AVERAGED Fm(INCH/HR) =  0.71
  AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     81.40       PEAK FLOW RATE(CFS) =     348.14

****************************************************************************
  FLOW PROCESS FROM NODE    205.00 TO NODE    205.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   6.46
  RAINFALL INTENSITY(INCH/HR) =   6.10
  AREA-AVERAGED Fm(INCH/HR) =  0.71
  AREA-AVERAGED Fp(INCH/HR) =  0.71
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =    71.84
  TOTAL STREAM AREA(ACRES) =    81.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    348.14

****************************************************************************
  FLOW PROCESS FROM NODE    206.10 TO NODE    206.20 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   208.00
  ELEVATION DATA: UPSTREAM(FEET) =   3080.00  DOWNSTREAM(FEET) =   3030.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.941
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.384
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                D        1.50      0.33     1.000    83    7.94
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      6.83
  TOTAL AREA(ACRES) =      1.50   PEAK FLOW RATE(CFS) =      6.83

****************************************************************************
  FLOW PROCESS FROM NODE    206.20 TO NODE    206.30 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   964.00
  ELEVATION DATA: UPSTREAM(FEET) =   3030.00  DOWNSTREAM(FEET) =   2710.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.747
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.873
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        9.50      0.86     1.000    46   13.75
  NATURAL FAIR COVER
  "OPEN BRUSH"                D        2.30      0.33     1.000    83   13.75
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.76
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   11.80   INITIAL SUBAREA RUNOFF(CFS) =   33.11

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =   7.94
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.384
  SUBAREA AREA(ACRES) =   11.80      SUBAREA RUNOFF(CFS) =   49.15
  EFFECTIVE AREA(ACRES) =     13.30   AREA-AVERAGED Fm(INCH/HR) =  0.71
  AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     13.30       PEAK FLOW RATE(CFS) =      55.98

****************************************************************************
  FLOW PROCESS FROM NODE    206.30 TO NODE    205.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  2799.00
  ELEVATION DATA: UPSTREAM(FEET) =   2710.00  DOWNSTREAM(FEET) =   2330.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   25.180
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.694
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A       22.90      0.86     1.000    46   25.18
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        3.70      0.61     1.000    66   25.18
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.83
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   26.60   INITIAL SUBAREA RUNOFF(CFS) =   44.72

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =   7.94
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.384
  SUBAREA AREA(ACRES) =   26.60      SUBAREA RUNOFF(CFS) =  109.12
  EFFECTIVE AREA(ACRES) =     39.90   AREA-AVERAGED Fm(INCH/HR) =  0.79
  AREA-AVERAGED Fp(INCH/HR) =  0.79  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     39.90       PEAK FLOW RATE(CFS) =     165.10

****************************************************************************
  FLOW PROCESS FROM NODE    205.00 TO NODE    205.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   7.94
  RAINFALL INTENSITY(INCH/HR) =   5.38
  AREA-AVERAGED Fm(INCH/HR) =  0.79
  AREA-AVERAGED Fp(INCH/HR) =  0.79
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =    39.90
  TOTAL STREAM AREA(ACRES) =    39.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    165.10

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    348.14   6.46    6.095  0.71( 0.71) 1.00    71.8     203.10
      1    315.36   8.96    5.007  0.70( 0.70) 1.00    81.4     201.10
      2    165.10   7.94    5.384  0.79( 0.79) 1.00    39.9     206.10

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
```

```
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    503.17   6.46    6.095  0.73( 0.73) 1.00   104.3     203.10
      2    493.84   7.94    5.384  0.73( 0.73) 1.00   117.4     206.10
      3    466.91   8.96    5.007  0.73( 0.73) 1.00   121.3     201.10

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    503.17    Tc(MIN.) =     6.46
  EFFECTIVE AREA(ACRES) =   104.28   AREA-AVERAGED Fm(INCH/HR) =  0.73
  AREA-AVERAGED Fp(INCH/HR) =  0.73  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    121.30
  LONGEST FLOWPATH FROM NODE    201.10 TO NODE    205.00 =   452.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    205.00 TO NODE    207.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   545.00
  ELEVATION DATA: UPSTREAM(FEET) =   2330.00  DOWNSTREAM(FEET) =   2240.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.583
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.084
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        3.80      0.61     1.000    66   12.58
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        1.60      0.86     1.000    46   12.58
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.69
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    5.40   INITIAL SUBAREA RUNOFF(CFS) =   16.51

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =   6.46
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  6.095
  SUBAREA AREA(ACRES) =    5.40      SUBAREA RUNOFF(CFS) =   26.28
  EFFECTIVE AREA(ACRES) =    109.68   AREA-AVERAGED Fm(INCH/HR) =  0.73
  AREA-AVERAGED Fp(INCH/HR) =  0.73  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    126.70       PEAK FLOW RATE(CFS) =     529.45

****************************************************************************
  FLOW PROCESS FROM NODE    207.00 TO NODE    207.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   6.46
  RAINFALL INTENSITY(INCH/HR) =   6.10
  AREA-AVERAGED Fm(INCH/HR) =  0.73
  AREA-AVERAGED Fp(INCH/HR) =  0.73
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =   109.68
  TOTAL STREAM AREA(ACRES) =   126.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    529.45

****************************************************************************
  FLOW PROCESS FROM NODE    208.10 TO NODE    208.20 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   940.00
  ELEVATION DATA: UPSTREAM(FEET) =   2926.00  DOWNSTREAM(FEET) =   2755.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   15.349
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.625
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        2.00      0.86     1.000    46   15.35
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      4.98
  TOTAL AREA(ACRES) =      2.00   PEAK FLOW RATE(CFS) =      4.98

****************************************************************************
  FLOW PROCESS FROM NODE    208.20 TO NODE    208.30 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  2078.00
  ELEVATION DATA: UPSTREAM(FEET) =   2755.00  DOWNSTREAM(FEET) =   2460.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   22.153
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.909
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A       16.80      0.86     1.000    46   22.15
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   16.80   INITIAL SUBAREA RUNOFF(CFS) =   30.98

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  15.35
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.625
  SUBAREA AREA(ACRES) =   16.80      SUBAREA RUNOFF(CFS) =   41.81
  EFFECTIVE AREA(ACRES) =     18.80   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     18.80       PEAK FLOW RATE(CFS) =      46.79

****************************************************************************
  FLOW PROCESS FROM NODE    208.30 TO NODE    207.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1339.00
  ELEVATION DATA: UPSTREAM(FEET) =   2460.00  DOWNSTREAM(FEET) =   2240.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   18.046
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.290
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        5.10      0.61     1.000    66   18.05
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        9.40      0.86     1.000    46   18.05
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.77
```

```
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   14.50   INITIAL SUBAREA RUNOFF(CFS) =   32.84

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  15.35
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.625
  SUBAREA AREA(ACRES) =   14.50      SUBAREA RUNOFF(CFS) =   37.22
  EFFECTIVE AREA(ACRES) =     33.30   AREA-AVERAGED Fm(INCH/HR) =  0.82
  AREA-AVERAGED Fp(INCH/HR) =  0.82  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     33.30       PEAK FLOW RATE(CFS) =      84.01

****************************************************************************
  FLOW PROCESS FROM NODE    207.00 TO NODE    207.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  15.35
  RAINFALL INTENSITY(INCH/HR) =   3.63
  AREA-AVERAGED Fm(INCH/HR) =  0.82
  AREA-AVERAGED Fp(INCH/HR) =  0.82
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =    33.30
  TOTAL STREAM AREA(ACRES) =    33.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     84.01

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    529.45   6.46    6.095  0.73( 0.73) 1.00   109.7     203.10
      1    514.25   7.94    5.384  0.73( 0.73) 1.00   122.8     206.10
      1    487.90   8.96    5.007  0.73( 0.73) 1.00   126.7     201.10
      2     84.01  15.35    3.625  0.82( 0.82) 1.00    33.3     208.10

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

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    595.93   6.46    6.095  0.74( 0.74) 1.00   123.7     203.10
      2    584.97   7.94    5.384  0.74( 0.74) 1.00   140.0     206.10
      3    561.13   8.96    5.007  0.74( 0.74) 1.00   146.1     201.10
      4    414.42  15.35    3.625  0.75( 0.75) 1.00   160.0     208.10

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    595.93    Tc(MIN.) =     6.46
  EFFECTIVE AREA(ACRES) =   123.69   AREA-AVERAGED Fm(INCH/HR) =  0.74
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    160.00
  LONGEST FLOWPATH FROM NODE    208.10 TO NODE    207.00 =   940.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    207.00 TO NODE    209.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1537.00
  ELEVATION DATA: UPSTREAM(FEET) =   2240.00  DOWNSTREAM(FEET) =   2060.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   20.406
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.056
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A       15.20      0.86     1.000    46   20.41
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   15.20   INITIAL SUBAREA RUNOFF(CFS) =   30.04

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =   6.46
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  6.095
  SUBAREA AREA(ACRES) =   15.20      SUBAREA RUNOFF(CFS) =   71.62
  EFFECTIVE AREA(ACRES) =    138.89   AREA-AVERAGED Fm(INCH/HR) =  0.75
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    175.20       PEAK FLOW RATE(CFS) =     667.55

****************************************************************************
  FLOW PROCESS FROM NODE    209.00 TO NODE    210.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   537.00
  ELEVATION DATA: UPSTREAM(FEET) =   2060.00  DOWNSTREAM(FEET) =   2019.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   14.596
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.737
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        4.20      0.86     1.000    46   14.60
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    4.20   INITIAL SUBAREA RUNOFF(CFS) =   10.87

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =   6.46
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  6.095
  SUBAREA AREA(ACRES) =    4.20      SUBAREA RUNOFF(CFS) =   19.79
  EFFECTIVE AREA(ACRES) =    143.09   AREA-AVERAGED Fm(INCH/HR) =  0.76
  AREA-AVERAGED Fp(INCH/HR) =  0.76  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    179.40       PEAK FLOW RATE(CFS) =     687.34
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =    179.40  TC(MIN.) =      6.46
  EFFECTIVE AREA(ACRES) =    143.09  AREA-AVERAGED Fm(INCH/HR)=  0.76
  AREA-AVERAGED Fp(INCH/HR) =  0.76  AREA-AVERAGED Ap = 1.000
  PEAK FLOW RATE(CFS)   =    687.34

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    687.34   6.46    6.095  0.76( 0.76) 1.00   143.1     203.10
      2    663.96   7.94    5.384  0.76( 0.76) 1.00   159.4     206.10
      3    633.53   8.96    5.007  0.75( 0.75) 1.00   165.5     201.10
      4    462.71  15.35    3.625  0.76( 0.76) 1.00   179.4     208.10
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
____________________________________________________________________________
****************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
         (c) Copyright 1983-2003 Advanced Engineering Software (aes)
             Ver. 8.0  Release Date: 01/01/2003  License ID 1261

                           Analysis prepared by:

                          Rick Engineering Company
                      1223 University Ave., Suite 240
                        Riverside, California 92507


 ************************* DESCRIPTION OF STUDY *************************
* SPRING TRAILS POST-PROJECT CONDITION HYDROLOGY 100YR 1HR                *
* REC 13565C LAF 10-20-09,4-21-11                                         *
* MEYERS CREEK                                                            *
 ****************************************************************************

  FILE NAME: 565PMCH.DAT
  TIME/DATE OF STUDY: 17:01 04/21/2011
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*
  10-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.100
  100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.600
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =  100.00   1-HOUR INTENSITY(INCH/HOUR) = 1.6000
  SLOPE OF INTENSITY DURATION CURVE = 0.6000

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

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
  FLOW PROCESS FROM NODE    901.10 TO NODE    901.20 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   962.00
  ELEVATION DATA: UPSTREAM(FEET) =   4340.00  DOWNSTREAM(FEET) =   3800.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.366
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.127
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                D        8.30      0.33     1.000    83   12.37
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     28.40
  TOTAL AREA(ACRES) =      8.30   PEAK FLOW RATE(CFS) =     28.40

****************************************************************************
  FLOW PROCESS FROM NODE    901.00 TO NODE    902.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   722.00
  ELEVATION DATA: UPSTREAM(FEET) =   3800.00  DOWNSTREAM(FEET) =   3400.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.054
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.415
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                D       12.80      0.33     1.000    83   11.05
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   12.80   INITIAL SUBAREA RUNOFF(CFS) =   47.10

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  12.37
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.127
  SUBAREA AREA(ACRES) =   12.80      SUBAREA RUNOFF(CFS) =   43.79
  EFFECTIVE AREA(ACRES) =     21.10   AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.33  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     21.10       PEAK FLOW RATE(CFS) =      72.19

****************************************************************************
  FLOW PROCESS FROM NODE    902.00 TO NODE    903.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1759.00
  ELEVATION DATA: UPSTREAM(FEET) =   3400.00  DOWNSTREAM(FEET) =   2760.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   17.168
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.390
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                D       59.30      0.33     1.000    83   17.17
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   59.30   INITIAL SUBAREA RUNOFF(CFS) =  163.51

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  12.37
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.127
  SUBAREA AREA(ACRES) =   59.30      SUBAREA RUNOFF(CFS) =  202.88
  EFFECTIVE AREA(ACRES) =     80.40   AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.33  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     80.40       PEAK FLOW RATE(CFS) =     275.07
```

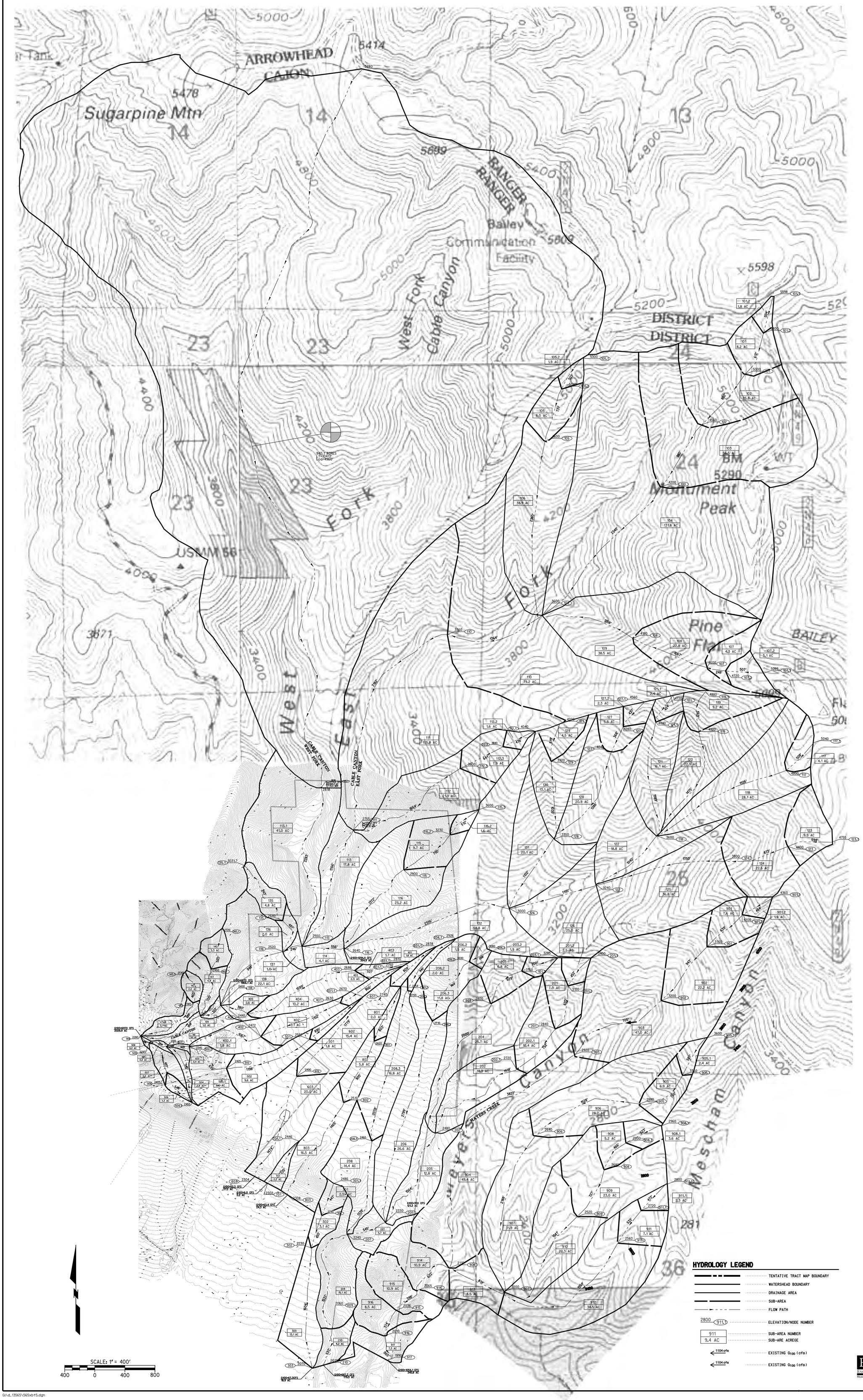
```
****************************************************************************
  FLOW PROCESS FROM NODE    903.00 TO NODE    904.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  3822.00
  ELEVATION DATA: UPSTREAM(FEET) =   2760.00  DOWNSTREAM(FEET) =   2110.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   27.264
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.568
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       41.40      0.61     1.000    66   27.26
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        8.00      0.86     1.000    46   27.26
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.65
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   49.40   INITIAL SUBAREA RUNOFF(CFS) =   85.12

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  12.37
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.127
  SUBAREA AREA(ACRES) =   49.40      SUBAREA RUNOFF(CFS) =  154.43
  EFFECTIVE AREA(ACRES) =    129.80   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.45  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    129.80       PEAK FLOW RATE(CFS) =     429.50

****************************************************************************
  FLOW PROCESS FROM NODE    904.00 TO NODE    904.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    905.10 TO NODE    905.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1127.00
  ELEVATION DATA: UPSTREAM(FEET) =   3480.00  DOWNSTREAM(FEET) =   2880.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.315
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.948
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               D        7.60      0.33     1.000    83   13.31
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     24.78
  TOTAL AREA(ACRES) =      7.60   PEAK FLOW RATE(CFS) =     24.78

****************************************************************************
  FLOW PROCESS FROM NODE    905.00 TO NODE    906.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1528.00
  ELEVATION DATA: UPSTREAM(FEET) =   2880.00  DOWNSTREAM(FEET) =   2640.00
  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   19.197
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.170
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       25.50      0.61     1.000    66   19.20
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        1.40      0.86     1.000    46   19.20
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.63
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   26.90   INITIAL SUBAREA RUNOFF(CFS) =   61.57

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  13.31
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.948
  SUBAREA AREA(ACRES) =   26.90      SUBAREA RUNOFF(CFS) =   80.41
  EFFECTIVE AREA(ACRES) =     34.50   AREA-AVERAGED Fm(INCH/HR) =  0.56
  AREA-AVERAGED Fp(INCH/HR) =  0.56  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     34.50       PEAK FLOW RATE(CFS) =     105.19

****************************************************************************
  FLOW PROCESS FROM NODE    906.00 TO NODE    907.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  2188.00
  ELEVATION DATA: UPSTREAM(FEET) =   2640.00  DOWNSTREAM(FEET) =   2160.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   20.729
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.027
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       31.90      0.61     1.000    66   20.73
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   31.90   INITIAL SUBAREA RUNOFF(CFS) =   69.29

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  13.31
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.948
  SUBAREA AREA(ACRES) =   31.90      SUBAREA RUNOFF(CFS) =   95.73
  EFFECTIVE AREA(ACRES) =     66.40   AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.59  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     66.40       PEAK FLOW RATE(CFS) =     200.92

****************************************************************************
  FLOW PROCESS FROM NODE    907.00 TO NODE    907.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  13.31
  RAINFALL INTENSITY(INCH/HR) =   3.95
  AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.59
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =    66.40
  TOTAL STREAM AREA(ACRES) =    66.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    200.92
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    908.10 TO NODE    908.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   941.00
  ELEVATION DATA: UPSTREAM(FEET) =   2960.00  DOWNSTREAM(FEET) =   2680.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.916
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.845
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        8.80      0.61     1.000    66   13.92
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     25.59
  TOTAL AREA(ACRES) =      8.80   PEAK FLOW RATE(CFS) =     25.59

****************************************************************************
  FLOW PROCESS FROM NODE    908.00 TO NODE    909.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   727.00
  ELEVATION DATA: UPSTREAM(FEET) =   2680.00  DOWNSTREAM(FEET) =   2520.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.332
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.945
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       23.00      0.61     1.000    66   13.33
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   23.00   INITIAL SUBAREA RUNOFF(CFS) =   68.96

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  13.92
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.845
  SUBAREA AREA(ACRES) =   23.00      SUBAREA RUNOFF(CFS) =   66.88
  EFFECTIVE AREA(ACRES) =     31.80   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.61  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     31.80       PEAK FLOW RATE(CFS) =      92.47

****************************************************************************
  FLOW PROCESS FROM NODE    909.00 TO NODE    907.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1341.00
  ELEVATION DATA: UPSTREAM(FEET) =   2480.00  DOWNSTREAM(FEET) =   2160.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   16.758
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.439
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       22.30      0.61     1.000    66   16.76
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   22.30   INITIAL SUBAREA RUNOFF(CFS) =   56.70

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  13.92
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.845
  SUBAREA AREA(ACRES) =   22.30      SUBAREA RUNOFF(CFS) =   64.85
  EFFECTIVE AREA(ACRES) =     54.10   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.61  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     54.10       PEAK FLOW RATE(CFS) =     157.32

****************************************************************************
  FLOW PROCESS FROM NODE    907.00 TO NODE    907.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  13.92
  RAINFALL INTENSITY(INCH/HR) =   3.84
  AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.61
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =    54.10
  TOTAL STREAM AREA(ACRES) =    54.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    157.32

****************************************************************************
  FLOW PROCESS FROM NODE    911.10 TO NODE    911.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1007.00
  ELEVATION DATA: UPSTREAM(FEET) =   2800.00  DOWNSTREAM(FEET) =   2560.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   14.948
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.684
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        9.40      0.61     1.000    66   14.95
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     25.97
  TOTAL AREA(ACRES) =      9.40   PEAK FLOW RATE(CFS) =     25.97

****************************************************************************
  FLOW PROCESS FROM NODE    911.00 TO NODE    907.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1954.00
  ELEVATION DATA: UPSTREAM(FEET) =   2560.00  DOWNSTREAM(FEET) =   2160.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   20.088
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.085
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
```

```
  NATURAL FAIR COVER
  "OPEN BRUSH"                B       34.50      0.61     1.000    66   20.09
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   34.50   INITIAL SUBAREA RUNOFF(CFS) =   76.72

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  14.95
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.684
  SUBAREA AREA(ACRES) =   34.50      SUBAREA RUNOFF(CFS) =   95.31
  EFFECTIVE AREA(ACRES) =     43.90   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.61  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     43.90       PEAK FLOW RATE(CFS) =     121.28

****************************************************************************
  FLOW PROCESS FROM NODE    907.00 TO NODE    907.00 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.) =  14.95
  RAINFALL INTENSITY(INCH/HR) =   3.68
  AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.61
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =    43.90
  TOTAL STREAM AREA(ACRES) =    43.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    121.28

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    200.92  13.31    3.948  0.59( 0.59) 1.00    66.4     905.10
      2    157.32  13.92    3.845  0.61( 0.61) 1.00    54.1     908.10
      3    121.28  14.95    3.684  0.61( 0.61) 1.00    43.9     911.10

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

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    473.59  13.31    3.948  0.60( 0.60) 1.00   157.3     905.10
      2    470.91  13.92    3.845  0.60( 0.60) 1.00   161.4     908.10
      3    455.83  14.95    3.684  0.60( 0.60) 1.00   164.4     911.10

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    473.59    Tc(MIN.) =    13.31
  EFFECTIVE AREA(ACRES) =   157.26   AREA-AVERAGED Fm(INCH/HR) =  0.60
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    164.40
  LONGEST FLOWPATH FROM NODE    905.10 TO NODE    907.00 =  1127.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    907.00 TO NODE    904.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   814.00
  ELEVATION DATA: UPSTREAM(FEET) =   2200.00  DOWNSTREAM(FEET) =   2100.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   15.674
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.580
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        8.50      0.61     1.000    66   15.67
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    8.50   INITIAL SUBAREA RUNOFF(CFS) =   22.69

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  13.31
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.948
  SUBAREA AREA(ACRES) =    8.50      SUBAREA RUNOFF(CFS) =   25.51
  EFFECTIVE AREA(ACRES) =    165.76   AREA-AVERAGED Fm(INCH/HR) =  0.60
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    172.90       PEAK FLOW RATE(CFS) =     499.10

****************************************************************************
  FLOW PROCESS FROM NODE    904.00 TO NODE    904.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    499.10  13.31    3.948  0.60( 0.60) 1.00   165.8     905.10
      2    495.62  13.92    3.845  0.60( 0.60) 1.00   169.9     908.10
      3    479.31  14.95    3.684  0.60( 0.60) 1.00   172.9     911.10
  LONGEST FLOWPATH FROM NODE    905.10 TO NODE    904.00 =  1127.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    429.50  12.37    4.127  0.45( 0.45) 1.00   129.8     901.10
  LONGEST FLOWPATH FROM NODE    901.10 TO NODE    904.00 =   962.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    917.85  12.37    4.127  0.53( 0.53) 1.00   283.8     901.10
      2    907.69  13.31    3.948  0.54( 0.54) 1.00   295.6     905.10
      3    892.14  13.92    3.845  0.54( 0.54) 1.00   299.7     908.10
      4    856.96  14.95    3.684  0.54( 0.54) 1.00   302.7     911.10
    TOTAL AREA(ACRES) =    302.70

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      917.85  Tc(MIN.) =   12.366
  EFFECTIVE AREA(ACRES) =    283.75  AREA-AVERAGED Fm(INCH/HR) =  0.53
  AREA-AVERAGED Fp(INCH/HR) =  0.54  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    302.70
  LONGEST FLOWPATH FROM NODE    905.10 TO NODE    904.00 =  1127.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    904.00 TO NODE    914.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   622.00
  ELEVATION DATA: UPSTREAM(FEET) =   2110.00  DOWNSTREAM(FEET) =   2065.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   15.647
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.584
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
```

```
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        9.40      0.61     1.000    66   15.65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    9.40   INITIAL SUBAREA RUNOFF(CFS) =   25.12

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  12.37
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.127
  SUBAREA AREA(ACRES) =    9.40      SUBAREA RUNOFF(CFS) =   29.72
  EFFECTIVE AREA(ACRES) =    293.15   AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.54  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    312.10       PEAK FLOW RATE(CFS) =     947.57

****************************************************************************
  FLOW PROCESS FROM NODE    914.00 TO NODE    915.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   398.00
  ELEVATION DATA: UPSTREAM(FEET) =   2065.00  DOWNSTREAM(FEET) =   2035.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.981
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.009
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                B       10.50      0.61     1.000    66   12.98
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   10.50   INITIAL SUBAREA RUNOFF(CFS) =   32.08

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  12.37
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.127
  SUBAREA AREA(ACRES) =   10.50      SUBAREA RUNOFF(CFS) =   33.20
  EFFECTIVE AREA(ACRES) =    303.65   AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.54  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    322.60       PEAK FLOW RATE(CFS) =     980.77

****************************************************************************
  FLOW PROCESS FROM NODE    915.00 TO NODE    916.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   374.00
  ELEVATION DATA: UPSTREAM(FEET) =   2036.00  DOWNSTREAM(FEET) =   2010.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.869
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.030
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        8.10      0.61     1.000    66   12.87
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    8.10   INITIAL SUBAREA RUNOFF(CFS) =   24.90

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  12.37
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.127
  SUBAREA AREA(ACRES) =    8.10      SUBAREA RUNOFF(CFS) =   25.61
  EFFECTIVE AREA(ACRES) =    311.75   AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.54  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    330.70       PEAK FLOW RATE(CFS) =    1006.38

****************************************************************************
  FLOW PROCESS FROM NODE    916.00 TO NODE    917.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   335.00
  ELEVATION DATA: UPSTREAM(FEET) =   2010.00  DOWNSTREAM(FEET) =   1990.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.695
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.063
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        7.10      0.61     1.000    66   12.69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    7.10   INITIAL SUBAREA RUNOFF(CFS) =   22.04

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  12.37
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.127
  SUBAREA AREA(ACRES) =    7.10      SUBAREA RUNOFF(CFS) =   22.45
  EFFECTIVE AREA(ACRES) =    318.85   AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.54  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    337.80       PEAK FLOW RATE(CFS) =    1028.84

****************************************************************************
  FLOW PROCESS FROM NODE    917.00 TO NODE    918.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   428.00
  ELEVATION DATA: UPSTREAM(FEET) =   1990.00  DOWNSTREAM(FEET) =   1960.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.560
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.905
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        5.50      0.61     1.000    66   13.56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    5.50   INITIAL SUBAREA RUNOFF(CFS) =   16.29

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  12.37
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.127
  SUBAREA AREA(ACRES) =    5.50      SUBAREA RUNOFF(CFS) =   17.39
  EFFECTIVE AREA(ACRES) =    324.35   AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.54  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    343.30       PEAK FLOW RATE(CFS) =    1046.23
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =    343.30  TC(MIN.) =     12.37
  EFFECTIVE AREA(ACRES) =    324.35  AREA-AVERAGED Fm(INCH/HR)=  0.54
```

```
  AREA-AVERAGED Fp(INCH/HR) =  0.54  AREA-AVERAGED Ap = 1.000
  PEAK FLOW RATE(CFS)   =   1046.23

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1   1046.23  12.37    4.127  0.54( 0.54) 1.00   324.4     901.10
      2   1029.52  13.31    3.948  0.55( 0.55) 1.00   336.2     905.10
      3   1010.20  13.92    3.845  0.55( 0.55) 1.00   340.3     908.10
      4    969.12  14.95    3.684  0.55( 0.55) 1.00   343.3     911.10
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```



PRE-PROJECT HYDROLOGY EXHIBIT 100YR 1HR AMC-II

TENTATIVE TRACT MAP NO.

15576

SPRING TRAILS

IN THE COUNTY OF SAN BERNARDINO

TO BE ANNEXED INTO
THE CITY OF SAN BERNARDINO, CALIFORNIA

RICK ENGINEERING COMPANY
1223 UNIVERSITY AVENUE - SUITE 240
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Riverside San Diego Orange Sacramento Phoenix Tucson

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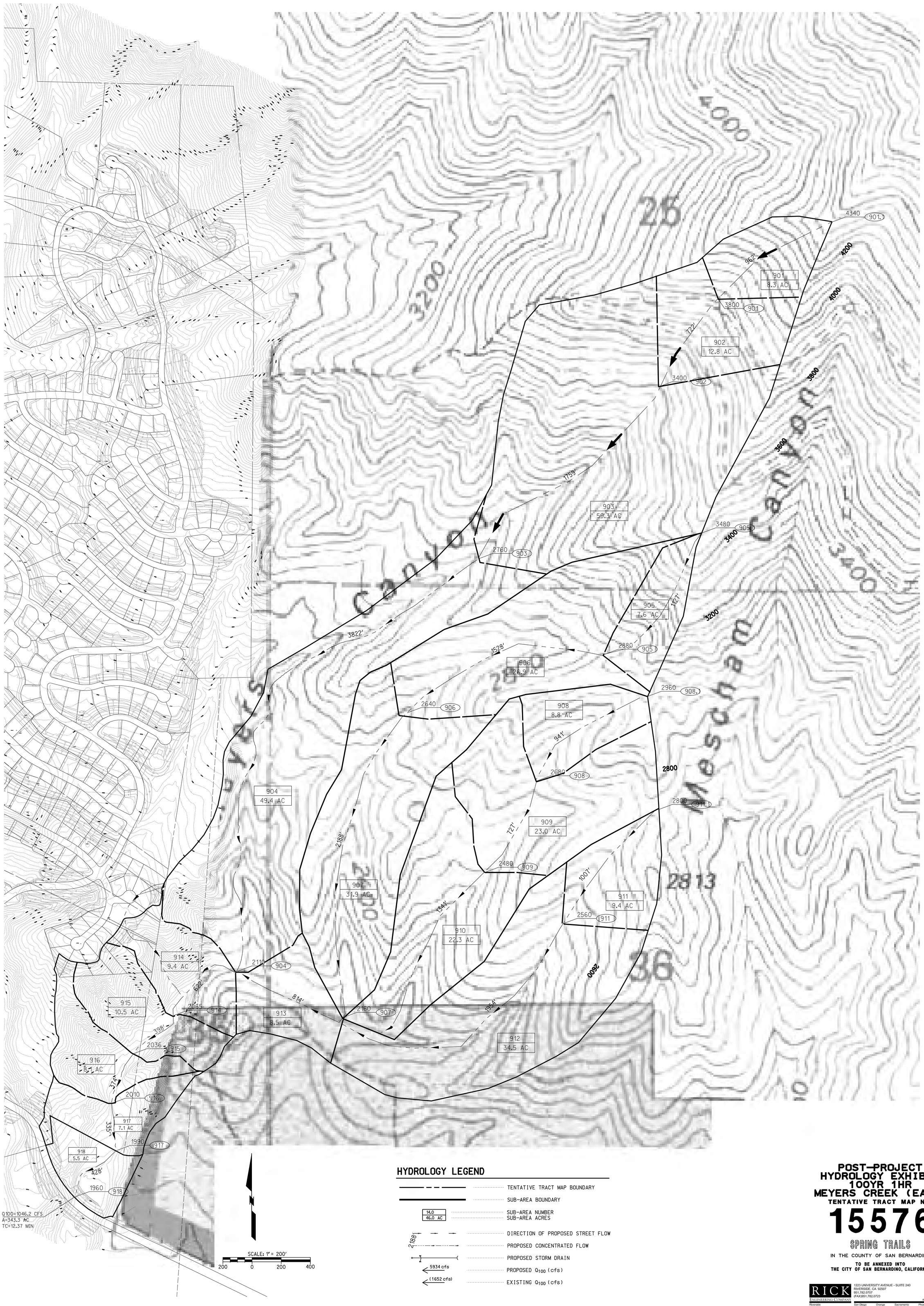

HYDROLOGY LEGEND

- TENTATIVE TRACT MAP BOUNDARY
- SUB-AREA BOUNDARY
- 14.0 / 46.0 AC — SUB-AREA NUMBER / SUB-AREA ACRES
- 2188' — DIRECTION OF PROPOSED STREET FLOW
- PROPOSED CONCENTRATED FLOW
- PROPOSED STORM DRAIN
- 5934 cfs — PROPOSED Q_{100} (cfs)
- (1652 cfs) — EXISTING Q_{100} (cfs)

POST-PROJECT HYDROLOGY EXHIBIT 100YR 1HR MEYERS CREEK (EAST)

TENTATIVE TRACT MAP NO.

15576

SPRING TRAILS

IN THE COUNTY OF SAN BERNARDINO

TO BE ANNEXED INTO
THE CITY OF SAN BERNARDINO, CALIFORNIA

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E. POST-PROJECT HYDROLOGY (RATIONAL METHOD)

- 100-yr 1hr (Drainage Area A)
- 100-yr 1hr (Drainage Area B)
- 100-yr 1hr (Drainage Area C)
- 100-yr 1hr (Drainage Area D)
- POST-PROJECT CONDITION 100YR 1 HR HYDROLOGY MAP (200 Scale)
- POST-PROJECT CONDITION 100YR I HR (MEYERS CREEK EAST) HYDROLOGY MAP (200S Scale)
- SECONDARY ACCESS ROAD HYDROLOGY AND HYDROLOGY MAP
- COMMENT LETTER FROM CITY OF SAN BERNARDINO PUBLIC WORKS

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****************************************************************************
              RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
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              Ver. 8.0  Release Date: 01/01/2003  License ID 1261

                          Analysis prepared by:



 ************************** DESCRIPTION OF STUDY **************************
* SPRING TRAILS TRACT 15576                                                *
* POST PROJECT CONDITON 100YR 1HR (WATERSHED #1 CABLE CANYON)              *
* 13565c REC NCS, LAF, 4-21-11,6-7-11                                      *
 ****************************************************************************

  FILE NAME: 565P1H.DAT
  TIME/DATE OF STUDY: 09:47 06/07/2011
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*
  10-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.100
  100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.600
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =  100.00   1-HOUR INTENSITY(INCH/HOUR) = 1.6000
  SLOPE OF INTENSITY DURATION CURVE = 0.6000

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

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
  FLOW PROCESS FROM NODE    100.10 TO NODE    100.10 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN.) =   8.78   RAINFALL INTENSITY(INCH/HR) =  5.07
  EFFECTIVE AREA(ACRES) =   244.56
  TOTAL AREA(ACRES) =   261.60        PEAK FLOW RATE(CFS) =   1043.70
  AREA-AVERAGED Fm(INCH/HR) =   0.33  AREA-AVERAGED Fp(INCH/HR) =   0.33
  AREA-AVERAGED Ap =  1.00
  NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
        CONFLUENCE ANALYSES.

****************************************************************************
  FLOW PROCESS FROM NODE    100.10 TO NODE    100.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1329.00
  ELEVATION DATA: UPSTREAM(FEET) =   3000.00  DOWNSTREAM(FEET) =   2788.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   18.099
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.284
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               D       42.00      0.33     1.000    83   18.10
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        4.50      0.86     1.000    46   18.10
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.38
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   46.50   INITIAL SUBAREA RUNOFF(CFS) =  121.63

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =   8.78
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.069
  SUBAREA AREA(ACRES) =   46.50      SUBAREA RUNOFF(CFS) =  196.33
  EFFECTIVE AREA(ACRES) =    291.06   AREA-AVERAGED Fm(INCH/HR) =  0.34
  AREA-AVERAGED Fp(INCH/HR) =  0.34  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    308.10       PEAK FLOW RATE(CFS) =    1239.38

****************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    101.00 IS CODE =  36
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED BOX SIZE (PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2788.00  DOWNSTREAM(FEET) =  2775.00
  FLOW LENGTH(FEET) =    75.00   MANNING'S N =  0.013
  GIVEN HEIGHT/BASEWIDTH RATIO =  0.75
  *ESTIMATED BOX BASEWIDTH(FEET) =   5.61   ESTIMATED HEIGHT(FEET) =    4.21
  BOX-FLOW VELOCITY(FEET/SEC.) =  52.44
  BOX-FLOW(CFS) =   1239.38
  BOX-FLOW TRAVEL TIME(MIN.) =   0.02    Tc(MIN.) =   8.80
  LONGEST FLOWPATH FROM NODE    100.10 TO NODE    101.00 =    75.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    101.00 TO NODE    101.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    101.11 TO NODE    101.10 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   715.00
  ELEVATION DATA: UPSTREAM(FEET) =   3600.00  DOWNSTREAM(FEET) =   3100.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.510
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.550
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
```

```
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                D        2.40      0.33     1.000    83   10.51
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      9.12
  TOTAL AREA(ACRES) =      2.40   PEAK FLOW RATE(CFS) =      9.12

****************************************************************************
  FLOW PROCESS FROM NODE    101.10 TO NODE    101.20 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   934.00
  ELEVATION DATA: UPSTREAM(FEET) =   3100.00  DOWNSTREAM(FEET) =   2908.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   14.940
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.685
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA       Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                D       11.20      0.33     1.000    83   14.94
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   11.20   INITIAL SUBAREA RUNOFF(CFS) =   33.86

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  10.51
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.550
  SUBAREA AREA(ACRES) =   11.20      SUBAREA RUNOFF(CFS) =   42.58
  EFFECTIVE AREA(ACRES) =     13.60   AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.33  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     13.60       PEAK FLOW RATE(CFS) =      51.71

****************************************************************************
  FLOW PROCESS FROM NODE    101.20 TO NODE    101.30 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2902.00  DOWNSTREAM(FEET) =  2851.00
  FLOW LENGTH(FEET) =   780.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  18.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  20.36
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     51.71
  PIPE TRAVEL TIME(MIN.) =   0.64    Tc(MIN.) =  11.15
  LONGEST FLOWPATH FROM NODE    101.11 TO NODE    101.30 =  1495.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1101.30 TO NODE   1101.30 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  11.15
  RAINFALL INTENSITY(INCH/HR) =   4.39
  AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.33
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =    13.60
  TOTAL STREAM AREA(ACRES) =    13.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     51.71

****************************************************************************
  FLOW PROCESS FROM NODE    101.20 TO NODE    101.30 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   780.00
  ELEVATION DATA: UPSTREAM(FEET) =   2902.00  DOWNSTREAM(FEET) =   2856.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.414
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.576
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA       Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        D        4.90      0.47     0.600    75   10.41
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.47
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.600
  SUBAREA RUNOFF(CFS) =     18.93
  TOTAL AREA(ACRES) =      4.90   PEAK FLOW RATE(CFS) =     18.93

****************************************************************************
  FLOW PROCESS FROM NODE    101.30 TO NODE   1101.30 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2856.00  DOWNSTREAM(FEET) =  2851.00
  FLOW LENGTH(FEET) =    25.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 24.000
  DEPTH OF FLOW IN  24.0 INCH PIPE IS   7.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  24.23
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     18.93
  PIPE TRAVEL TIME(MIN.) =   0.02    Tc(MIN.) =  10.43
  LONGEST FLOWPATH FROM NODE    101.20 TO NODE   1101.30 =   805.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1101.30 TO NODE   1101.30 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  10.43
  RAINFALL INTENSITY(INCH/HR) =   4.57
  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.47
  AREA-AVERAGED Ap =  0.60
  EFFECTIVE STREAM AREA(ACRES) =     4.90
  TOTAL STREAM AREA(ACRES) =     4.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     18.93

****************************************************************************
  FLOW PROCESS FROM NODE    101.51 TO NODE    101.50 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   448.00
  ELEVATION DATA: UPSTREAM(FEET) =   2980.00  DOWNSTREAM(FEET) =   2864.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.634
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.519
```

```
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                 D        1.70      0.33     1.000    83   10.63
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      6.41
  TOTAL AREA(ACRES) =      1.70   PEAK FLOW RATE(CFS) =      6.41

****************************************************************************
  FLOW PROCESS FROM NODE    101.50 TO NODE   1101.30 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2864.00  DOWNSTREAM(FEET) =  2851.00
  FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 24.000
  DEPTH OF FLOW IN  24.0 INCH PIPE IS   3.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  19.41
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      6.41
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =  10.68
  LONGEST FLOWPATH FROM NODE    101.51 TO NODE   1101.30 =   498.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1101.30 TO NODE   1101.30 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =  10.68
  RAINFALL INTENSITY(INCH/HR) =   4.51
  AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.33
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =     1.70
  TOTAL STREAM AREA(ACRES) =     1.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.41

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     51.71  11.15    4.392  0.33( 0.33) 1.00    13.6     101.11
      2     18.93  10.43    4.571  0.47( 0.28) 0.60     4.9     101.20
      3      6.41  10.68    4.508  0.33( 0.33) 1.00     1.7     101.51

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

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     75.80  10.43    4.571  0.35( 0.31) 0.90    19.3     101.20
      2     75.99  10.68    4.508  0.35( 0.32) 0.90    19.6     101.51
      3     76.09  11.15    4.392  0.35( 0.32) 0.90    20.2     101.11

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     76.09    Tc(MIN.) =    11.15
  EFFECTIVE AREA(ACRES) =    20.20   AREA-AVERAGED Fm(INCH/HR) =  0.32
  AREA-AVERAGED Fp(INCH/HR) =  0.35  AREA-AVERAGED Ap =  0.90
  TOTAL AREA(ACRES) =     20.20
  LONGEST FLOWPATH FROM NODE    101.11 TO NODE   1101.30 =  1495.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1101.30 TO NODE   1101.40 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2851.00  DOWNSTREAM(FEET) =  2813.00
  FLOW LENGTH(FEET) =   388.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  18.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  26.43
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     76.09
  PIPE TRAVEL TIME(MIN.) =   0.24    Tc(MIN.) =  11.39
  LONGEST FLOWPATH FROM NODE    101.11 TO NODE   1101.40 =  1883.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1101.40 TO NODE   1101.40 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  11.39
  RAINFALL INTENSITY(INCH/HR) =   4.34
  AREA-AVERAGED Fm(INCH/HR) =  0.32
  AREA-AVERAGED Fp(INCH/HR) =  0.35
  AREA-AVERAGED Ap =  0.90
  EFFECTIVE STREAM AREA(ACRES) =    20.20
  TOTAL STREAM AREA(ACRES) =    20.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     76.09

****************************************************************************
  FLOW PROCESS FROM NODE    101.30 TO NODE    101.40 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   388.00
  ELEVATION DATA: UPSTREAM(FEET) =   2856.00  DOWNSTREAM(FEET) =   2818.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.116
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.750
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"         D        1.80      0.47     0.600    75    7.12
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.47
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.600
  SUBAREA RUNOFF(CFS) =      8.86
  TOTAL AREA(ACRES) =      1.80   PEAK FLOW RATE(CFS) =      8.86

****************************************************************************
  FLOW PROCESS FROM NODE    101.40 TO NODE   1101.40 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2818.00  DOWNSTREAM(FEET) =  2813.00
  FLOW LENGTH(FEET) =    25.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 24.000
  DEPTH OF FLOW IN  24.0 INCH PIPE IS   4.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  19.44
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      8.86
  PIPE TRAVEL TIME(MIN.) =   0.02    Tc(MIN.) =   7.14
```

```
  LONGEST FLOWPATH FROM NODE    101.30 TO NODE   1101.40 =   413.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1101.40 TO NODE   1101.40 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   7.14
  RAINFALL INTENSITY(INCH/HR) =   5.74
  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.47
  AREA-AVERAGED Ap =  0.60
  EFFECTIVE STREAM AREA(ACRES) =     1.80
  TOTAL STREAM AREA(ACRES) =     1.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.86

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     75.80  10.68    4.508  0.35( 0.31) 0.90    19.3     101.20
      1     75.99  10.92    4.447  0.35( 0.32) 0.90    19.6     101.51
      1     76.09  11.39    4.335  0.35( 0.32) 0.90    20.2     101.11
      2      8.86   7.14    5.740  0.47( 0.28) 0.60     1.8     101.30

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

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     74.43   7.14    5.740  0.36( 0.31) 0.86    14.7     101.30
      2     82.66  10.68    4.508  0.36( 0.31) 0.87    21.1     101.20
      3     82.75  10.92    4.447  0.36( 0.31) 0.87    21.4     101.51
      4     82.67  11.39    4.335  0.36( 0.31) 0.88    22.0     101.11

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     82.75    Tc(MIN.) =    10.92
  EFFECTIVE AREA(ACRES) =    21.42   AREA-AVERAGED Fm(INCH/HR) =  0.31
  AREA-AVERAGED Fp(INCH/HR) =  0.36  AREA-AVERAGED Ap =  0.87
  TOTAL AREA(ACRES) =     22.00
  LONGEST FLOWPATH FROM NODE    101.11 TO NODE   1101.40 =  1883.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1101.40 TO NODE    101.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2813.00  DOWNSTREAM(FEET) =  2788.00
  FLOW LENGTH(FEET) =   100.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  38.52
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     82.75
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =  10.96
  LONGEST FLOWPATH FROM NODE    101.11 TO NODE    101.00 =  1983.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    101.00 TO NODE    101.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     74.43   7.18    5.718  0.36( 0.31) 0.86    14.7     101.30
      2     82.66  10.72    4.497  0.36( 0.31) 0.87    21.1     101.20
      3     82.75  10.96    4.436  0.36( 0.31) 0.87    21.4     101.51
      4     82.67  11.44    4.326  0.36( 0.31) 0.88    22.0     101.11
  LONGEST FLOWPATH FROM NODE    101.11 TO NODE    101.00 =  1983.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1   1239.38   8.80    5.061  0.34( 0.34) 1.00   291.1     100.10
  LONGEST FLOWPATH FROM NODE    100.10 TO NODE    101.00 =    75.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1   1226.24   7.18    5.718  0.34( 0.34) 0.99   252.1     101.30
      2   1317.58   8.80    5.061  0.34( 0.34) 0.99   308.7     100.10
      3   1174.12  10.72    4.497  0.34( 0.34) 0.99   312.1     101.20
      4   1158.28  10.96    4.436  0.34( 0.34) 0.99   312.5     101.51
      5   1129.14  11.44    4.326  0.34( 0.34) 0.99   313.1     101.11
    TOTAL AREA(ACRES) =    330.10

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     1317.58  Tc(MIN.) =    8.804
  EFFECTIVE AREA(ACRES) =    308.68  AREA-AVERAGED Fm(INCH/HR) =  0.34
  AREA-AVERAGED Fp(INCH/HR) =  0.34  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    330.10
  LONGEST FLOWPATH FROM NODE    101.11 TO NODE    101.00 =  1983.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    101.00 TO NODE    102.00 IS CODE =  36
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED BOX SIZE (PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2788.00  DOWNSTREAM(FEET) =  2762.00
  FLOW LENGTH(FEET) =    90.00   MANNING'S N =  0.013
  GIVEN HEIGHT/BASEWIDTH RATIO =  0.75
  *ESTIMATED BOX BASEWIDTH(FEET) =   5.22   ESTIMATED HEIGHT(FEET) =    3.91
  BOX-FLOW VELOCITY(FEET/SEC.) =  64.49
  BOX-FLOW(CFS) =   1317.58
  BOX-FLOW TRAVEL TIME(MIN.) =   0.02    Tc(MIN.) =   8.83
  LONGEST FLOWPATH FROM NODE    101.11 TO NODE    102.00 =  2073.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    102.00 TO NODE    103.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   357.00
  ELEVATION DATA: UPSTREAM(FEET) =   2762.00  DOWNSTREAM(FEET) =   2705.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.696
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.503
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        2.80      0.86     1.000    46   10.70
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    2.80   INITIAL SUBAREA RUNOFF(CFS) =    9.18
```

```
  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =   8.83
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.053
  SUBAREA AREA(ACRES) =    2.80      SUBAREA RUNOFF(CFS) =   10.57
  EFFECTIVE AREA(ACRES) =    311.48   AREA-AVERAGED Fm(INCH/HR) =  0.34
  AREA-AVERAGED Fp(INCH/HR) =  0.34  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    332.90       PEAK FLOW RATE(CFS) =    1320.90

****************************************************************************
  FLOW PROCESS FROM NODE    103.00 TO NODE    104.00 IS CODE =  36
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED BOX SIZE (PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2705.00  DOWNSTREAM(FEET) =  2696.00
  FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
  GIVEN HEIGHT/BASEWIDTH RATIO =  0.75
  *ESTIMATED BOX BASEWIDTH(FEET) =   5.71   ESTIMATED HEIGHT(FEET) =    4.28
  BOX-FLOW VELOCITY(FEET/SEC.) =  54.04
  BOX-FLOW(CFS) =   1320.90
  BOX-FLOW TRAVEL TIME(MIN.) =   0.02    Tc(MIN.) =   8.84
  LONGEST FLOWPATH FROM NODE    101.11 TO NODE    104.00 =  2123.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    104.00 TO NODE    104.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    104.11 TO NODE    104.10 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   840.00
  ELEVATION DATA: UPSTREAM(FEET) =   2860.00  DOWNSTREAM(FEET) =   2785.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.873
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.724
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA       Fp          Ap      SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A         9.80      0.98     0.600    32    9.87
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.600
  SUBAREA RUNOFF(CFS) =     36.51
  TOTAL AREA(ACRES) =      9.80   PEAK FLOW RATE(CFS) =     36.51

****************************************************************************
  FLOW PROCESS FROM NODE    104.10 TO NODE   1104.20 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2780.00  DOWNSTREAM(FEET) =  2712.00
  FLOW LENGTH(FEET) =   590.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 24.000
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  11.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  23.68
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     36.51
  PIPE TRAVEL TIME(MIN.) =   0.42    Tc(MIN.) =  10.29
  LONGEST FLOWPATH FROM NODE    104.11 TO NODE   1104.20 =  1430.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1104.20 TO NODE   1104.20 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  10.29
  RAINFALL INTENSITY(INCH/HR) =   4.61
  AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.98
  AREA-AVERAGED Ap =  0.60
  EFFECTIVE STREAM AREA(ACRES) =     9.80
  TOTAL STREAM AREA(ACRES) =     9.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     36.51

****************************************************************************
  FLOW PROCESS FROM NODE    104.10 TO NODE    104.20 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   590.00
  ELEVATION DATA: UPSTREAM(FEET) =   2785.00  DOWNSTREAM(FEET) =   2717.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.145
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.302
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA       Fp          Ap      SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A         7.50      0.98     0.600    32    8.15
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.600
  SUBAREA RUNOFF(CFS) =     31.84
  TOTAL AREA(ACRES) =      7.50   PEAK FLOW RATE(CFS) =     31.84

****************************************************************************
  FLOW PROCESS FROM NODE    104.20 TO NODE   1104.20 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2717.00  DOWNSTREAM(FEET) =  2712.00
  FLOW LENGTH(FEET) =    25.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 24.000
  DEPTH OF FLOW IN  24.0 INCH PIPE IS   9.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  27.99
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     31.84
  PIPE TRAVEL TIME(MIN.) =   0.01    Tc(MIN.) =   8.16
  LONGEST FLOWPATH FROM NODE    104.10 TO NODE   1104.20 =   615.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1104.20 TO NODE   1104.20 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   8.16
  RAINFALL INTENSITY(INCH/HR) =   5.30
  AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.98
  AREA-AVERAGED Ap =  0.60
```

```
  EFFECTIVE STREAM AREA(ACRES) =     7.50
  TOTAL STREAM AREA(ACRES) =     7.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     31.84

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     36.51  10.29    4.609  0.98( 0.59) 0.60     9.8     104.11
      2     31.84   8.16    5.297  0.98( 0.59) 0.60     7.5     104.10

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

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     65.75   8.16    5.297  0.98( 0.59) 0.60    15.3     104.10
      2     63.70  10.29    4.609  0.98( 0.59) 0.60    17.3     104.11

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     65.75    Tc(MIN.) =     8.16
  EFFECTIVE AREA(ACRES) =    15.27   AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     17.30
  LONGEST FLOWPATH FROM NODE    104.11 TO NODE   1104.20 =  1430.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1104.20 TO NODE    104.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2712.00  DOWNSTREAM(FEET) =  2696.00
  FLOW LENGTH(FEET) =    30.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH)  INCREASED TO 24.000
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  10.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  48.66
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     65.75
  PIPE TRAVEL TIME(MIN.) =   0.01    Tc(MIN.) =   8.17
  LONGEST FLOWPATH FROM NODE    104.11 TO NODE    104.00 =  1460.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    104.00 TO NODE    104.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     65.75   8.17    5.293  0.98( 0.59) 0.60    15.3     104.10
      2     63.70  10.30    4.606  0.98( 0.59) 0.60    17.3     104.11
  LONGEST FLOWPATH FROM NODE    104.11 TO NODE    104.00 =  1460.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1   1230.98   7.22    5.700  0.34( 0.34) 0.99   254.9     101.30
      2   1320.90   8.84    5.047  0.34( 0.34) 0.99   311.5     100.10
      3   1176.43  10.76    4.487  0.34( 0.34) 0.99   314.9     101.20
      4   1160.53  11.00    4.427  0.34( 0.34) 0.99   315.3     101.51
      5   1131.28  11.48    4.316  0.34( 0.34) 0.99   315.9     101.11
  LONGEST FLOWPATH FROM NODE    101.11 TO NODE    104.00 =  2123.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1   1294.11   7.22    5.700  0.36( 0.35) 0.97   268.4     101.30
      2   1349.37   8.17    5.293  0.36( 0.35) 0.97   303.3     104.10
      3   1386.00   8.84    5.047  0.36( 0.35) 0.97   327.4     100.10
      4   1274.82  10.30    4.606  0.36( 0.35) 0.97   331.4     104.11
      5   1238.25  10.76    4.487  0.36( 0.35) 0.97   332.2     101.20
      6   1221.39  11.00    4.427  0.36( 0.35) 0.97   332.6     101.51
      7   1190.39  11.48    4.316  0.36( 0.35) 0.97   333.2     101.11
    TOTAL AREA(ACRES) =    350.20

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     1386.00  Tc(MIN.) =    8.843
  EFFECTIVE AREA(ACRES) =    327.40  AREA-AVERAGED Fm(INCH/HR) =  0.35
  AREA-AVERAGED Fp(INCH/HR) =  0.36  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    350.20
  LONGEST FLOWPATH FROM NODE    101.11 TO NODE    104.00 =  2123.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    104.00 TO NODE    105.00 IS CODE =  36
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED BOX SIZE (PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2696.00  DOWNSTREAM(FEET) =  2687.00
  FLOW LENGTH(FEET) =    70.00   MANNING'S N =  0.013
  GIVEN HEIGHT/BASEWIDTH RATIO =  0.75
  *ESTIMATED BOX BASEWIDTH(FEET) =   6.19   ESTIMATED HEIGHT(FEET) =    4.64
  BOX-FLOW VELOCITY(FEET/SEC.) =  48.21
  BOX-FLOW(CFS) =   1386.00
  BOX-FLOW TRAVEL TIME(MIN.) =   0.02    Tc(MIN.) =   8.87
  LONGEST FLOWPATH FROM NODE    101.11 TO NODE    105.00 =  2193.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    105.00 TO NODE    106.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   556.00
  ELEVATION DATA: UPSTREAM(FEET) =   2687.00  DOWNSTREAM(FEET) =   2550.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.709
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.265
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        6.90      0.86     1.000    46   11.71
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    6.90   INITIAL SUBAREA RUNOFF(CFS) =   21.14

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =   8.87
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.039
  SUBAREA AREA(ACRES) =    6.90      SUBAREA RUNOFF(CFS) =   25.95
  EFFECTIVE AREA(ACRES) =    334.30   AREA-AVERAGED Fm(INCH/HR) =  0.36
  AREA-AVERAGED Fp(INCH/HR) =  0.37  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    357.10       PEAK FLOW RATE(CFS) =    1406.84

****************************************************************************
  FLOW PROCESS FROM NODE    106.00 TO NODE    106.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
```

```
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   8.87
  RAINFALL INTENSITY(INCH/HR) =   5.04
  AREA-AVERAGED Fm(INCH/HR) =  0.36
  AREA-AVERAGED Fp(INCH/HR) =  0.37
  AREA-AVERAGED Ap =  0.97
  EFFECTIVE STREAM AREA(ACRES) =   334.30
  TOTAL STREAM AREA(ACRES) =   357.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   1406.84

****************************************************************************
  FLOW PROCESS FROM NODE    106.11 TO NODE    106.11 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN.) =  15.50   RAINFALL INTENSITY(INCH/HR) =  3.60
  EFFECTIVE AREA(ACRES) =   916.57
  TOTAL AREA(ACRES) =   940.10        PEAK FLOW RATE(CFS) =   3779.50
  AREA-AVERAGED Fm(INCH/HR) =   0.07  AREA-AVERAGED Fp(INCH/HR) =   0.07
  AREA-AVERAGED Ap =  1.00
  NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
        CONFLUENCE ANALYSES.

****************************************************************************
  FLOW PROCESS FROM NODE    106.11 TO NODE    106.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  2283.00
  ELEVATION DATA: UPSTREAM(FEET) =   2818.00  DOWNSTREAM(FEET) =   2550.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   23.894
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.780
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                B       41.00      0.61     1.000    66   23.89
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   41.00   INITIAL SUBAREA RUNOFF(CFS) =   79.92

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  15.50
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.604
  SUBAREA AREA(ACRES) =   41.00      SUBAREA RUNOFF(CFS) =  110.34
  EFFECTIVE AREA(ACRES) =    957.57   AREA-AVERAGED Fm(INCH/HR) =  0.09
  AREA-AVERAGED Fp(INCH/HR) =  0.09  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    981.10       PEAK FLOW RATE(CFS) =    3779.50
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE    106.00 TO NODE    106.00 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.) =  15.50
  RAINFALL INTENSITY(INCH/HR) =   3.60
  AREA-AVERAGED Fm(INCH/HR) =  0.09
  AREA-AVERAGED Fp(INCH/HR) =  0.09
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =   957.57
  TOTAL STREAM AREA(ACRES) =   981.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   3779.50

****************************************************************************
  FLOW PROCESS FROM NODE    111.00 TO NODE    111.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN.) =   9.04   RAINFALL INTENSITY(INCH/HR) =  4.98
  EFFECTIVE AREA(ACRES) =   527.39
  TOTAL AREA(ACRES) =   560.00        PEAK FLOW RATE(CFS) =   2206.20
  AREA-AVERAGED Fm(INCH/HR) =   0.33  AREA-AVERAGED Fp(INCH/HR) =   0.33
  AREA-AVERAGED Ap =  1.00
  NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
        CONFLUENCE ANALYSES.

****************************************************************************
  FLOW PROCESS FROM NODE    106.21 TO NODE    106.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1765.00
  ELEVATION DATA: UPSTREAM(FEET) =   2755.00  DOWNSTREAM(FEET) =   2550.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   21.602
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.953
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A       15.50      0.86     1.000    46   21.60
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   15.50   INITIAL SUBAREA RUNOFF(CFS) =   29.20

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =   9.04
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.981
  SUBAREA AREA(ACRES) =   15.50      SUBAREA RUNOFF(CFS) =   57.49
  EFFECTIVE AREA(ACRES) =    542.89   AREA-AVERAGED Fm(INCH/HR) =  0.35
  AREA-AVERAGED Fp(INCH/HR) =  0.35  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    575.50       PEAK FLOW RATE(CFS) =    2265.05

****************************************************************************
  FLOW PROCESS FROM NODE    106.00 TO NODE    106.00 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.) =   9.04
  RAINFALL INTENSITY(INCH/HR) =   4.98
  AREA-AVERAGED Fm(INCH/HR) =  0.35
  AREA-AVERAGED Fp(INCH/HR) =  0.35
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =   542.89
  TOTAL STREAM AREA(ACRES) =   575.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   2265.05

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1   1318.58   7.25    5.688  0.38( 0.37) 0.97   275.3     101.30
```

```
    1   1373.16   8.19    5.283  0.37( 0.36) 0.97   310.2     104.10
    1   1406.84   8.87    5.039  0.37( 0.36) 0.97   334.3     100.10
    1   1289.75  10.32    4.600  0.37( 0.36) 0.97   338.3     104.11
    1   1256.69  10.78    4.481  0.37( 0.36) 0.97   339.1     101.20
    1   1239.57  11.03    4.421  0.37( 0.36) 0.97   339.5     101.51
    1   1208.08  11.50    4.311  0.37( 0.36) 0.97   340.1     101.11
    2   3779.50  15.50    3.604  0.09( 0.09) 1.00   957.6     106.11
    3   2265.05   9.04    4.981  0.35( 0.35) 1.00   542.9     111.00

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

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
    1   6226.39   7.25    5.688  0.25( 0.25) 0.99  1158.1     101.30
    2   6513.99   8.19    5.283  0.25( 0.25) 0.99  1308.6     104.10
    3   6702.01   8.87    5.039  0.25( 0.25) 0.99  1414.6     100.10
    4   6725.65   9.04    4.981  0.25( 0.25) 0.99  1436.1     111.00
    5   6599.35  10.32    4.600  0.25( 0.24) 0.99  1519.0     104.11
    6   6563.30  10.78    4.481  0.24( 0.24) 0.99  1548.2     101.20
    7   6545.57  11.03    4.421  0.24( 0.24) 0.99  1563.8     101.51
    8   6514.63  11.50    4.311  0.24( 0.24) 0.99  1593.5     101.11
    9   6363.74  15.50    3.604  0.22( 0.22) 0.99  1840.5     106.11

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =   6725.65    Tc(MIN.) =     9.04
  EFFECTIVE AREA(ACRES) =  1436.15   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.25  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =   1913.70
  LONGEST FLOWPATH FROM NODE    101.11 TO NODE    106.00 =  2193.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    106.00 TO NODE    107.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   185.00
  ELEVATION DATA: UPSTREAM(FEET) =   2550.00  DOWNSTREAM(FEET) =   2520.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.198
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.282
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        1.80      0.86     1.000    46    8.20
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    1.80   INITIAL SUBAREA RUNOFF(CFS) =    7.16

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =   9.04
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.981
  SUBAREA AREA(ACRES) =    1.80      SUBAREA RUNOFF(CFS) =    6.68
  EFFECTIVE AREA(ACRES) =   1437.95   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.25  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =   1915.50       PEAK FLOW RATE(CFS) =    6725.65
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE    107.00 TO NODE    107.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
```

```
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.04
  RAINFALL INTENSITY(INCH/HR) =   4.98
  AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.25
  AREA-AVERAGED Ap =  0.99
  EFFECTIVE STREAM AREA(ACRES) =  1437.95
  TOTAL STREAM AREA(ACRES) =  1915.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   6725.65

****************************************************************************
  FLOW PROCESS FROM NODE    107.11 TO NODE    107.10 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   943.00
  ELEVATION DATA: UPSTREAM(FEET) =   3031.70  DOWNSTREAM(FEET) =   2640.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.029
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.000
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        4.90      0.61     1.000    66   13.03
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     14.93
  TOTAL AREA(ACRES) =      4.90   PEAK FLOW RATE(CFS) =     14.93

****************************************************************************
  FLOW PROCESS FROM NODE    107.10 TO NODE    107.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   497.00
  ELEVATION DATA: UPSTREAM(FEET) =   2640.00  DOWNSTREAM(FEET) =   2520.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.240
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.371
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        2.00      0.61     1.000    66   11.24
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    2.00   INITIAL SUBAREA RUNOFF(CFS) =    6.76

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  13.03
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.000
  SUBAREA AREA(ACRES) =    2.00      SUBAREA RUNOFF(CFS) =    6.09
  EFFECTIVE AREA(ACRES) =      6.90   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.61  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      6.90       PEAK FLOW RATE(CFS) =      21.03

****************************************************************************
  FLOW PROCESS FROM NODE    107.00 TO NODE    107.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
```

```
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  13.03
  RAINFALL INTENSITY(INCH/HR) =   4.00
  AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.61
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =     6.90
  TOTAL STREAM AREA(ACRES) =     6.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     21.03

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1   6226.39   7.25    5.688  0.26( 0.25) 0.99  1159.9     101.30
      1   6513.99   8.19    5.283  0.25( 0.25) 0.99  1310.4     104.10
      1   6702.01   8.87    5.039  0.25( 0.25) 0.99  1416.4     100.10
      1   6725.65   9.04    4.981  0.25( 0.25) 0.99  1437.9     111.00
      1   6599.35  10.32    4.600  0.25( 0.24) 0.99  1520.8     104.11
      1   6563.30  10.78    4.481  0.24( 0.24) 0.99  1550.0     101.20
      1   6545.57  11.03    4.421  0.24( 0.24) 0.99  1565.6     101.51
      1   6514.63  11.50    4.311  0.24( 0.24) 0.99  1595.3     101.11
      1   6363.74  15.50    3.604  0.22( 0.22) 0.99  1842.3     106.11
      2     21.03  13.03    4.000  0.61( 0.61) 1.00     6.9     107.11

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

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1   6243.91   7.25    5.688  0.26( 0.26) 0.99  1163.7     101.30
      2   6532.23   8.19    5.283  0.26( 0.25) 0.99  1314.8     104.10
      3   6720.71   8.87    5.039  0.26( 0.25) 0.99  1421.1     100.10
      4   6744.47   9.04    4.981  0.25( 0.25) 0.99  1442.7     111.00
      5   6618.96  10.32    4.600  0.25( 0.25) 0.99  1526.2     104.11
      6   6583.17  10.78    4.481  0.24( 0.24) 0.99  1555.7     101.20
      7   6565.58  11.03    4.421  0.24( 0.24) 0.99  1571.4     101.51
      8   6534.89  11.50    4.311  0.24( 0.24) 0.99  1601.4     101.11
      9   6478.01  13.03    4.000  0.23( 0.23) 0.99  1696.6     107.11
     10   6382.31  15.50    3.604  0.22( 0.22) 0.99  1849.2     106.11

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =   6744.47    Tc(MIN.) =     9.04
  EFFECTIVE AREA(ACRES) =  1442.73   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.25  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =   1922.40
  LONGEST FLOWPATH FROM NODE    101.11 TO NODE    107.00 =  2193.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    107.00 TO NODE    108.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1147.00
  ELEVATION DATA: UPSTREAM(FEET) =   2520.00  DOWNSTREAM(FEET) =   2400.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   18.565
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.234
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                B       11.50      0.61     1.000    66   18.57
  NATURAL FAIR COVER
  "OPEN BRUSH"                A       10.40      0.86     1.000    46   18.57
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.73
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   21.90   INITIAL SUBAREA RUNOFF(CFS) =   49.34

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =   9.04
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.981
  SUBAREA AREA(ACRES) =   21.90      SUBAREA RUNOFF(CFS) =   83.77
  EFFECTIVE AREA(ACRES) =   1464.63   AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.26  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =   1944.30       PEAK FLOW RATE(CFS) =    6744.47
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE    108.00 TO NODE    108.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
==============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    108.00 TO NODE    108.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
==============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    108.00 TO NODE    108.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
==============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    110.10 TO NODE    110.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
  ELEVATION DATA: UPSTREAM(FEET) =   2732.00  DOWNSTREAM(FEET) =   2724.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.863
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.416
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"        A        2.30      0.98     0.500    32    7.86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.500
  SUBAREA RUNOFF(CFS) =     10.20
  TOTAL AREA(ACRES) =      2.30   PEAK FLOW RATE(CFS) =     10.20

****************************************************************************
  FLOW PROCESS FROM NODE    110.00 TO NODE    111.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
==============================================================================
  UPSTREAM ELEVATION(FEET) = 2724.00  DOWNSTREAM ELEVATION(FEET) = 2612.00
  STREET LENGTH(FEET) =   875.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 30.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.018
```

```
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.018

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      32.61
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.40
    HALFSTREET FLOOD WIDTH(FEET) =   13.40
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.07
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.65
  STREET FLOW TRAVEL TIME(MIN.) =   1.61   Tc(MIN.) =   9.47
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.844
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A       11.40      0.98     0.500    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.500
  SUBAREA AREA(ACRES) =   11.40      SUBAREA RUNOFF(CFS) =   44.70
  EFFECTIVE AREA(ACRES) =     13.70    AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =     13.70        PEAK FLOW RATE(CFS) =      53.71

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.46   HALFSTREET FLOOD WIDTH(FEET) =  16.52
  FLOW VELOCITY(FEET/SEC.) = 10.20   DEPTH*VELOCITY(FT*FT/SEC.) =   4.67
  LONGEST FLOWPATH FROM NODE    110.10 TO NODE    111.00 =  1175.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    111.00 TO NODE   1112.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2607.00  DOWNSTREAM(FEET) =  2552.00
  FLOW LENGTH(FEET) =   607.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  23.52
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     53.71
  PIPE TRAVEL TIME(MIN.) =   0.43    Tc(MIN.) =   9.90
  LONGEST FLOWPATH FROM NODE    110.10 TO NODE   1112.00 =  1782.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1112.00 TO NODE   1112.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.90
  RAINFALL INTENSITY(INCH/HR) =   4.72
  AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.98
  AREA-AVERAGED Ap =  0.50
  EFFECTIVE STREAM AREA(ACRES) =    13.70
  TOTAL STREAM AREA(ACRES) =    13.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     53.71

****************************************************************************
  FLOW PROCESS FROM NODE    112.11 TO NODE    112.10 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   961.00
  ELEVATION DATA: UPSTREAM(FEET) =   2634.00  DOWNSTREAM(FEET) =   2585.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.004
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.427
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        5.70      0.98     0.500    32   11.00
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.500
  SUBAREA RUNOFF(CFS) =     20.21
  TOTAL AREA(ACRES) =      5.70   PEAK FLOW RATE(CFS) =     20.21

****************************************************************************
  FLOW PROCESS FROM NODE    112.10 TO NODE    112.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2585.00  DOWNSTREAM ELEVATION(FEET) = 2557.00
  STREET LENGTH(FEET) =   325.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 30.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.018
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.018

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      31.43
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.42
    HALFSTREET FLOOD WIDTH(FEET) =   14.34
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.75
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.24
  STREET FLOW TRAVEL TIME(MIN.) =   0.70   Tc(MIN.) =  11.70
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.266
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        6.60      0.98     0.500    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.500
  SUBAREA AREA(ACRES) =    6.60      SUBAREA RUNOFF(CFS) =   22.44
  EFFECTIVE AREA(ACRES) =     12.30    AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =     12.30        PEAK FLOW RATE(CFS) =      41.83

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.45   HALFSTREET FLOOD WIDTH(FEET) =  16.13
  FLOW VELOCITY(FEET/SEC.) =  8.31   DEPTH*VELOCITY(FT*FT/SEC.) =   3.74
  LONGEST FLOWPATH FROM NODE    112.11 TO NODE    112.00 =  1286.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    112.00 TO NODE   1112.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
```

```
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2557.00  DOWNSTREAM(FEET) =  2552.00
  FLOW LENGTH(FEET) =    25.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 24.000
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  10.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  30.10
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     41.83
  PIPE TRAVEL TIME(MIN.) =   0.01    Tc(MIN.) =  11.72
  LONGEST FLOWPATH FROM NODE    112.11 TO NODE   1112.00 =  1311.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1112.00 TO NODE   1112.00 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.) =  11.72
  RAINFALL INTENSITY(INCH/HR) =   4.26
  AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.98
  AREA-AVERAGED Ap =  0.50
  EFFECTIVE STREAM AREA(ACRES) =    12.30
  TOTAL STREAM AREA(ACRES) =    12.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     41.83

****************************************************************************
  FLOW PROCESS FROM NODE    113.11 TO NODE    113.10 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   350.00
  ELEVATION DATA: UPSTREAM(FEET) =   2588.00  DOWNSTREAM(FEET) =   2579.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.424
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.196
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        1.70      0.75     0.500    56    8.42
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.500
  SUBAREA RUNOFF(CFS) =      7.38
  TOTAL AREA(ACRES) =      1.70   PEAK FLOW RATE(CFS) =      7.38

****************************************************************************
  FLOW PROCESS FROM NODE    113.10 TO NODE    113.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
==============================================================================
  UPSTREAM ELEVATION(FEET) = 2579.00  DOWNSTREAM ELEVATION(FEET) = 2561.00
  STREET LENGTH(FEET) =   640.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 30.00

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

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

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      12.35
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.39
    HALFSTREET FLOOD WIDTH(FEET) =   13.24
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.30
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.29
  STREET FLOW TRAVEL TIME(MIN.) =   3.23   Tc(MIN.) =  11.66
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.276
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        2.90      0.98     0.500    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.500
  SUBAREA AREA(ACRES) =    2.90      SUBAREA RUNOFF(CFS) =    9.89
  EFFECTIVE AREA(ACRES) =      4.60    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.89  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =      4.60        PEAK FLOW RATE(CFS) =      15.86

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.42   HALFSTREET FLOOD WIDTH(FEET) =  14.65
  FLOW VELOCITY(FEET/SEC.) =  3.50   DEPTH*VELOCITY(FT*FT/SEC.) =   1.47
  LONGEST FLOWPATH FROM NODE    113.11 TO NODE    113.00 =   990.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    113.00 TO NODE   1112.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2561.00  DOWNSTREAM(FEET) =  2552.00
  FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 24.000
  DEPTH OF FLOW IN  24.0 INCH PIPE IS   6.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  22.18
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     15.86
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =  11.70
  LONGEST FLOWPATH FROM NODE    113.11 TO NODE   1112.00 =  1040.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1112.00 TO NODE   1112.00 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.) =  11.70
  RAINFALL INTENSITY(INCH/HR) =   4.27
  AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.89
  AREA-AVERAGED Ap =  0.50
  EFFECTIVE STREAM AREA(ACRES) =     4.60
  TOTAL STREAM AREA(ACRES) =     4.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     15.86

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     53.71   9.90    4.716  0.98( 0.49) 0.50    13.7     110.10
      2     41.83  11.72    4.263  0.98( 0.49) 0.50    12.3     112.11
      3     15.86  11.70    4.268  0.89( 0.45) 0.50     4.6     113.11

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
```

```
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    108.30   9.90    4.716  0.96( 0.48) 0.50    28.0     110.10
      2    105.67  11.70    4.268  0.96( 0.48) 0.50    30.6     113.11
      3    105.62  11.72    4.263  0.96( 0.48) 0.50    30.6     112.11

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    108.30    Tc(MIN.) =     9.90
  EFFECTIVE AREA(ACRES) =    27.99   AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.96  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =     30.60
  LONGEST FLOWPATH FROM NODE    110.10 TO NODE   1112.00 =  1782.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1112.00 TO NODE   1113.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2552.00  DOWNSTREAM(FEET) =  2530.00
  FLOW LENGTH(FEET) =   300.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  21.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  25.96
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    108.30
  PIPE TRAVEL TIME(MIN.) =   0.19    Tc(MIN.) =  10.09
  LONGEST FLOWPATH FROM NODE    110.10 TO NODE   1113.00 =  2082.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1113.00 TO NODE   1113.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  10.09
  RAINFALL INTENSITY(INCH/HR) =   4.66
  AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.96
  AREA-AVERAGED Ap =  0.50
  EFFECTIVE STREAM AREA(ACRES) =    27.99
  TOTAL STREAM AREA(ACRES) =    30.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    108.30

****************************************************************************
  FLOW PROCESS FROM NODE    114.10 TO NODE    114.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   725.00
  ELEVATION DATA: UPSTREAM(FEET) =   2557.00  DOWNSTREAM(FEET) =   2536.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.008
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.426
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"        A        3.10      0.98     0.500    32   11.01
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.500
  SUBAREA RUNOFF(CFS) =     10.99
  TOTAL AREA(ACRES) =      3.10   PEAK FLOW RATE(CFS) =     10.99

****************************************************************************
  FLOW PROCESS FROM NODE    114.00 TO NODE   1113.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2536.00  DOWNSTREAM(FEET) =  2530.00
  FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 24.000
  DEPTH OF FLOW IN  24.0 INCH PIPE IS   6.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.27
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     10.99
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =  11.06
  LONGEST FLOWPATH FROM NODE    114.10 TO NODE   1113.00 =   775.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1113.00 TO NODE   1113.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  11.06
  RAINFALL INTENSITY(INCH/HR) =   4.41
  AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.98
  AREA-AVERAGED Ap =  0.50
  EFFECTIVE STREAM AREA(ACRES) =     3.10
  TOTAL STREAM AREA(ACRES) =     3.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.99

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    108.30  10.09    4.662  0.96( 0.48) 0.50    28.0     110.10
      1    105.67  11.90    4.225  0.96( 0.48) 0.50    30.6     113.11
      1    105.62  11.92    4.220  0.96( 0.48) 0.50    30.6     112.11
      2     10.99  11.06    4.414  0.98( 0.49) 0.50     3.1     114.10

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

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    118.97  10.09    4.662  0.96( 0.48) 0.50    30.8     110.10
      2    117.89  11.06    4.414  0.96( 0.48) 0.50    32.5     114.10
      3    116.13  11.90    4.225  0.96( 0.48) 0.50    33.7     113.11
      4    116.07  11.92    4.220  0.96( 0.48) 0.50    33.7     112.11

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    118.97    Tc(MIN.) =    10.09
  EFFECTIVE AREA(ACRES) =    30.82   AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.96  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =     33.70
  LONGEST FLOWPATH FROM NODE    110.10 TO NODE   1113.00 =  2082.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1113.00 TO NODE   1114.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
```

```
  ELEVATION DATA: UPSTREAM(FEET) =  2530.00  DOWNSTREAM(FEET) =  2510.00
  FLOW LENGTH(FEET) =   160.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  21.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  32.27
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    118.97
  PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =  10.18
  LONGEST FLOWPATH FROM NODE    110.10 TO NODE   1114.00 =  2242.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1114.00 TO NODE   1114.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  10.18
  RAINFALL INTENSITY(INCH/HR) =   4.64
  AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.96
  AREA-AVERAGED Ap =  0.50
  EFFECTIVE STREAM AREA(ACRES) =    30.82
  TOTAL STREAM AREA(ACRES) =    33.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    118.97

****************************************************************************
  FLOW PROCESS FROM NODE    115.10 TO NODE    115.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   655.00
  ELEVATION DATA: UPSTREAM(FEET) =   2523.00  DOWNSTREAM(FEET) =   2515.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.563
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.089
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        1.90      0.98     0.500    32   12.56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.500
  SUBAREA RUNOFF(CFS) =      6.16
  TOTAL AREA(ACRES) =      1.90   PEAK FLOW RATE(CFS) =      6.16

****************************************************************************
  FLOW PROCESS FROM NODE    115.00 TO NODE   1114.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2515.00  DOWNSTREAM(FEET) =  2510.00
  FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 24.000
  DEPTH OF FLOW IN  24.0 INCH PIPE IS   4.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.69
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      6.16
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =  12.62
  LONGEST FLOWPATH FROM NODE    115.10 TO NODE   1114.00 =   705.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1114.00 TO NODE   1114.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
```

```
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  12.62
  RAINFALL INTENSITY(INCH/HR) =   4.08
  AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.98
  AREA-AVERAGED Ap =  0.50
  EFFECTIVE STREAM AREA(ACRES) =     1.90
  TOTAL STREAM AREA(ACRES) =     1.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.16

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    118.97  10.18    4.639  0.96( 0.48) 0.50    30.8     110.10
      1    117.89  11.14    4.394  0.96( 0.48) 0.50    32.5     114.10
      1    116.13  11.98    4.207  0.96( 0.48) 0.50    33.7     113.11
      1    116.07  12.00    4.203  0.96( 0.48) 0.50    33.7     112.11
      2      6.16  12.62    4.077  0.98( 0.49) 0.50     1.9     115.10

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

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    124.71  10.18    4.639  0.96( 0.48) 0.50    32.3     110.10
      2    123.80  11.14    4.394  0.96( 0.48) 0.50    34.1     114.10
      3    122.19  11.98    4.207  0.96( 0.48) 0.50    35.5     113.11
      4    122.13  12.00    4.203  0.96( 0.48) 0.50    35.5     112.11
      5    118.29  12.62    4.077  0.96( 0.48) 0.50    35.6     115.10

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    124.71    Tc(MIN.) =    10.18
  EFFECTIVE AREA(ACRES) =    32.35   AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.96  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =     35.60
  LONGEST FLOWPATH FROM NODE    110.10 TO NODE   1114.00 =  2242.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1114.00 TO NODE   1115.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2511.00  DOWNSTREAM(FEET) =  2510.50
  FLOW LENGTH(FEET) =    95.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  54.0 INCH PIPE IS  39.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.89
  ESTIMATED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    124.71
  PIPE TRAVEL TIME(MIN.) =   0.16    Tc(MIN.) =  10.34
  LONGEST FLOWPATH FROM NODE    110.10 TO NODE   1115.00 =  2337.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1115.00 TO NODE   1116.00 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2511.00  DOWNSTREAM(FEET) =   2508.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   502.00   CHANNEL SLOPE =  0.0060
  CHANNEL BASE(FEET) =   30.00   "Z" FACTOR =   4.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =   6.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.076
```

```
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA       Fp          Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                 A        4.40      0.98     0.850    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.850
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    131.14
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.65
  AVERAGE FLOW DEPTH(FEET) =   1.05   TRAVEL TIME(MIN.) =   2.29
  Tc(MIN.) =  12.63
  SUBAREA AREA(ACRES) =     4.40       SUBAREA RUNOFF(CFS) =   12.86
  EFFECTIVE AREA(ACRES) =     36.75     AREA-AVERAGED Fm(INCH/HR) =   0.52
  AREA-AVERAGED Fp(INCH/HR) =   0.97  AREA-AVERAGED Ap =   0.54
  TOTAL AREA(ACRES) =     40.00         PEAK FLOW RATE(CFS) =     124.71
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.02   FLOW VELOCITY(FEET/SEC.) =   3.59
  LONGEST FLOWPATH FROM NODE    110.10 TO NODE   1116.00 =  2839.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1116.00 TO NODE   1117.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2508.00  DOWNSTREAM(FEET) =  2460.00
  FLOW LENGTH(FEET) =   168.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  17.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  44.80
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    124.71
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =  12.69
  LONGEST FLOWPATH FROM NODE    110.10 TO NODE   1117.00 =  3007.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1115.00 TO NODE    108.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   450.00
  ELEVATION DATA: UPSTREAM(FEET) =   2460.00  DOWNSTREAM(FEET) =   2400.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.165
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.168
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA       Fp          Ap     SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        2.90      0.86     1.000    46   12.16
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    2.90   INITIAL SUBAREA RUNOFF(CFS) =    8.63

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  12.69
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.064
  SUBAREA AREA(ACRES) =    2.90      SUBAREA RUNOFF(CFS) =    8.36
  EFFECTIVE AREA(ACRES) =     39.65   AREA-AVERAGED Fm(INCH/HR) =  0.55
  AREA-AVERAGED Fp(INCH/HR) =  0.95  AREA-AVERAGED Ap =  0.58
  TOTAL AREA(ACRES) =     42.90       PEAK FLOW RATE(CFS) =     125.44

****************************************************************************
  FLOW PROCESS FROM NODE    108.00 TO NODE    108.00 IS CODE =  11
----------------------------------------------------------------------------
```

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

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM      Q      Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
   NUMBER    (CFS)  (MIN.) (INCH/HR) (INCH/HR)        (ACRES)     NODE
      1     125.44  12.69    4.064  0.95( 0.55) 0.58    39.6      110.10
      2     124.72  13.66    3.889  0.95( 0.55) 0.57    41.4      114.10
      3     123.46  14.51    3.750  0.95( 0.54) 0.57    42.8      113.11
      4     123.40  14.53    3.746  0.95( 0.54) 0.57    42.8      112.11
      5     119.87  15.19    3.648  0.95( 0.54) 0.57    42.9      115.10
  LONGEST FLOWPATH FROM NODE    110.10 TO NODE    108.00 =  3007.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM      Q      Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
   NUMBER    (CFS)  (MIN.) (INCH/HR) (INCH/HR)        (ACRES)     NODE
      1    6243.91   7.25    5.688  0.27( 0.26) 0.99  1185.6      101.30
      2    6532.23   8.19    5.283  0.26( 0.26) 0.99  1336.7      104.10
      3    6720.71   8.87    5.039  0.26( 0.26) 0.99  1443.0      100.10
      4    6744.47   9.04    4.981  0.26( 0.26) 0.99  1464.6      111.00
      5    6618.96  10.32    4.600  0.25( 0.25) 0.99  1548.1      104.11
      6    6583.17  10.78    4.481  0.25( 0.25) 0.99  1577.6      101.20
      7    6565.58  11.03    4.421  0.25( 0.25) 0.99  1593.3      101.51
      8    6534.89  11.50    4.311  0.25( 0.25) 0.99  1623.3      101.11
      9    6478.01  13.03    4.000  0.24( 0.24) 0.99  1718.5      107.11
     10    6382.31  15.50    3.604  0.23( 0.23) 0.99  1871.1      106.11
  LONGEST FLOWPATH FROM NODE    101.11 TO NODE    108.00 =  2193.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM      Q      Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
   NUMBER    (CFS)  (MIN.) (INCH/HR) (INCH/HR)        (ACRES)     NODE
      1    6348.63   7.25    5.688  0.27( 0.27) 0.99  1208.3      101.30
      2    6641.33   8.19    5.283  0.27( 0.27) 0.99  1362.3      104.10
      3    6832.68   8.87    5.039  0.27( 0.27) 0.99  1470.7      100.10
      4    6857.14   9.04    4.981  0.27( 0.27) 0.99  1492.9      111.00
      5    6736.56  10.32    4.600  0.26( 0.26) 0.99  1580.4      104.11
      6    6702.41  10.78    4.481  0.26( 0.26) 0.99  1611.3      101.20
      7    6685.67  11.03    4.421  0.26( 0.25) 0.99  1627.8      101.51
      8    6656.58  11.50    4.311  0.26( 0.25) 0.99  1659.2      101.11
      9    6616.10  12.69    4.064  0.25( 0.25) 0.98  1737.0      110.10
     10    6603.19  13.03    4.000  0.25( 0.25) 0.98  1758.8      107.11
     11    6578.44  13.66    3.889  0.25( 0.24) 0.98  1798.7      114.10
     12    6544.08  14.51    3.750  0.24( 0.24) 0.98  1852.8      113.11
     13    6543.18  14.53    3.746  0.24( 0.24) 0.98  1854.2      112.11
     14    6514.08  15.19    3.648  0.24( 0.23) 0.99  1895.0      115.10
     15    6500.49  15.50    3.604  0.24( 0.23) 0.99  1914.0      106.11
    TOTAL AREA(ACRES) =   1987.20

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     6857.14  Tc(MIN.) =    9.040
  EFFECTIVE AREA(ACRES) =   1492.88  AREA-AVERAGED Fm(INCH/HR) =  0.27
  AREA-AVERAGED Fp(INCH/HR) =  0.25  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =   1987.20
  LONGEST FLOWPATH FROM NODE    110.10 TO NODE    108.00 =  3007.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    108.00 TO NODE    131.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =   9.04
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.981
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA       Fp          Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        1.00      0.86     1.000    46
```

```
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    1.00      SUBAREA RUNOFF(CFS) =    3.71
  EFFECTIVE AREA(ACRES) =   1493.88   AREA-AVERAGED Fm(INCH/HR) =  0.27
  AREA-AVERAGED Fp(INCH/HR) =  0.27  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =   1988.20       PEAK FLOW RATE(CFS) =    6857.14
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE    131.00 TO NODE    131.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.04
  RAINFALL INTENSITY(INCH/HR) =   4.98
  AREA-AVERAGED Fm(INCH/HR) =  0.27
  AREA-AVERAGED Fp(INCH/HR) =  0.27
  AREA-AVERAGED Ap =  0.99
  EFFECTIVE STREAM AREA(ACRES) =  1493.88
  TOTAL STREAM AREA(ACRES) =  1988.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   6857.14

****************************************************************************
  FLOW PROCESS FROM NODE    130.10 TO NODE    130.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   565.00
  ELEVATION DATA: UPSTREAM(FEET) =   2720.00  DOWNSTREAM(FEET) =   2450.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.322
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.600
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        3.30      0.61     1.000    66   10.32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     11.84
  TOTAL AREA(ACRES) =      3.30   PEAK FLOW RATE(CFS) =     11.84

****************************************************************************
  FLOW PROCESS FROM NODE    130.00 TO NODE    131.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   705.00
  ELEVATION DATA: UPSTREAM(FEET) =   2450.00  DOWNSTREAM(FEET) =   2373.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   15.150
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.654
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        2.10      0.86     1.000    46   15.15
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        2.70      0.61     1.000    66   15.15
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.72
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    4.80   INITIAL SUBAREA RUNOFF(CFS) =   12.67

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  10.32
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.600
  SUBAREA AREA(ACRES) =    4.80      SUBAREA RUNOFF(CFS) =   16.75
  EFFECTIVE AREA(ACRES) =      8.10   AREA-AVERAGED Fm(INCH/HR) =  0.68
  AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      8.10       PEAK FLOW RATE(CFS) =      28.59

****************************************************************************
  FLOW PROCESS FROM NODE    131.00 TO NODE    131.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  10.32
  RAINFALL INTENSITY(INCH/HR) =   4.60
  AREA-AVERAGED Fm(INCH/HR) =  0.68
  AREA-AVERAGED Fp(INCH/HR) =  0.68
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =     8.10
  TOTAL STREAM AREA(ACRES) =     8.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     28.59

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1   6348.63   7.25    5.688  0.27( 0.27) 0.99  1209.3     101.30
      1   6641.33   8.19    5.283  0.27( 0.27) 0.99  1363.3     104.10
      1   6832.68   8.87    5.039  0.27( 0.27) 0.99  1471.7     100.10
      1   6857.14   9.04    4.981  0.27( 0.27) 0.99  1493.9     111.00
      1   6736.56  10.32    4.600  0.26( 0.26) 0.99  1581.4     104.11
      1   6702.41  10.78    4.481  0.26( 0.26) 0.99  1612.3     101.20
      1   6685.67  11.03    4.421  0.26( 0.25) 0.99  1628.8     101.51
      1   6656.58  11.50    4.311  0.26( 0.25) 0.99  1660.2     101.11
      1   6616.10  12.69    4.064  0.25( 0.25) 0.98  1738.0     110.10
      1   6603.19  13.03    4.000  0.25( 0.25) 0.98  1759.8     107.11
      1   6578.44  13.66    3.889  0.25( 0.24) 0.98  1799.7     114.10
      1   6544.08  14.51    3.750  0.24( 0.24) 0.98  1853.8     113.11
      1   6543.18  14.53    3.746  0.24( 0.24) 0.98  1855.2     112.11
      1   6514.08  15.19    3.648  0.24( 0.23) 0.99  1896.0     115.10
      1   6500.49  15.50    3.604  0.24( 0.23) 0.99  1915.0     106.11
      2     28.59  10.32    4.600  0.68( 0.68) 1.00     8.1     130.10

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

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1   6374.27   7.25    5.688  0.28( 0.27) 0.99  1215.0     101.30
      2   6667.99   8.19    5.283  0.27( 0.27) 0.99  1369.7     104.10
      3   6859.99   8.87    5.039  0.27( 0.27) 0.99  1478.6     100.10
      4   6884.62   9.04    4.981  0.27( 0.27) 0.99  1501.0     111.00
      5   6765.30  10.32    4.600  0.26( 0.26) 0.99  1589.4     130.10
      6   6765.15  10.32    4.600  0.26( 0.26) 0.99  1589.5     104.11
      7   6730.14  10.78    4.481  0.26( 0.26) 0.99  1620.4     101.20
      8   6712.96  11.03    4.421  0.26( 0.26) 0.99  1636.9     101.51
      9   6683.06  11.50    4.311  0.26( 0.25) 0.99  1668.3     101.11
     10   6640.78  12.69    4.064  0.25( 0.25) 0.98  1746.1     110.10
     11   6627.41  13.03    4.000  0.25( 0.25) 0.98  1767.9     107.11
     12   6601.85  13.66    3.889  0.25( 0.24) 0.98  1807.8     114.10
     13   6566.48  14.51    3.750  0.24( 0.24) 0.98  1861.9     113.11
     14   6565.55  14.53    3.746  0.24( 0.24) 0.98  1863.3     112.11
```

```
    15   6535.73  15.19    3.648  0.24( 0.24) 0.99  1904.1     115.10
    16   6521.83  15.50    3.604  0.24( 0.23) 0.99  1923.1     106.11

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =   6884.62    Tc(MIN.) =     9.04
  EFFECTIVE AREA(ACRES) =  1500.97   AREA-AVERAGED Fm(INCH/HR) =  0.27
  AREA-AVERAGED Fp(INCH/HR) =  0.27  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =   1996.30
  LONGEST FLOWPATH FROM NODE    110.10 TO NODE    131.00 =  3007.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    131.00 TO NODE    133.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   980.00
  ELEVATION DATA: UPSTREAM(FEET) =   2373.00  DOWNSTREAM(FEET) =   2280.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   17.776
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.320
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        5.20      0.86     1.000    46   17.78
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    5.20   INITIAL SUBAREA RUNOFF(CFS) =   11.51

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =   9.04
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.981
  SUBAREA AREA(ACRES) =    5.20      SUBAREA RUNOFF(CFS) =   19.29
  EFFECTIVE AREA(ACRES) =   1506.17   AREA-AVERAGED Fm(INCH/HR) =  0.27
  AREA-AVERAGED Fp(INCH/HR) =  0.27  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =   2001.50       PEAK FLOW RATE(CFS) =    6884.62
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE    133.00 TO NODE    133.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.04
  RAINFALL INTENSITY(INCH/HR) =   4.98
  AREA-AVERAGED Fm(INCH/HR) =  0.27
  AREA-AVERAGED Fp(INCH/HR) =  0.27
  AREA-AVERAGED Ap =  0.99
  EFFECTIVE STREAM AREA(ACRES) =  1506.17
  TOTAL STREAM AREA(ACRES) =  2001.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   6884.62

****************************************************************************
  FLOW PROCESS FROM NODE    132.10 TO NODE    132.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   465.00
  ELEVATION DATA: UPSTREAM(FEET) =   2442.00  DOWNSTREAM(FEET) =   2385.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.534
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.094
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        1.20      0.86     1.000    46   12.53
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        0.80      0.61     1.000    66   12.53
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.76
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      6.00
  TOTAL AREA(ACRES) =      2.00   PEAK FLOW RATE(CFS) =      6.00

****************************************************************************
  FLOW PROCESS FROM NODE    132.00 TO NODE    133.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   885.00
  ELEVATION DATA: UPSTREAM(FEET) =   2385.00  DOWNSTREAM(FEET) =   2280.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   16.320
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.494
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        3.10      0.86     1.000    46   16.32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    3.10   INITIAL SUBAREA RUNOFF(CFS) =    7.35

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  12.53
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.094
  SUBAREA AREA(ACRES) =    3.10      SUBAREA RUNOFF(CFS) =    9.02
  EFFECTIVE AREA(ACRES) =      5.10   AREA-AVERAGED Fm(INCH/HR) =  0.82
  AREA-AVERAGED Fp(INCH/HR) =  0.82  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      5.10       PEAK FLOW RATE(CFS) =      15.02

****************************************************************************
  FLOW PROCESS FROM NODE    133.00 TO NODE    133.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  12.53
  RAINFALL INTENSITY(INCH/HR) =   4.09
  AREA-AVERAGED Fm(INCH/HR) =  0.82
  AREA-AVERAGED Fp(INCH/HR) =  0.82
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =     5.10
  TOTAL STREAM AREA(ACRES) =     5.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     15.02

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1   6374.27   7.25    5.688  0.28( 0.27) 0.99  1220.2     101.30
      1   6667.99   8.19    5.283  0.28( 0.27) 0.99  1374.9     104.10
      1   6859.99   8.87    5.039  0.27( 0.27) 0.99  1483.8     100.10
      1   6884.62   9.04    4.981  0.27( 0.27) 0.99  1506.2     111.00
      1   6765.30  10.32    4.600  0.27( 0.26) 0.99  1594.6     130.10
```

```
     1   6765.15  10.32    4.600  0.27( 0.26) 0.99  1594.7     104.11
     1   6730.14  10.78    4.481  0.26( 0.26) 0.99  1625.6     101.20
     1   6712.96  11.03    4.421  0.26( 0.26) 0.99  1642.1     101.51
     1   6683.06  11.50    4.311  0.26( 0.26) 0.99  1673.5     101.11
     1   6640.78  12.69    4.064  0.25( 0.25) 0.98  1751.3     110.10
     1   6627.41  13.03    4.000  0.25( 0.25) 0.98  1773.1     107.11
     1   6601.85  13.66    3.889  0.25( 0.25) 0.98  1813.0     114.10
     1   6566.48  14.51    3.750  0.25( 0.24) 0.98  1867.1     113.11
     1   6565.55  14.53    3.746  0.25( 0.24) 0.98  1868.5     112.11
     1   6535.73  15.19    3.648  0.24( 0.24) 0.99  1909.3     115.10
     1   6521.83  15.50    3.604  0.24( 0.24) 0.99  1928.3     106.11
     2     15.02  12.53    4.094  0.82( 0.82) 1.00     5.1     132.10

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

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1   6387.18   7.25    5.688  0.28( 0.28) 0.99  1223.1     101.30
     2   6681.38   8.19    5.283  0.28( 0.27) 0.99  1378.2     104.10
     3   6873.68   8.87    5.039  0.28( 0.27) 0.99  1487.4     100.10
     4   6898.39   9.04    4.981  0.28( 0.27) 0.99  1509.9     111.00
     5   6779.58  10.32    4.600  0.27( 0.26) 0.99  1598.8     130.10
     6   6779.43  10.32    4.600  0.27( 0.26) 0.99  1598.9     104.11
     7   6744.59  10.78    4.481  0.27( 0.26) 0.99  1630.0     101.20
     8   6727.49  11.03    4.421  0.26( 0.26) 0.99  1646.6     101.51
     9   6697.76  11.50    4.311  0.26( 0.26) 0.99  1678.2     101.11
    10   6661.33  12.53    4.094  0.26( 0.25) 0.98  1746.2     132.10
    11   6655.67  12.69    4.064  0.26( 0.25) 0.98  1756.4     110.10
    12   6642.00  13.03    4.000  0.25( 0.25) 0.98  1778.2     107.11
    13   6615.93  13.66    3.889  0.25( 0.25) 0.98  1818.1     114.10
    14   6579.92  14.51    3.750  0.25( 0.24) 0.99  1872.2     113.11
    15   6578.97  14.53    3.746  0.25( 0.24) 0.99  1873.6     112.11
    16   6548.70  15.19    3.648  0.24( 0.24) 0.99  1914.4     115.10
    17   6534.60  15.50    3.604  0.24( 0.24) 0.99  1933.4     106.11

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =   6898.39    Tc(MIN.) =     9.04
  EFFECTIVE AREA(ACRES) =  1509.85   AREA-AVERAGED Fm(INCH/HR) =  0.27
  AREA-AVERAGED Fp(INCH/HR) =  0.28  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =   2006.60
  LONGEST FLOWPATH FROM NODE    110.10 TO NODE    133.00 =  3007.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    133.00 TO NODE    133.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    120.10 TO NODE    120.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   568.00
  ELEVATION DATA: UPSTREAM(FEET) =   2520.00  DOWNSTREAM(FEET) =   2450.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.564
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.905
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        1.60      0.86     1.000    46   13.56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      4.38
  TOTAL AREA(ACRES) =      1.60   PEAK FLOW RATE(CFS) =      4.38

****************************************************************************
  FLOW PROCESS FROM NODE    120.00 TO NODE    141.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   843.00
  ELEVATION DATA: UPSTREAM(FEET) =   2450.00  DOWNSTREAM(FEET) =   2345.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   15.851
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.556
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        5.90      0.86     1.000    46   15.85
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    5.90   INITIAL SUBAREA RUNOFF(CFS) =   14.32

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  13.56
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.905
  SUBAREA AREA(ACRES) =    5.90      SUBAREA RUNOFF(CFS) =   16.17
  EFFECTIVE AREA(ACRES) =      7.50   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      7.50       PEAK FLOW RATE(CFS) =      20.55

****************************************************************************
  FLOW PROCESS FROM NODE    141.00 TO NODE    141.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  13.56
  RAINFALL INTENSITY(INCH/HR) =   3.90
  AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =     7.50
  TOTAL STREAM AREA(ACRES) =     7.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     20.55

****************************************************************************
  FLOW PROCESS FROM NODE    140.10 TO NODE    140.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   750.00
  ELEVATION DATA: UPSTREAM(FEET) =   2542.00  DOWNSTREAM(FEET) =   2462.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   15.604
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.590
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        2.70      0.86     1.000    46   15.60
```

```
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      6.63
  TOTAL AREA(ACRES) =      2.70   PEAK FLOW RATE(CFS) =      6.63

****************************************************************************
  FLOW PROCESS FROM NODE    140.00 TO NODE    140.12 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2462.00  DOWNSTREAM(FEET) =  2452.00
  FLOW LENGTH(FEET) =   181.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 24.000
  DEPTH OF FLOW IN  24.0 INCH PIPE IS   5.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.33
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      6.63
  PIPE TRAVEL TIME(MIN.) =   0.27    Tc(MIN.) =  15.87
  LONGEST FLOWPATH FROM NODE    140.10 TO NODE    140.12 =   931.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    140.12 TO NODE    140.10 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   458.00
  ELEVATION DATA: UPSTREAM(FEET) =   2452.00  DOWNSTREAM(FEET) =   2422.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   14.122
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.811
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        7.30      0.86     1.000    46   14.12
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    7.30   INITIAL SUBAREA RUNOFF(CFS) =   19.39

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  15.87
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.554
  SUBAREA AREA(ACRES) =    7.30      SUBAREA RUNOFF(CFS) =   17.70
  EFFECTIVE AREA(ACRES) =     10.00   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     10.00       PEAK FLOW RATE(CFS) =      24.24

****************************************************************************
  FLOW PROCESS FROM NODE    140.10 TO NODE    141.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   622.00
  ELEVATION DATA: UPSTREAM(FEET) =   2422.00  DOWNSTREAM(FEET) =   2345.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   14.053
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.822
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        7.00      0.86     1.000    46   14.05
```

```
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    7.00   INITIAL SUBAREA RUNOFF(CFS) =   18.66

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  15.87
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.554
  SUBAREA AREA(ACRES) =    7.00      SUBAREA RUNOFF(CFS) =   16.97
  EFFECTIVE AREA(ACRES) =     17.00   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     17.00       PEAK FLOW RATE(CFS) =      41.21

****************************************************************************
  FLOW PROCESS FROM NODE    141.00 TO NODE    141.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  15.87
  RAINFALL INTENSITY(INCH/HR) =   3.55
  AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =    17.00
  TOTAL STREAM AREA(ACRES) =    17.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     41.21

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     20.55  13.56    3.905  0.86( 0.86) 1.00     7.5     120.10
      2     41.21  15.87    3.554  0.86( 0.86) 1.00    17.0     140.10

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

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     60.37  13.56    3.905  0.86( 0.86) 1.00    22.0     120.10
      2     59.39  15.87    3.554  0.86( 0.86) 1.00    24.5     140.10

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     60.37    Tc(MIN.) =    13.56
  EFFECTIVE AREA(ACRES) =    22.03   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     24.50
  LONGEST FLOWPATH FROM NODE    140.10 TO NODE    141.00 =   931.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    141.00 TO NODE    142.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   303.00
  ELEVATION DATA: UPSTREAM(FEET) =   2345.00  DOWNSTREAM(FEET) =   2320.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.431
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.327
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
```

```
  "OPEN BRUSH"                B        0.40      0.61     1.000    66   11.43
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    0.40   INITIAL SUBAREA RUNOFF(CFS) =    1.34

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  13.56
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.905
  SUBAREA AREA(ACRES) =    0.40      SUBAREA RUNOFF(CFS) =    1.18
  EFFECTIVE AREA(ACRES) =     22.43   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     24.90       PEAK FLOW RATE(CFS) =      61.55

****************************************************************************
  FLOW PROCESS FROM NODE    142.00 TO NODE    142.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  13.56
  RAINFALL INTENSITY(INCH/HR) =   3.90
  AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =    22.43
  TOTAL STREAM AREA(ACRES) =    24.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     61.55

****************************************************************************
  FLOW PROCESS FROM NODE    145.10 TO NODE    142.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   871.00
  ELEVATION DATA: UPSTREAM(FEET) =   2450.00  DOWNSTREAM(FEET) =   2320.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   15.489
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.606
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        1.80      0.61     1.000    66   15.49
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      4.85
  TOTAL AREA(ACRES) =      1.80   PEAK FLOW RATE(CFS) =      4.85

****************************************************************************
  FLOW PROCESS FROM NODE    142.00 TO NODE    142.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  15.49
  RAINFALL INTENSITY(INCH/HR) =   3.61
  AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.61
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =     1.80
  TOTAL STREAM AREA(ACRES) =     1.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.85

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     61.55  13.56    3.905  0.86( 0.86) 1.00    22.4     120.10
      1     60.45  15.87    3.554  0.86( 0.86) 1.00    24.9     140.10
      2      4.85  15.49    3.606  0.61( 0.61) 1.00     1.8     145.10

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

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     66.22  13.56    3.905  0.84( 0.84) 1.00    24.0     120.10
      2     65.48  15.49    3.606  0.84( 0.84) 1.00    26.3     145.10
      3     65.21  15.87    3.554  0.84( 0.84) 1.00    26.7     140.10

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     66.22    Tc(MIN.) =    13.56
  EFFECTIVE AREA(ACRES) =    24.01   AREA-AVERAGED Fm(INCH/HR) =  0.84
  AREA-AVERAGED Fp(INCH/HR) =  0.84  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     26.70
  LONGEST FLOWPATH FROM NODE    140.10 TO NODE    142.00 =   931.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    142.00 TO NODE    144.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   254.00
  ELEVATION DATA: UPSTREAM(FEET) =   2320.00  DOWNSTREAM(FEET) =   2297.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.456
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.565
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        0.50      0.86     1.000    46   10.46
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    0.50   INITIAL SUBAREA RUNOFF(CFS) =    1.67

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  13.56
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.905
  SUBAREA AREA(ACRES) =    0.50      SUBAREA RUNOFF(CFS) =    1.37
  EFFECTIVE AREA(ACRES) =     24.51   AREA-AVERAGED Fm(INCH/HR) =  0.84
  AREA-AVERAGED Fp(INCH/HR) =  0.84  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     27.20       PEAK FLOW RATE(CFS) =      67.59

****************************************************************************
  FLOW PROCESS FROM NODE    144.00 TO NODE    144.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  13.56
  RAINFALL INTENSITY(INCH/HR) =   3.90
  AREA-AVERAGED Fm(INCH/HR) =  0.84
  AREA-AVERAGED Fp(INCH/HR) =  0.84
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =    24.51
```

```
  TOTAL STREAM AREA(ACRES) =    27.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     67.59

****************************************************************************
  FLOW PROCESS FROM NODE    145.10 TO NODE    145.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   544.00
  ELEVATION DATA: UPSTREAM(FEET) =   2450.00  DOWNSTREAM(FEET) =   2405.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   14.438
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.761
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        1.30      0.61     1.000    66   14.44
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      3.68
  TOTAL AREA(ACRES) =      1.30   PEAK FLOW RATE(CFS) =      3.68

****************************************************************************
  FLOW PROCESS FROM NODE    145.00 TO NODE    144.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   497.00
  ELEVATION DATA: UPSTREAM(FEET) =   2405.00  DOWNSTREAM(FEET) =   2297.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.480
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.316
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        3.00      0.61     1.000    66   11.48
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    3.00   INITIAL SUBAREA RUNOFF(CFS) =    9.99

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  14.44
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.761
  SUBAREA AREA(ACRES) =    3.00      SUBAREA RUNOFF(CFS) =    8.50
  EFFECTIVE AREA(ACRES) =      4.30   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.61  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      4.30       PEAK FLOW RATE(CFS) =      12.18

****************************************************************************
  FLOW PROCESS FROM NODE    144.00 TO NODE    144.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  14.44
  RAINFALL INTENSITY(INCH/HR) =   3.76
  AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.61
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =     4.30
  TOTAL STREAM AREA(ACRES) =     4.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.18

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     67.59  13.56    3.905  0.84( 0.84) 1.00    24.5     120.10
      1     66.70  15.49    3.606  0.84( 0.84) 1.00    26.8     145.10
      1     66.43  15.87    3.554  0.84( 0.84) 1.00    27.2     140.10
      2     12.18  14.44    3.761  0.61( 0.61) 1.00     4.3     145.10

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

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     79.55  13.56    3.905  0.81( 0.81) 1.00    28.5     120.10
      2     79.36  14.44    3.761  0.81( 0.81) 1.00    29.8     145.10
      3     78.27  15.49    3.606  0.81( 0.81) 1.00    31.1     145.10
      4     77.80  15.87    3.554  0.81( 0.81) 1.00    31.5     140.10

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     79.55    Tc(MIN.) =    13.56
  EFFECTIVE AREA(ACRES) =    28.55   AREA-AVERAGED Fm(INCH/HR) =  0.81
  AREA-AVERAGED Fp(INCH/HR) =  0.81  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     31.50
  LONGEST FLOWPATH FROM NODE    140.10 TO NODE    144.00 =   931.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    144.00 TO NODE    133.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   145.00
  ELEVATION DATA: UPSTREAM(FEET) =   2297.00  DOWNSTREAM(FEET) =   2280.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.935
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.386
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        0.20      0.61     1.000    66    7.93
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    0.20   INITIAL SUBAREA RUNOFF(CFS) =    0.86

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  13.56
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.905
  SUBAREA AREA(ACRES) =    0.20      SUBAREA RUNOFF(CFS) =    0.59
  EFFECTIVE AREA(ACRES) =     28.75   AREA-AVERAGED Fm(INCH/HR) =  0.81
  AREA-AVERAGED Fp(INCH/HR) =  0.81  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     31.70       PEAK FLOW RATE(CFS) =      80.14

****************************************************************************
  FLOW PROCESS FROM NODE    133.00 TO NODE    133.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
```

NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)		(ACRES)	NODE
1	80.14	13.56	3.905	0.81(0.81)	1.00	28.7	120.10
2	79.90	14.44	3.761	0.81(0.81)	1.00	30.0	145.10
3	78.81	15.49	3.606	0.81(0.81)	1.00	31.3	145.10
4	78.33	15.87	3.554	0.81(0.81)	1.00	31.7	140.10

LONGEST FLOWPATH FROM NODE 140.10 TO NODE 133.00 = 931.00 FEET.

** MEMORY BANK # 2 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)		Ap	Ae (ACRES)	HEADWATER NODE
1	6387.18	7.25	5.688	0.28(0.28)	0.99		1223.1	101.30
2	6681.38	8.19	5.283	0.28(0.27)	0.99		1378.2	104.10
3	6873.68	8.87	5.039	0.28(0.27)	0.99		1487.4	100.10
4	6898.39	9.04	4.981	0.28(0.27)	0.99		1509.9	111.00
5	6779.58	10.32	4.600	0.27(0.26)	0.99		1598.8	130.10
6	6779.43	10.32	4.600	0.27(0.26)	0.99		1598.9	104.11
7	6744.59	10.78	4.481	0.27(0.26)	0.99		1630.0	101.20
8	6727.49	11.03	4.421	0.26(0.26)	0.99		1646.6	101.51
9	6697.76	11.50	4.311	0.26(0.26)	0.99		1678.2	101.11
10	6661.33	12.53	4.094	0.26(0.25)	0.98		1746.2	132.10
11	6655.67	12.69	4.064	0.26(0.25)	0.98		1756.4	110.10
12	6642.00	13.03	4.000	0.25(0.25)	0.98		1778.2	107.11
13	6615.93	13.66	3.889	0.25(0.25)	0.98		1818.1	114.10
14	6579.92	14.51	3.750	0.25(0.24)	0.99		1872.2	113.11
15	6578.97	14.53	3.746	0.25(0.24)	0.99		1873.6	112.11
16	6548.70	15.19	3.648	0.24(0.24)	0.99		1914.4	115.10
17	6534.60	15.50	3.604	0.24(0.24)	0.99		1933.4	106.11

LONGEST FLOWPATH FROM NODE 110.10 TO NODE 133.00 = 3007.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)		Ap	Ae (ACRES)	HEADWATER NODE
1	6454.64	7.25	5.688	0.29(0.28)	0.99		1238.5	101.30
2	6751.34	8.19	5.283	0.28(0.28)	0.99		1395.6	104.10
3	6945.26	8.87	5.039	0.28(0.28)	0.99		1506.2	100.10
4	6970.36	9.04	4.981	0.28(0.28)	0.99		1529.0	111.00
5	6854.26	10.32	4.600	0.28(0.27)	0.99		1620.7	130.10
6	6854.11	10.32	4.600	0.28(0.27)	0.99		1620.8	104.11
7	6820.15	10.78	4.481	0.27(0.27)	0.99		1652.9	101.20
8	6803.52	11.03	4.421	0.27(0.27)	0.99		1669.9	101.51
9	6774.63	11.50	4.311	0.27(0.27)	0.99		1702.6	101.11
10	6739.92	12.53	4.094	0.27(0.26)	0.99		1772.8	132.10
11	6734.50	12.69	4.064	0.26(0.26)	0.99		1783.3	110.10
12	6721.36	13.03	4.000	0.26(0.26)	0.99		1805.8	107.11
13	6699.90	13.56	3.905	0.26(0.26)	0.99		1841.0	120.10
14	6696.04	13.66	3.889	0.26(0.26)	0.99		1846.9	114.10
15	6662.86	14.44	3.761	0.26(0.25)	0.99		1897.7	145.10
16	6659.74	14.51	3.750	0.26(0.25)	0.99		1902.3	113.11
17	6658.77	14.53	3.746	0.26(0.25)	0.99		1903.7	112.11
18	6627.82	15.19	3.648	0.25(0.25)	0.99		1945.4	115.10
19	6613.91	15.49	3.606	0.25(0.25)	0.99		1964.0	145.10
20	6613.40	15.50	3.604	0.25(0.25)	0.99		1964.7	106.11
21	6514.67	15.87	3.554	0.25(0.25)	0.99		1965.1	140.10

TOTAL AREA(ACRES) = 2038.30

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 6970.36 Tc(MIN.) = 9.040
EFFECTIVE AREA(ACRES) = 1529.01 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.27 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 2038.30
LONGEST FLOWPATH FROM NODE 110.10 TO NODE 133.00 = 3007.00 FEET.

==========

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 2038.30 TC(MIN.) = 9.04
EFFECTIVE AREA(ACRES) = 1529.01 AREA-AVERAGED Fm(INCH/HR)= 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.28 AREA-AVERAGED Ap = 0.986
PEAK FLOW RATE(CFS) = 6970.36

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)		Ap	Ae (ACRES)	HEADWATER NODE
1	6454.64	7.25	5.688	0.29(0.28)	0.99		1238.5	101.30
2	6751.34	8.19	5.283	0.28(0.28)	0.99		1395.6	104.10
3	6945.26	8.87	5.039	0.28(0.28)	0.99		1506.2	100.10
4	6970.36	9.04	4.981	0.28(0.28)	0.99		1529.0	111.00
5	6854.26	10.32	4.600	0.28(0.27)	0.99		1620.7	130.10
6	6854.11	10.32	4.600	0.28(0.27)	0.99		1620.8	104.11
7	6820.15	10.78	4.481	0.27(0.27)	0.99		1652.9	101.20
8	6803.52	11.03	4.421	0.27(0.27)	0.99		1669.9	101.51
9	6774.63	11.50	4.311	0.27(0.27)	0.99		1702.6	101.11
10	6739.92	12.53	4.094	0.27(0.26)	0.99		1772.8	132.10
11	6734.50	12.69	4.064	0.26(0.26)	0.99		1783.3	110.10
12	6721.36	13.03	4.000	0.26(0.26)	0.99		1805.8	107.11
13	6699.90	13.56	3.905	0.26(0.26)	0.99		1841.0	120.10
14	6696.04	13.66	3.889	0.26(0.26)	0.99		1846.9	114.10
15	6662.86	14.44	3.761	0.26(0.25)	0.99		1897.7	145.10
16	6659.74	14.51	3.750	0.26(0.25)	0.99		1902.3	113.11
17	6658.77	14.53	3.746	0.26(0.25)	0.99		1903.7	112.11
18	6627.82	15.19	3.648	0.25(0.25)	0.99		1945.4	115.10
19	6613.91	15.49	3.606	0.25(0.25)	0.99		1964.0	145.10
20	6613.40	15.50	3.604	0.25(0.25)	0.99		1964.7	106.11
21	6514.67	15.87	3.554	0.25(0.25)	0.99		1965.1	140.10

==========

END OF RATIONAL METHOD ANALYSIS

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____________________________________________________________________________
****************************************************************************
              RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
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                           Analysis prepared by:

                         Rick Engineering Company
                      1223 University Ave., Suite 240
                        Riverside, California 92507


 ************************** DESCRIPTION OF STUDY **************************
* SPRING TRAILS TRACT 15576                                                *
* POST PROJECT CONDITION 100YR 1HR (WATERSHED #2) MIDPOINT DISCHARGE       *
* 13565C REC NCS, LAF 4-21-11                                              *
 ****************************************************************************

  FILE NAME: 565P2H.DAT
  TIME/DATE OF STUDY: 16:23 04/21/2011
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                     --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*
  10-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.100
  100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.600
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =  100.00   1-HOUR INTENSITY(INCH/HOUR) = 1.6000
  SLOPE OF INTENSITY DURATION CURVE = 0.6000

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

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  ===== ===== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
  FLOW PROCESS FROM NODE    201.10 TO NODE    201.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   520.00
  ELEVATION DATA: UPSTREAM(FEET) =   2557.00  DOWNSTREAM(FEET) =   2516.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.889
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.405
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        4.10      0.98     0.500    32    7.89
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.500
  SUBAREA RUNOFF(CFS) =     18.15
  TOTAL AREA(ACRES) =      4.10   PEAK FLOW RATE(CFS) =     18.15

****************************************************************************
  FLOW PROCESS FROM NODE    201.00 TO NODE    202.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2516.00  DOWNSTREAM ELEVATION(FEET) = 2447.00

  STREET LENGTH(FEET) =  1175.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 30.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.018
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.018

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      34.53
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.45
    HALFSTREET FLOOD WIDTH(FEET) =   16.13
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.86
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.09
  STREET FLOW TRAVEL TIME(MIN.) =   2.86   Tc(MIN.) =  10.74
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.491
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        6.60      0.98     0.500    32
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        2.40      0.75     0.500    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.91
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.500
  SUBAREA AREA(ACRES) =    9.00      SUBAREA RUNOFF(CFS) =   32.67
  EFFECTIVE AREA(ACRES) =     13.10    AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.93  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =     13.10        PEAK FLOW RATE(CFS) =      47.44

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.49   HALFSTREET FLOOD WIDTH(FEET) =  18.40
  FLOW VELOCITY(FEET/SEC.) =  7.37   DEPTH*VELOCITY(FT*FT/SEC.) =   3.62
  LONGEST FLOWPATH FROM NODE    201.10 TO NODE    202.00 =  1695.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    202.00 TO NODE   2201.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2447.00  DOWNSTREAM(FEET) =  2394.50
  FLOW LENGTH(FEET) =   405.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 24.000
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  13.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  26.39
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     47.44
  PIPE TRAVEL TIME(MIN.) =   0.26    Tc(MIN.) =  11.00
  LONGEST FLOWPATH FROM NODE    201.10 TO NODE   2201.00 =  2100.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2201.00 TO NODE   2201.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  11.00
  RAINFALL INTENSITY(INCH/HR) =   4.43
  AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.93
  AREA-AVERAGED Ap =  0.50
  EFFECTIVE STREAM AREA(ACRES) =    13.10
  TOTAL STREAM AREA(ACRES) =    13.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     47.44

****************************************************************************
  FLOW PROCESS FROM NODE    210.10 TO NODE    210.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   663.00
  ELEVATION DATA: UPSTREAM(FEET) =   2405.00  DOWNSTREAM(FEET) =   2403.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   16.698
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.447
```

```
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        2.90      0.75     0.500    56   16.70
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        3.00      0.98     0.500    32   16.70
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.500
  SUBAREA RUNOFF(CFS) =      16.01
  TOTAL AREA(ACRES) =      5.90   PEAK FLOW RATE(CFS) =     16.01

****************************************************************************
  FLOW PROCESS FROM NODE    210.00 TO NODE    211.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2403.00  DOWNSTREAM ELEVATION(FEET) = 2399.00
  STREET LENGTH(FEET) =   420.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 30.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.018
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.018

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      19.44
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.49
    HALFSTREET FLOOD WIDTH(FEET) =   18.55
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.97
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.47
  STREET FLOW TRAVEL TIME(MIN.) =   2.35   Tc(MIN.) =  19.05
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.185
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        2.30      0.98     0.500    32
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.50      0.75     0.500    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.93
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.500
  SUBAREA AREA(ACRES) =     2.80      SUBAREA RUNOFF(CFS) =     6.85
  EFFECTIVE AREA(ACRES) =      8.70    AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.89  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =      8.70        PEAK FLOW RATE(CFS) =      21.47

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.51   HALFSTREET FLOOD WIDTH(FEET) =  19.26
  FLOW VELOCITY(FEET/SEC.) =  3.06   DEPTH*VELOCITY(FT*FT/SEC.) =   1.55
  LONGEST FLOWPATH FROM NODE    210.10 TO NODE    211.00 =  1083.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    211.00 TO NODE   2201.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2395.00  DOWNSTREAM(FEET) =  2394.50
  FLOW LENGTH(FEET) =    60.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  17.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.66
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     21.47
  PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =  19.18
  LONGEST FLOWPATH FROM NODE    210.10 TO NODE   2201.00 =  1143.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2201.00 TO NODE   2201.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  19.18
  RAINFALL INTENSITY(INCH/HR) =   3.17
  AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.89
  AREA-AVERAGED Ap =  0.50
  EFFECTIVE STREAM AREA(ACRES) =     8.70
  TOTAL STREAM AREA(ACRES) =     8.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     21.47

  ** CONFLUENCE DATA **
   STREAM     Q      Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     47.44  11.00    4.428  0.93( 0.47) 0.50    13.1     201.10
      2     21.47  19.18    3.172  0.89( 0.44) 0.50     8.7     210.10

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

  ** PEAK FLOW RATE TABLE **
   STREAM     Q      Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     65.42  11.00    4.428  0.92( 0.46) 0.50    18.1     201.10
      2     53.86  19.18    3.172  0.91( 0.46) 0.50    21.8     210.10

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     65.42    Tc(MIN.) =    11.00
  EFFECTIVE AREA(ACRES) =    18.09   AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.92  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =     21.80
  LONGEST FLOWPATH FROM NODE    201.10 TO NODE   2201.00 =  2100.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2201.00 TO NODE   2202.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2394.50  DOWNSTREAM(FEET) =  2394.00
  FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  26.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.64
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     65.42
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =  11.06
  LONGEST FLOWPATH FROM NODE    201.10 TO NODE   2202.00 =  2140.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2202.00 TO NODE   2203.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2394.00  DOWNSTREAM(FEET) =   2392.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   340.00   CHANNEL SLOPE =  0.0059
  CHANNEL BASE(FEET) =   45.00   "Z" FACTOR =   4.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =   6.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.950
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                A        1.60      0.98     0.850    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.850
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     67.67
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.52
  AVERAGE FLOW DEPTH(FEET) =   0.57   TRAVEL TIME(MIN.) =   2.25
  Tc(MIN.) =  13.30
  SUBAREA AREA(ACRES) =     1.60       SUBAREA RUNOFF(CFS) =    4.50
  EFFECTIVE AREA(ACRES) =     19.69     AREA-AVERAGED Fm(INCH/HR) =   0.49
  AREA-AVERAGED Fp(INCH/HR) =   0.93  AREA-AVERAGED Ap =   0.53
  TOTAL AREA(ACRES) =     23.40         PEAK FLOW RATE(CFS) =      65.42
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.55   FLOW VELOCITY(FEET/SEC.) =   2.50
  LONGEST FLOWPATH FROM NODE    201.10 TO NODE   2203.00 =  2480.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2203.10 TO NODE   2203.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2392.00  DOWNSTREAM(FEET) =  2380.00
  FLOW LENGTH(FEET) =    90.00   MANNING'S N =  0.013
```

```
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  28.55
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     65.42
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =  13.36
  LONGEST FLOWPATH FROM NODE    201.10 TO NODE   2203.00 =  2570.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    213.00 TO NODE    213.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  13.36
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.941
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        4.60      0.86     1.000    46
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    4.60      SUBAREA RUNOFF(CFS) =   12.76
  EFFECTIVE AREA(ACRES) =     24.29   AREA-AVERAGED Fm(INCH/HR) =  0.56
  AREA-AVERAGED Fp(INCH/HR) =  0.91  AREA-AVERAGED Ap =  0.62
  TOTAL AREA(ACRES) =     28.00       PEAK FLOW RATE(CFS) =      73.90

****************************************************************************
  FLOW PROCESS FROM NODE    221.10 TO NODE    221.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   522.00
  ELEVATION DATA: UPSTREAM(FEET) =   2548.00  DOWNSTREAM(FEET) =   2480.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.969
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.011
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        5.10      0.86     1.000    46   12.97
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     14.46
  TOTAL AREA(ACRES) =      5.10   PEAK FLOW RATE(CFS) =     14.46

****************************************************************************
  FLOW PROCESS FROM NODE    221.00 TO NODE    222.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   728.00
  ELEVATION DATA: UPSTREAM(FEET) =   2480.00  DOWNSTREAM(FEET) =   2429.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   16.771
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.438
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        9.70      0.86     1.000    46   16.77
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    9.70   INITIAL SUBAREA RUNOFF(CFS) =   22.50

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  12.97
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.011
  SUBAREA AREA(ACRES) =    9.70      SUBAREA RUNOFF(CFS) =   27.51
  EFFECTIVE AREA(ACRES) =     14.80   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     14.80       PEAK FLOW RATE(CFS) =      41.97

****************************************************************************
  FLOW PROCESS FROM NODE    222.00 TO NODE    223.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2429.00  DOWNSTREAM(FEET) =  2360.00
  FLOW LENGTH(FEET) =   500.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 24.000
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  12.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  26.23
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     41.97
  PIPE TRAVEL TIME(MIN.) =   0.32    Tc(MIN.) =  13.29
  LONGEST FLOWPATH FROM NODE    221.10 TO NODE    223.00 =  1022.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    223.00 TO NODE    224.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   196.00
  ELEVATION DATA: UPSTREAM(FEET) =   2472.00  DOWNSTREAM(FEET) =   2305.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.020
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  6.357
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        2.70      0.86     1.000    46    6.02
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    2.70   INITIAL SUBAREA RUNOFF(CFS) =   13.36

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  13.29
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.953
  SUBAREA AREA(ACRES) =    2.70      SUBAREA RUNOFF(CFS) =    7.52
  EFFECTIVE AREA(ACRES) =     17.50   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     17.50       PEAK FLOW RATE(CFS) =      48.72
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =     17.50  TC(MIN.) =     13.29
  EFFECTIVE AREA(ACRES) =     17.50  AREA-AVERAGED Fm(INCH/HR)=  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap = 1.000
  PEAK FLOW RATE(CFS)   =     48.72
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
____________________________________________________________________________
****************************************************************************
              RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
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                          Analysis prepared by:

                        Rick Engineering Company
                    1223 University Ave., Suite 240
                      Riverside, California 92507


 ************************* DESCRIPTION OF STUDY **************************
* SPRING TRAILS TRACT 15576                                              *
* POST PROJECT CONDITION 100YR 1HR (WATERSHED #3) SOUTHERN DISCHARGE POINT *
* 13565C REC NCS, LAF 10-20-09,4-21-11                                   *
 **************************************************************************

  FILE NAME: 565P3H.DAT
  TIME/DATE OF STUDY: 16:43 04/21/2011
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*
  10-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.100
  100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.600
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =  100.00   1-HOUR INTENSITY(INCH/HOUR) = 1.6000
  SLOPE OF INTENSITY DURATION CURVE = 0.6000

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

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  ===== ===== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
  FLOW PROCESS FROM NODE    300.10 TO NODE    300.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   420.00
  ELEVATION DATA: UPSTREAM(FEET) =   2791.00  DOWNSTREAM(FEET) =   2750.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.940
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.837
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        2.80      0.98     0.500    32    6.94
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.500
  SUBAREA RUNOFF(CFS) =     13.48
  TOTAL AREA(ACRES) =      2.80   PEAK FLOW RATE(CFS) =     13.48

****************************************************************************
  FLOW PROCESS FROM NODE    300.00 TO NODE    301.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2750.00  DOWNSTREAM ELEVATION(FEET) = 2655.00

  STREET LENGTH(FEET) =   950.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 30.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.018
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.018

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      39.22
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.44
    HALFSTREET FLOOD WIDTH(FEET) =   15.27
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.61
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.75
  STREET FLOW TRAVEL TIME(MIN.) =   1.84   Tc(MIN.) =   8.78
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.070
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       D       11.80      0.47     0.500    75
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.47
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.500
  SUBAREA AREA(ACRES) =   11.80      SUBAREA RUNOFF(CFS) =   51.34
  EFFECTIVE AREA(ACRES) =     14.60    AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.57  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =     14.60        PEAK FLOW RATE(CFS) =      62.89

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.49   HALFSTREET FLOOD WIDTH(FEET) =  18.55
  FLOW VELOCITY(FEET/SEC.) =  9.62   DEPTH*VELOCITY(FT*FT/SEC.) =   4.75
  LONGEST FLOWPATH FROM NODE    300.10 TO NODE    301.00 =  1370.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    301.00 TO NODE   3301.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2655.00  DOWNSTREAM(FEET) =  2650.00
  FLOW LENGTH(FEET) =   50.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  17.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  25.12
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     62.89
  PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =   8.81
  LONGEST FLOWPATH FROM NODE    300.10 TO NODE   3301.00 =  1420.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3301.00 TO NODE   3301.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   8.81
  RAINFALL INTENSITY(INCH/HR) =   5.06
  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.57
  AREA-AVERAGED Ap =  0.50
  EFFECTIVE STREAM AREA(ACRES) =    14.60
  TOTAL STREAM AREA(ACRES) =    14.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     62.89

****************************************************************************
  FLOW PROCESS FROM NODE    302.10 TO NODE    302.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   750.00
  ELEVATION DATA: UPSTREAM(FEET) =   2676.00  DOWNSTREAM(FEET) =   2660.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.862
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.232
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
```

```
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        3.40      0.98     0.500    32   11.86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.500
  SUBAREA RUNOFF(CFS) =     11.46
  TOTAL AREA(ACRES) =      3.40   PEAK FLOW RATE(CFS) =     11.46

****************************************************************************
  FLOW PROCESS FROM NODE    302.00 TO NODE   3301.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2660.00  DOWNSTREAM(FEET) =  2650.00
  FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 24.000
  DEPTH OF FLOW IN  24.0 INCH PIPE IS   5.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  20.97
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     11.46
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =  11.90
  LONGEST FLOWPATH FROM NODE    302.10 TO NODE   3301.00 =   800.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3301.00 TO NODE   3301.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  11.90
  RAINFALL INTENSITY(INCH/HR) =   4.22
  AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.97
  AREA-AVERAGED Ap =  0.50
  EFFECTIVE STREAM AREA(ACRES) =     3.40
  TOTAL STREAM AREA(ACRES) =     3.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.46

  ** CONFLUENCE DATA **
   STREAM     Q      Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     62.89   8.81    5.058  0.57( 0.28) 0.50    14.6     300.10
      2     11.46  11.90    4.223  0.97( 0.49) 0.50     3.4     302.10

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

  ** PEAK FLOW RATE TABLE **
   STREAM     Q      Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     73.27   8.81    5.058  0.63( 0.31) 0.50    17.1     300.10
      2     63.35  11.90    4.223  0.64( 0.32) 0.50    18.0     302.10

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     73.27    Tc(MIN.) =     8.81
  EFFECTIVE AREA(ACRES) =    17.12   AREA-AVERAGED Fm(INCH/HR) =  0.31
  AREA-AVERAGED Fp(INCH/HR) =  0.63  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =     18.00
  LONGEST FLOWPATH FROM NODE    300.10 TO NODE   3301.00 =  1420.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3301.00 TO NODE   3301.10 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2650.00  DOWNSTREAM(FEET) =  2625.00
  FLOW LENGTH(FEET) =   272.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  18.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  25.57
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     73.27
  PIPE TRAVEL TIME(MIN.) =   0.18    Tc(MIN.) =   8.99
  LONGEST FLOWPATH FROM NODE    300.10 TO NODE   3301.10 =  1692.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3301.10 TO NODE   3301.10 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
```

```
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   8.99
  RAINFALL INTENSITY(INCH/HR) =   5.00
  AREA-AVERAGED Fm(INCH/HR) =  0.31
  AREA-AVERAGED Fp(INCH/HR) =  0.63
  AREA-AVERAGED Ap =  0.50
  EFFECTIVE STREAM AREA(ACRES) =    17.12
  TOTAL STREAM AREA(ACRES) =    18.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     73.27

****************************************************************************
  FLOW PROCESS FROM NODE    303.10 TO NODE    303.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   825.00
  ELEVATION DATA: UPSTREAM(FEET) =   2653.00  DOWNSTREAM(FEET) =   2634.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.136
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.174
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        3.40      0.98     0.500    32   12.14
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.500
  SUBAREA RUNOFF(CFS) =     11.28
  TOTAL AREA(ACRES) =      3.40   PEAK FLOW RATE(CFS) =     11.28

****************************************************************************
  FLOW PROCESS FROM NODE    303.00 TO NODE   3301.10 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2629.00  DOWNSTREAM(FEET) =  2625.00
  FLOW LENGTH(FEET) =    21.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 24.000
  DEPTH OF FLOW IN  24.0 INCH PIPE IS   5.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  20.52
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     11.28
  PIPE TRAVEL TIME(MIN.) =   0.02    Tc(MIN.) =  12.15
  LONGEST FLOWPATH FROM NODE    303.10 TO NODE   3301.10 =   846.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3301.10 TO NODE   3301.10 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  12.15
  RAINFALL INTENSITY(INCH/HR) =   4.17
  AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.97
  AREA-AVERAGED Ap =  0.50
  EFFECTIVE STREAM AREA(ACRES) =     3.40
  TOTAL STREAM AREA(ACRES) =     3.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.28

  ** CONFLUENCE DATA **
   STREAM     Q      Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     73.27   8.99    4.998  0.63( 0.31) 0.50    17.1     300.10
      1     63.35  12.09    4.184  0.64( 0.32) 0.50    18.0     302.10
      2     11.28  12.15    4.171  0.97( 0.49) 0.50     3.4     303.10

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

  ** PEAK FLOW RATE TABLE **
   STREAM     Q      Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     83.49   8.99    4.998  0.67( 0.34) 0.50    19.6     300.10
      2     74.61  12.09    4.184  0.70( 0.35) 0.50    21.4     302.10
      3     74.41  12.15    4.171  0.70( 0.35) 0.50    21.4     303.10

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
```

```
  PEAK FLOW RATE(CFS) =     83.49    Tc(MIN.) =     8.99
  EFFECTIVE AREA(ACRES) =    19.63   AREA-AVERAGED Fm(INCH/HR) =  0.34
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =     21.40
  LONGEST FLOWPATH FROM NODE    300.10 TO NODE   3301.10 =  1692.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3301.10 TO NODE   3302.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2625.00  DOWNSTREAM(FEET) =  2600.00
  FLOW LENGTH(FEET) =   227.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  18.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  28.19
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     83.49
  PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =   9.12
  LONGEST FLOWPATH FROM NODE    300.10 TO NODE   3302.00 =  1919.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3302.00 TO NODE   3302.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.12
  RAINFALL INTENSITY(INCH/HR) =   4.95
  AREA-AVERAGED Fm(INCH/HR) =  0.34
  AREA-AVERAGED Fp(INCH/HR) =  0.67
  AREA-AVERAGED Ap =  0.50
  EFFECTIVE STREAM AREA(ACRES) =    19.63
  TOTAL STREAM AREA(ACRES) =    21.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     83.49

****************************************************************************
  FLOW PROCESS FROM NODE    304.10 TO NODE    304.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   950.00
  ELEVATION DATA: UPSTREAM(FEET) =   2615.00  DOWNSTREAM(FEET) =   2607.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   15.702
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.576
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"        A        5.10      0.98     0.500    32   15.70
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.500
  SUBAREA RUNOFF(CFS) =     14.18
  TOTAL AREA(ACRES) =      5.10   PEAK FLOW RATE(CFS) =     14.18

****************************************************************************
  FLOW PROCESS FROM NODE    304.00 TO NODE   3302.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2607.00  DOWNSTREAM(FEET) =  2600.00
  FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 24.000
  DEPTH OF FLOW IN  24.0 INCH PIPE IS   6.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  19.63
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     14.18
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =  15.74
  LONGEST FLOWPATH FROM NODE    304.10 TO NODE   3302.00 =  1000.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3302.00 TO NODE   3302.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  15.74
  RAINFALL INTENSITY(INCH/HR) =   3.57
  AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.97
  AREA-AVERAGED Ap =  0.50
  EFFECTIVE STREAM AREA(ACRES) =     5.10
  TOTAL STREAM AREA(ACRES) =     5.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     14.18

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     83.49   9.12    4.954  0.67( 0.34) 0.50    19.6     300.10
      1     74.61  12.23    4.156  0.70( 0.35) 0.50    21.4     302.10
      1     74.41  12.29    4.143  0.70( 0.35) 0.50    21.4     303.10
      2     14.18  15.74    3.570  0.97( 0.49) 0.50     5.1     304.10

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

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     95.39   9.12    4.954  0.71( 0.36) 0.50    22.6     300.10
      2     87.71  12.23    4.156  0.74( 0.37) 0.50    25.3     302.10
      3     87.54  12.29    4.143  0.74( 0.37) 0.50    25.4     303.10
      4     77.37  15.74    3.570  0.75( 0.38) 0.50    26.5     304.10

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     95.39    Tc(MIN.) =     9.12
  EFFECTIVE AREA(ACRES) =    22.59   AREA-AVERAGED Fm(INCH/HR) =  0.36
  AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =     26.50
  LONGEST FLOWPATH FROM NODE    300.10 TO NODE   3302.00 =  1919.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3302.00 TO NODE   3303.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2600.00  DOWNSTREAM(FEET) =  2575.00
  FLOW LENGTH(FEET) =   245.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  21.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  27.65
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     95.39
  PIPE TRAVEL TIME(MIN.) =   0.15    Tc(MIN.) =   9.27
  LONGEST FLOWPATH FROM NODE    300.10 TO NODE   3303.00 =  2164.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3303.00 TO NODE   3303.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.27
  RAINFALL INTENSITY(INCH/HR) =   4.91
  AREA-AVERAGED Fm(INCH/HR) =  0.36
  AREA-AVERAGED Fp(INCH/HR) =  0.71
  AREA-AVERAGED Ap =  0.50
  EFFECTIVE STREAM AREA(ACRES) =    22.59
  TOTAL STREAM AREA(ACRES) =    26.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     95.39

****************************************************************************
  FLOW PROCESS FROM NODE    301.00 TO NODE    305.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   744.00
  ELEVATION DATA: UPSTREAM(FEET) =   2655.00  DOWNSTREAM(FEET) =   2580.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.667
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.108
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"        A        3.20      0.98     0.500    32    8.67
```

```
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.500
  SUBAREA RUNOFF(CFS) =     13.31
  TOTAL AREA(ACRES) =      3.20   PEAK FLOW RATE(CFS) =     13.31

****************************************************************************
  FLOW PROCESS FROM NODE    303.00 TO NODE   3303.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2580.00  DOWNSTREAM(FEET) =  2575.00
  FLOW LENGTH(FEET) =    25.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 24.000
  DEPTH OF FLOW IN  24.0 INCH PIPE IS   6.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  21.90
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     13.31
  PIPE TRAVEL TIME(MIN.) =   0.02    Tc(MIN.) =   8.69
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE   3303.00 =   769.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3303.00 TO NODE   3303.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   8.69
  RAINFALL INTENSITY(INCH/HR) =   5.10
  AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.98
  AREA-AVERAGED Ap =  0.50
  EFFECTIVE STREAM AREA(ACRES) =     3.20
  TOTAL STREAM AREA(ACRES) =     3.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     13.31

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     95.39   9.27    4.906  0.71( 0.36) 0.50    22.6     300.10
      1     87.71  12.37    4.126  0.74( 0.37) 0.50    25.3     302.10
      1     87.54  12.44    4.113  0.74( 0.37) 0.50    25.4     303.10
      1     77.37  15.90    3.550  0.75( 0.38) 0.50    26.5     304.10
      2     13.31   8.69    5.102  0.98( 0.49) 0.50     3.2     301.00

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

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    106.52   8.69    5.102  0.75( 0.37) 0.50    24.4     301.00
      2    108.13   9.27    4.906  0.74( 0.37) 0.50    25.8     300.10
      3     98.20  12.37    4.126  0.77( 0.38) 0.50    28.5     302.10
      4     97.99  12.44    4.113  0.77( 0.38) 0.50    28.6     303.10
      5     86.20  15.90    3.550  0.77( 0.39) 0.50    29.7     304.10

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    108.13    Tc(MIN.) =     9.27
  EFFECTIVE AREA(ACRES) =    25.79   AREA-AVERAGED Fm(INCH/HR) =  0.37
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =     29.70
  LONGEST FLOWPATH FROM NODE    300.10 TO NODE   3303.00 =  2164.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3303.00 TO NODE   3304.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2575.00  DOWNSTREAM(FEET) =  2500.00
  FLOW LENGTH(FEET) =   880.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  22.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  26.99
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    108.13
  PIPE TRAVEL TIME(MIN.) =   0.54    Tc(MIN.) =   9.81
  LONGEST FLOWPATH FROM NODE    300.10 TO NODE   3304.00 =  3044.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3304.00 TO NODE   3304.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.81
  RAINFALL INTENSITY(INCH/HR) =   4.74
  AREA-AVERAGED Fm(INCH/HR) =  0.37
  AREA-AVERAGED Fp(INCH/HR) =  0.74
  AREA-AVERAGED Ap =  0.50
  EFFECTIVE STREAM AREA(ACRES) =    25.79
  TOTAL STREAM AREA(ACRES) =    29.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    108.13

****************************************************************************
  FLOW PROCESS FROM NODE    305.11 TO NODE    305.10 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   950.00
  ELEVATION DATA: UPSTREAM(FEET) =   2588.00  DOWNSTREAM(FEET) =   2515.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.091
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.663
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        4.00      0.98     0.500    32   10.09
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.500
  SUBAREA RUNOFF(CFS) =     15.03
  TOTAL AREA(ACRES) =      4.00   PEAK FLOW RATE(CFS) =     15.03

****************************************************************************
  FLOW PROCESS FROM NODE    305.10 TO NODE    305.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2575.00  DOWNSTREAM ELEVATION(FEET) = 2512.00
  STREET LENGTH(FEET) =   880.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 30.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.018
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.018

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      25.11
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.40
    HALFSTREET FLOOD WIDTH(FEET) =   13.55
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.84
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.77
  STREET FLOW TRAVEL TIME(MIN.) =   2.14   Tc(MIN.) =  12.23
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.154
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        6.10      0.98     0.500    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.500
  SUBAREA AREA(ACRES) =    6.10      SUBAREA RUNOFF(CFS) =   20.13
  EFFECTIVE AREA(ACRES) =     10.10    AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =     10.10        PEAK FLOW RATE(CFS) =      33.33

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.44   HALFSTREET FLOOD WIDTH(FEET) =  15.27
  FLOW VELOCITY(FEET/SEC.) =  7.32   DEPTH*VELOCITY(FT*FT/SEC.) =   3.19
  LONGEST FLOWPATH FROM NODE    305.11 TO NODE    305.00 =  1830.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    305.00 TO NODE   3304.00 IS CODE =  31
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2512.00  DOWNSTREAM(FEET) =  2500.00
  FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 24.000
  DEPTH OF FLOW IN  24.0 INCH PIPE IS   9.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  30.29
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     33.33
  PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =  12.26
  LONGEST FLOWPATH FROM NODE    305.11 TO NODE   3304.00 =  1880.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3304.00 TO NODE   3304.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  12.26
  RAINFALL INTENSITY(INCH/HR) =   4.15
  AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.97
  AREA-AVERAGED Ap =  0.50
  EFFECTIVE STREAM AREA(ACRES) =    10.10
  TOTAL STREAM AREA(ACRES) =    10.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     33.33

****************************************************************************
  FLOW PROCESS FROM NODE    306.10 TO NODE    306.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   938.00
  ELEVATION DATA: UPSTREAM(FEET) =   2532.00  DOWNSTREAM(FEET) =   2509.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.616
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.078
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        4.70      0.98     0.500    32   12.62
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.500
  SUBAREA RUNOFF(CFS) =     15.19
  TOTAL AREA(ACRES) =      4.70   PEAK FLOW RATE(CFS) =     15.19

****************************************************************************
  FLOW PROCESS FROM NODE    306.00 TO NODE   3304.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2509.00  DOWNSTREAM(FEET) =  2500.00
  FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 24.000
  DEPTH OF FLOW IN  24.0 INCH PIPE IS   6.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  21.91
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     15.19
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =  12.65
  LONGEST FLOWPATH FROM NODE    306.10 TO NODE   3304.00 =   988.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3304.00 TO NODE   3304.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =  12.65
  RAINFALL INTENSITY(INCH/HR) =   4.07
  AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.98
  AREA-AVERAGED Ap =  0.50
  EFFECTIVE STREAM AREA(ACRES) =     4.70
  TOTAL STREAM AREA(ACRES) =     4.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     15.19

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    106.52   9.23    4.919  0.75( 0.37) 0.50    24.4     301.00
      1    108.13   9.81    4.741  0.74( 0.37) 0.50    25.8     300.10
      1     98.20  12.93    4.019  0.77( 0.38) 0.50    28.5     302.10
      1     97.99  12.99    4.007  0.77( 0.38) 0.50    28.6     303.10
      1     86.20  16.48    3.474  0.77( 0.39) 0.50    29.7     304.10
      2     33.33  12.26    4.149  0.97( 0.49) 0.50    10.1     305.11
      3     15.19  12.65    4.071  0.98( 0.49) 0.50     4.7     306.10

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

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    150.59   9.23    4.919  0.82( 0.41) 0.50    35.4     301.00
      2    153.11   9.81    4.741  0.82( 0.41) 0.50    37.5     300.10
      3    148.69  12.26    4.149  0.83( 0.42) 0.50    42.6     305.11
      4    146.89  12.65    4.071  0.84( 0.42) 0.50    43.1     306.10
      5    145.33  12.93    4.019  0.84( 0.42) 0.50    43.3     302.10
      6    144.96  12.99    4.007  0.84( 0.42) 0.50    43.4     303.10
      7    126.06  16.48    3.474  0.84( 0.42) 0.50    44.5     304.10

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    153.11    Tc(MIN.) =     9.81
  EFFECTIVE AREA(ACRES) =    37.52   AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.82  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =     44.50
  LONGEST FLOWPATH FROM NODE    300.10 TO NODE   3304.00 =  3044.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3304.00 TO NODE   3306.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2500.00  DOWNSTREAM(FEET) =  2390.00
  FLOW LENGTH(FEET) =  1350.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  24.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  29.32
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    153.11
  PIPE TRAVEL TIME(MIN.) =   0.77    Tc(MIN.) =  10.58
  LONGEST FLOWPATH FROM NODE    300.10 TO NODE   3306.00 =  4394.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3306.00 TO NODE   3306.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  10.58
  RAINFALL INTENSITY(INCH/HR) =   4.53
  AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.82
  AREA-AVERAGED Ap =  0.50
  EFFECTIVE STREAM AREA(ACRES) =    37.52
  TOTAL STREAM AREA(ACRES) =    44.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    153.11

****************************************************************************
  FLOW PROCESS FROM NODE    307.11 TO NODE    307.10 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   644.00
  ELEVATION DATA: UPSTREAM(FEET) =   2489.00  DOWNSTREAM(FEET) =   2461.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.679
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.781
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        3.50      0.98     0.500    32    9.68
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.500
```

```
  SUBAREA RUNOFF(CFS) =     13.52
  TOTAL AREA(ACRES) =      3.50   PEAK FLOW RATE(CFS) =     13.52

****************************************************************************
  FLOW PROCESS FROM NODE    307.10 TO NODE    307.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2461.00  DOWNSTREAM ELEVATION(FEET) = 2395.00
  STREET LENGTH(FEET) =   795.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 30.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.018
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.018

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      23.50
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.39
    HALFSTREET FLOOD WIDTH(FEET) =   12.77
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.12
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.78
  STREET FLOW TRAVEL TIME(MIN.) =   1.86   Tc(MIN.) =  11.54
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.302
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        5.80      0.98     0.500    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.500
  SUBAREA AREA(ACRES) =    5.80      SUBAREA RUNOFF(CFS) =   19.91
  EFFECTIVE AREA(ACRES) =      9.30    AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =      9.30        PEAK FLOW RATE(CFS) =      31.93

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.42   HALFSTREET FLOOD WIDTH(FEET) =  14.57
  FLOW VELOCITY(FEET/SEC.) =  7.64   DEPTH*VELOCITY(FT*FT/SEC.) =   3.23
  LONGEST FLOWPATH FROM NODE    307.11 TO NODE    307.00 =  1439.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    307.00 TO NODE   3306.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2395.00  DOWNSTREAM(FEET) =  2390.00
  FLOW LENGTH(FEET) =    25.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 24.000
  DEPTH OF FLOW IN  24.0 INCH PIPE IS   9.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  28.01
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     31.93
  PIPE TRAVEL TIME(MIN.) =   0.01    Tc(MIN.) =  11.56
  LONGEST FLOWPATH FROM NODE    307.11 TO NODE   3306.00 =  1464.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3306.00 TO NODE   3306.00 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.) =  11.56
  RAINFALL INTENSITY(INCH/HR) =   4.30
  AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.97
  AREA-AVERAGED Ap =  0.50
  EFFECTIVE STREAM AREA(ACRES) =     9.30
  TOTAL STREAM AREA(ACRES) =     9.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     31.93

****************************************************************************
  FLOW PROCESS FROM NODE    308.10 TO NODE    308.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   821.00
  ELEVATION DATA: UPSTREAM(FEET) =   2450.00  DOWNSTREAM(FEET) =   2397.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.856
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.729
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        6.20      0.75     0.500    56    9.86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.500
  SUBAREA RUNOFF(CFS) =     24.30
  TOTAL AREA(ACRES) =      6.20   PEAK FLOW RATE(CFS) =     24.30

****************************************************************************
  FLOW PROCESS FROM NODE    308.00 TO NODE   3306.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2397.00  DOWNSTREAM(FEET) =  2390.00
  FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 24.000
  DEPTH OF FLOW IN  24.0 INCH PIPE IS   8.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  22.84
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     24.30
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =   9.89
  LONGEST FLOWPATH FROM NODE    308.10 TO NODE   3306.00 =   871.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3306.00 TO NODE   3306.00 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.) =   9.89
  RAINFALL INTENSITY(INCH/HR) =   4.72
  AREA-AVERAGED Fm(INCH/HR) =  0.37
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.50
  EFFECTIVE STREAM AREA(ACRES) =     6.20
  TOTAL STREAM AREA(ACRES) =     6.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     24.30

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    150.59  10.00    4.688  0.82( 0.41) 0.50    35.4     301.00
      1    153.11  10.58    4.532  0.82( 0.41) 0.50    37.5     300.10
      1    148.69  13.03    3.999  0.83( 0.42) 0.50    42.6     305.11
      1    146.89  13.45    3.924  0.84( 0.42) 0.50    43.1     306.10
      1    145.33  13.72    3.878  0.84( 0.42) 0.50    43.3     302.10
      1    144.96  13.79    3.867  0.84( 0.42) 0.50    43.4     303.10
      1    126.06  17.29    3.376  0.84( 0.42) 0.50    44.5     304.10
      2     31.93  11.56    4.299  0.97( 0.49) 0.50     9.3     307.11
      3     24.30   9.89    4.719  0.75( 0.37) 0.50     6.2     308.10

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

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    204.68   9.89    4.719  0.83( 0.42) 0.50    49.2     308.10
      2    205.18  10.00    4.688  0.83( 0.42) 0.50    49.6     301.00
      3    207.39  10.58    4.532  0.83( 0.42) 0.50    52.2     300.10
      4    205.23  11.56    4.299  0.84( 0.42) 0.50    55.0     307.11
      5    198.39  13.03    3.999  0.85( 0.42) 0.50    58.1     305.11
      6    195.54  13.45    3.924  0.85( 0.42) 0.50    58.6     306.10
      7    193.32  13.72    3.878  0.85( 0.42) 0.50    58.8     302.10
      8    192.80  13.79    3.867  0.85( 0.42) 0.50    58.9     303.10
      9    167.05  17.29    3.376  0.85( 0.43) 0.50    60.0     304.10

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    207.39    Tc(MIN.) =    10.58
  EFFECTIVE AREA(ACRES) =    52.23   AREA-AVERAGED Fm(INCH/HR) =  0.42
```

```
  AREA-AVERAGED Fp(INCH/HR) =  0.83  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =     60.00
  LONGEST FLOWPATH FROM NODE    300.10 TO NODE   3306.00 =  4394.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3306.00 TO NODE   3307.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2390.00  DOWNSTREAM(FEET) =  2324.00
  FLOW LENGTH(FEET) =   464.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  25.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  38.90
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    207.39
  PIPE TRAVEL TIME(MIN.) =   0.20    Tc(MIN.) =  10.78
  LONGEST FLOWPATH FROM NODE    300.10 TO NODE   3307.00 =  4858.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3307.00 TO NODE   3307.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  10.78
  RAINFALL INTENSITY(INCH/HR) =   4.48
  AREA-AVERAGED Fm(INCH/HR) =  0.42
  AREA-AVERAGED Fp(INCH/HR) =  0.83
  AREA-AVERAGED Ap =  0.50
  EFFECTIVE STREAM AREA(ACRES) =    52.23
  TOTAL STREAM AREA(ACRES) =    60.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    207.39

****************************************************************************
  FLOW PROCESS FROM NODE    330.10 TO NODE    330.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   930.00
  ELEVATION DATA: UPSTREAM(FEET) =   2401.00  DOWNSTREAM(FEET) =   2339.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.293
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.608
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"        A        6.00      0.98     0.500    32   10.29
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"        B        1.90      0.75     0.500    56   10.29
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.92
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.500
  SUBAREA RUNOFF(CFS) =     29.49
  TOTAL AREA(ACRES) =      7.90   PEAK FLOW RATE(CFS) =     29.49

****************************************************************************
  FLOW PROCESS FROM NODE    307.00 TO NODE    331.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2395.00  DOWNSTREAM ELEVATION(FEET) = 2330.00
  STREET LENGTH(FEET) =   470.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 30.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.018
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.018

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      30.94
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.39
    HALFSTREET FLOOD WIDTH(FEET) =   12.85
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.27
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.63
  STREET FLOW TRAVEL TIME(MIN.) =   0.85   Tc(MIN.) =  11.14
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.395
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"        B        0.80      0.75     0.500    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.500
  SUBAREA AREA(ACRES) =     0.80     SUBAREA RUNOFF(CFS) =    2.89
  EFFECTIVE AREA(ACRES) =      8.70    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.90  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =      8.70        PEAK FLOW RATE(CFS) =      30.87

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.39   HALFSTREET FLOOD WIDTH(FEET) =  12.85
  FLOW VELOCITY(FEET/SEC.) =  9.25   DEPTH*VELOCITY(FT*FT/SEC.) =   3.63
  LONGEST FLOWPATH FROM NODE    330.10 TO NODE    331.00 =  1400.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3307.00 TO NODE   3307.00 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.) =  11.14
  RAINFALL INTENSITY(INCH/HR) =   4.39
  AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.90
  AREA-AVERAGED Ap =  0.50
  EFFECTIVE STREAM AREA(ACRES) =     8.70
  TOTAL STREAM AREA(ACRES) =     8.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     30.87

****************************************************************************
  FLOW PROCESS FROM NODE    331.10 TO NODE   3307.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   650.00
  ELEVATION DATA: UPSTREAM(FEET) =   2344.00  DOWNSTREAM(FEET) =   2339.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.737
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.875
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"        B        4.70      0.75     0.500    56   13.74
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.500
  SUBAREA RUNOFF(CFS) =     14.81
  TOTAL AREA(ACRES) =      4.70   PEAK FLOW RATE(CFS) =     14.81

****************************************************************************
  FLOW PROCESS FROM NODE    330.00 TO NODE   3307.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2324.50  DOWNSTREAM(FEET) =  2324.00
  FLOW LENGTH(FEET) =    30.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 24.000
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  12.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.15
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     14.81
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =  13.79
  LONGEST FLOWPATH FROM NODE    331.10 TO NODE   3307.00 =   680.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3307.00 TO NODE   3307.00 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.) =  13.79
```

```
RAINFALL INTENSITY(INCH/HR) =   3.87
AREA-AVERAGED Fm(INCH/HR) =  0.37
AREA-AVERAGED Fp(INCH/HR) =  0.75
AREA-AVERAGED Ap =  0.50
EFFECTIVE STREAM AREA(ACRES) =     4.70
TOTAL STREAM AREA(ACRES) =     4.70
PEAK FLOW RATE(CFS) AT CONFLUENCE =     14.81

** CONFLUENCE DATA **
 STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
    1    204.68  10.09    4.663  0.83( 0.42) 0.50    49.2     308.10
    1    205.18  10.20    4.633  0.83( 0.42) 0.50    49.6     301.00
    1    207.39  10.78    4.482  0.83( 0.42) 0.50    52.2     300.10
    1    205.23  11.75    4.255  0.84( 0.42) 0.50    55.0     307.11
    1    198.39  13.23    3.963  0.85( 0.42) 0.50    58.1     305.11
    1    195.54  13.65    3.890  0.85( 0.42) 0.50    58.6     306.10
    1    193.32  13.93    3.843  0.85( 0.42) 0.50    58.8     302.10
    1    192.80  13.99    3.832  0.85( 0.42) 0.50    58.9     303.10
    1    167.05  17.50    3.352  0.85( 0.43) 0.50    60.0     304.10
    2     30.87  11.14    4.395  0.90( 0.45) 0.50     8.7     330.10
    3     14.81  13.79    3.866  0.75( 0.37) 0.50     4.7     331.10

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

** PEAK FLOW RATE TABLE **
 STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
    1    247.86  10.09    4.663  0.84( 0.42) 0.50    60.5     308.10
    2    248.51  10.20    4.633  0.84( 0.42) 0.50    61.1     301.00
    3    251.54  10.78    4.482  0.84( 0.42) 0.50    64.3     300.10
    4    251.24  11.14    4.395  0.84( 0.42) 0.50    65.8     330.10
    5    249.03  11.75    4.255  0.84( 0.42) 0.50    67.7     307.11
    6    240.48  13.23    3.963  0.85( 0.42) 0.50    71.3     305.11
    7    237.21  13.65    3.890  0.85( 0.42) 0.50    72.0     306.10
    8    235.96  13.79    3.866  0.85( 0.42) 0.50    72.1     331.10
    9    234.58  13.93    3.843  0.85( 0.42) 0.50    72.2     302.10
   10    233.93  13.99    3.832  0.85( 0.42) 0.50    72.3     303.10
   11    202.38  17.50    3.352  0.85( 0.43) 0.50    73.4     304.10

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =    251.54    Tc(MIN.) =    10.78
EFFECTIVE AREA(ACRES) =    64.33   AREA-AVERAGED Fm(INCH/HR) =  0.42
AREA-AVERAGED Fp(INCH/HR) =  0.84  AREA-AVERAGED Ap =  0.50
TOTAL AREA(ACRES) =    73.40
LONGEST FLOWPATH FROM NODE    300.10 TO NODE   3307.00 =  4858.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   3307.00 TO NODE   3308.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =  2324.00  DOWNSTREAM(FEET) =  2240.00
FLOW LENGTH(FEET) =   800.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  39.0 INCH PIPE IS  30.8 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =  35.81
ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =    251.54
PIPE TRAVEL TIME(MIN.) =   0.37    Tc(MIN.) =  11.15
LONGEST FLOWPATH FROM NODE    300.10 TO NODE   3308.00 =  5658.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    340.00 TO NODE    340.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =  11.15
RAINFALL INTENSITY(INCH/HR) =   4.39
AREA-AVERAGED Fm(INCH/HR) =  0.42
AREA-AVERAGED Fp(INCH/HR) =  0.84
AREA-AVERAGED Ap =  0.50
EFFECTIVE STREAM AREA(ACRES) =    64.33
TOTAL STREAM AREA(ACRES) =    73.40
PEAK FLOW RATE(CFS) AT CONFLUENCE =    251.54

****************************************************************************
FLOW PROCESS FROM NODE    340.10 TO NODE    340.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
INITIAL SUBAREA FLOW-LENGTH(FEET) =   304.00
ELEVATION DATA: UPSTREAM(FEET) =   2262.00  DOWNSTREAM(FEET) =   2245.00

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.817
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.900
SUBAREA Tc AND LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
RESIDENTIAL
"5-7 DWELLINGS/ACRE"       A        2.50      0.98     0.500    32    6.82
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.500
SUBAREA RUNOFF(CFS) =     12.18
TOTAL AREA(ACRES) =      2.50   PEAK FLOW RATE(CFS) =     12.18

****************************************************************************
FLOW PROCESS FROM NODE    340.00 TO NODE   3308.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =  2243.00  DOWNSTREAM(FEET) =  2240.00
FLOW LENGTH(FEET) =    30.00   MANNING'S N =  0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 24.000
DEPTH OF FLOW IN  24.0 INCH PIPE IS   6.8 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =  16.67
ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =     12.18
PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =   6.85
LONGEST FLOWPATH FROM NODE    340.10 TO NODE   3308.00 =   334.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   3308.00 TO NODE   3308.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =   6.85
RAINFALL INTENSITY(INCH/HR) =   5.88
AREA-AVERAGED Fm(INCH/HR) =  0.49
AREA-AVERAGED Fp(INCH/HR) =  0.98
AREA-AVERAGED Ap =  0.50
EFFECTIVE STREAM AREA(ACRES) =     2.50
TOTAL STREAM AREA(ACRES) =     2.50
PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.18

** CONFLUENCE DATA **
 STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
    1    247.86  10.46    4.562  0.84( 0.42) 0.50    60.5     308.10
    1    248.51  10.57    4.534  0.84( 0.42) 0.50    61.1     301.00
    1    251.54  11.15    4.391  0.84( 0.42) 0.50    64.3     300.10
    1    251.24  11.51    4.309  0.84( 0.42) 0.50    65.8     330.10
    1    249.03  12.13    4.176  0.84( 0.42) 0.50    67.7     307.11
    1    240.48  13.61    3.897  0.85( 0.42) 0.50    71.3     305.11
    1    237.21  14.03    3.827  0.85( 0.42) 0.50    72.0     306.10
    1    235.96  14.17    3.804  0.85( 0.42) 0.50    72.1     331.10
    1    234.58  14.30    3.782  0.85( 0.42) 0.50    72.2     302.10
    1    233.93  14.37    3.772  0.85( 0.42) 0.50    72.3     303.10
    1    202.38  17.89    3.307  0.85( 0.43) 0.50    73.4     304.10
    2     12.18   6.85    5.885  0.98( 0.49) 0.50     2.5     340.10

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

** PEAK FLOW RATE TABLE **
 STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
    1    226.11   6.85    5.885  0.85( 0.42) 0.50    42.1     340.10
    2    257.06  10.46    4.562  0.84( 0.42) 0.50    63.0     308.10
    3    257.64  10.57    4.534  0.84( 0.42) 0.50    63.6     301.00
    4    260.35  11.15    4.391  0.84( 0.42) 0.50    66.8     300.10
    5    259.86  11.51    4.309  0.85( 0.42) 0.50    68.3     330.10
    6    257.36  12.13    4.176  0.85( 0.42) 0.50    70.2     307.11
    7    248.17  13.61    3.897  0.85( 0.43) 0.50    73.8     305.11
    8    244.75  14.03    3.827  0.85( 0.43) 0.50    74.5     306.10
    9    243.44  14.17    3.804  0.85( 0.43) 0.50    74.6     331.10
   10    242.02  14.30    3.782  0.85( 0.43) 0.50    74.7     302.10
```

```
    11    241.35  14.37    3.772  0.85( 0.43) 0.50    74.8     303.10
    12    208.74  17.89    3.307  0.86( 0.43) 0.50    75.9     304.10

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    260.35    Tc(MIN.) =    11.15
  EFFECTIVE AREA(ACRES) =    66.83   AREA-AVERAGED Fm(INCH/HR) =  0.42
  AREA-AVERAGED Fp(INCH/HR) =  0.84  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =      75.90
  LONGEST FLOWPATH FROM NODE    300.10 TO NODE   3308.00 =  5658.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3308.00 TO NODE   3309.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2240.00  DOWNSTREAM(FEET) =  2114.00
  FLOW LENGTH(FEET) =  1085.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  30.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  37.62
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    260.35
  PIPE TRAVEL TIME(MIN.) =   0.48    Tc(MIN.) =  11.63
  LONGEST FLOWPATH FROM NODE    300.10 TO NODE   3309.00 =  6743.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3309.00 TO NODE   3309.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  11.63
  RAINFALL INTENSITY(INCH/HR) =   4.28
  AREA-AVERAGED Fm(INCH/HR) =  0.42
  AREA-AVERAGED Fp(INCH/HR) =  0.84
  AREA-AVERAGED Ap =  0.50
  EFFECTIVE STREAM AREA(ACRES) =    66.83
  TOTAL STREAM AREA(ACRES) =    75.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    260.35

****************************************************************************
  FLOW PROCESS FROM NODE    340.00 TO NODE    342.10 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   304.00
  ELEVATION DATA: UPSTREAM(FEET) =   2245.00  DOWNSTREAM(FEET) =   2110.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.000
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  7.106
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        1.40      0.98     0.500    32    5.00
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.500
  SUBAREA RUNOFF(CFS) =      8.34
  TOTAL AREA(ACRES) =      1.40   PEAK FLOW RATE(CFS) =      8.34

****************************************************************************
  FLOW PROCESS FROM NODE    342.10 TO NODE    341.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2220.00  DOWNSTREAM ELEVATION(FEET) = 2120.00
  STREET LENGTH(FEET) =   825.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 30.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.018
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.018

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)   =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      24.25

    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.38
    HALFSTREET FLOOD WIDTH(FEET) =   11.91
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.30
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.11
  STREET FLOW TRAVEL TIME(MIN.) =   1.66   Tc(MIN.) =   6.66
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.985
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        6.40      0.98     0.500    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.500
  SUBAREA AREA(ACRES) =    6.40      SUBAREA RUNOFF(CFS) =   31.66
  EFFECTIVE AREA(ACRES) =      7.80    AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =      7.80        PEAK FLOW RATE(CFS) =      38.59

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.42   HALFSTREET FLOOD WIDTH(FEET) =  14.57
  FLOW VELOCITY(FEET/SEC.) =  9.23   DEPTH*VELOCITY(FT*FT/SEC.) =   3.90
  LONGEST FLOWPATH FROM NODE    340.00 TO NODE    341.00 =  1129.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    341.00 TO NODE   3309.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2115.00  DOWNSTREAM(FEET) =  2114.00
  FLOW LENGTH(FEET) =    70.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  20.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.83
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     38.59
  PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =   6.76
  LONGEST FLOWPATH FROM NODE    340.00 TO NODE   3309.00 =  1199.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3309.00 TO NODE   3309.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   6.76
  RAINFALL INTENSITY(INCH/HR) =   5.93
  AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.97
  AREA-AVERAGED Ap =  0.50
  EFFECTIVE STREAM AREA(ACRES) =      7.80
  TOTAL STREAM AREA(ACRES) =     7.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     38.59

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    226.11   7.34    5.646  0.85( 0.42) 0.50    42.1     340.10
      1    257.06  10.95    4.441  0.84( 0.42) 0.50    63.0     308.10
      1    257.64  11.05    4.415  0.84( 0.42) 0.50    63.6     301.00
      1    260.35  11.63    4.281  0.84( 0.42) 0.50    66.8     300.10
      1    259.86  11.99    4.204  0.85( 0.42) 0.50    68.3     330.10
      1    257.36  12.61    4.079  0.85( 0.42) 0.50    70.2     307.11
      1    248.17  14.09    3.817  0.85( 0.43) 0.50    73.8     305.11
      1    244.75  14.51    3.750  0.85( 0.43) 0.50    74.5     306.10
      1    243.44  14.65    3.728  0.85( 0.43) 0.50    74.6     331.10
      1    242.02  14.79    3.707  0.85( 0.43) 0.50    74.7     302.10
      1    241.35  14.85    3.698  0.85( 0.43) 0.50    74.8     303.10
      1    208.74  18.40    3.252  0.86( 0.43) 0.50    75.9     304.10
      2     38.59   6.76    5.927  0.97( 0.49) 0.50     7.8     340.00

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

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    258.32   6.76    5.927  0.87( 0.43) 0.50    46.6     340.00
      2    262.70   7.34    5.646  0.87( 0.43) 0.50    49.9     340.10
      3    285.10  10.95    4.441  0.86( 0.43) 0.50    70.8     308.10
      4    285.50  11.05    4.415  0.86( 0.43) 0.50    71.4     301.00
```

```
     5    287.27  11.63    4.281  0.86( 0.43) 0.50    74.6     300.10
     6    286.23  11.99    4.204  0.86( 0.43) 0.50    76.1     330.10
     7    282.84  12.61    4.079  0.86( 0.43) 0.50    78.0     307.11
     8    271.79  14.09    3.817  0.86( 0.43) 0.50    81.6     305.11
     9    267.89  14.51    3.750  0.87( 0.43) 0.50    82.3     306.10
    10    266.43  14.65    3.728  0.87( 0.43) 0.50    82.4     331.10
    11    264.86  14.79    3.707  0.87( 0.43) 0.50    82.5     302.10
    12    264.12  14.85    3.698  0.87( 0.43) 0.50    82.6     303.10
    13    228.35  18.40    3.252  0.87( 0.43) 0.50    83.7     304.10

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    287.27    Tc(MIN.) =    11.63
  EFFECTIVE AREA(ACRES) =    74.63   AREA-AVERAGED Fm(INCH/HR) =  0.43
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =      83.70
  LONGEST FLOWPATH FROM NODE    300.10 TO NODE   3309.00 =  6743.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3309.00 TO NODE   3310.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2114.00  DOWNSTREAM(FEET) =  2096.00
  FLOW LENGTH(FEET) =   350.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  48.0 INCH PIPE IS  35.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  28.61
  ESTIMATED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    287.27
  PIPE TRAVEL TIME(MIN.) =   0.20    Tc(MIN.) =  11.84
  LONGEST FLOWPATH FROM NODE    300.10 TO NODE   3310.00 =  7093.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3310.00 TO NODE   3311.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2096.00  DOWNSTREAM(FEET) =   2093.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   600.00   CHANNEL SLOPE =  0.0050
  CHANNEL BASE(FEET) =  150.00   "Z" FACTOR =   4.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =   6.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.603
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                A       4.90      0.98      0.850    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.850
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    293.39
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.72
  AVERAGE FLOW DEPTH(FEET) =   0.70   TRAVEL TIME(MIN.) =   3.67
  Tc(MIN.) =  15.51
  SUBAREA AREA(ACRES) =     4.90       SUBAREA RUNOFF(CFS) =   12.24
  EFFECTIVE AREA(ACRES) =     79.53     AREA-AVERAGED Fm(INCH/HR) =   0.45
  AREA-AVERAGED Fp(INCH/HR) =   0.87  AREA-AVERAGED Ap =   0.52
  TOTAL AREA(ACRES) =     88.60          PEAK FLOW RATE(CFS) =     287.27
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.69   FLOW VELOCITY(FEET/SEC.) =   2.72
  LONGEST FLOWPATH FROM NODE    300.10 TO NODE   3311.00 =  7693.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3311.00 TO NODE   3325.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2093.00  DOWNSTREAM(FEET) =  2052.00
  FLOW LENGTH(FEET) =   210.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  26.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  47.71
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    287.27
  PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =  15.58
  LONGEST FLOWPATH FROM NODE    300.10 TO NODE   3325.00 =  7903.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3325.00 TO NODE   3325.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    319.11 TO NODE    319.10 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   200.00
  ELEVATION DATA: UPSTREAM(FEET) =   3285.00  DOWNSTREAM(FEET) =   3160.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =     6.457
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  6.095
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                D        1.90      0.33     1.000    83    6.46
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      9.87
  TOTAL AREA(ACRES) =      1.90   PEAK FLOW RATE(CFS) =      9.87

****************************************************************************
  FLOW PROCESS FROM NODE    319.10 TO NODE    319.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   561.00
  ELEVATION DATA: UPSTREAM(FEET) =   3160.00  DOWNSTREAM(FEET) =   2800.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.703
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.774
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        1.70      0.86     1.000    46    9.70
  NATURAL FAIR COVER
  "OPEN BRUSH"                D        5.10      0.33     1.000    83    9.70
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.46
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    6.80   INITIAL SUBAREA RUNOFF(CFS) =   26.40

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =   6.46
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  6.095
  SUBAREA AREA(ACRES) =    6.80      SUBAREA RUNOFF(CFS) =   34.49
  EFFECTIVE AREA(ACRES) =      8.70   AREA-AVERAGED Fm(INCH/HR) =  0.43
  AREA-AVERAGED Fp(INCH/HR) =  0.43  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      8.70       PEAK FLOW RATE(CFS) =      44.36

****************************************************************************
  FLOW PROCESS FROM NODE    319.00 TO NODE    320.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   903.00
  ELEVATION DATA: UPSTREAM(FEET) =   2800.00  DOWNSTREAM(FEET) =   2620.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   14.831
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.701
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A       13.50      0.86     1.000    46   14.83
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        3.50      0.61     1.000    66   14.83
  NATURAL FAIR COVER
  "OPEN BRUSH"                D        1.80      0.33     1.000    83   14.83
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.76
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   18.80   INITIAL SUBAREA RUNOFF(CFS) =   49.71

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =   6.46
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  6.095
  SUBAREA AREA(ACRES) =   18.80      SUBAREA RUNOFF(CFS) =   90.22
```

```
  EFFECTIVE AREA(ACRES) =     27.50   AREA-AVERAGED Fm(INCH/HR) =  0.66
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     27.50       PEAK FLOW RATE(CFS) =     134.57

****************************************************************************
  FLOW PROCESS FROM NODE    320.00 TO NODE    320.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   6.46
  RAINFALL INTENSITY(INCH/HR) =   6.10
  AREA-AVERAGED Fm(INCH/HR) =  0.66
  AREA-AVERAGED Fp(INCH/HR) =  0.66
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =    27.50
  TOTAL STREAM AREA(ACRES) =    27.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    134.57

****************************************************************************
  FLOW PROCESS FROM NODE    310.11 TO NODE    310.10 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   624.00
  ELEVATION DATA: UPSTREAM(FEET) =   3080.00  DOWNSTREAM(FEET) =   2825.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.082
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.408
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               D        2.90      0.33     1.000    83   11.08
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     10.65
  TOTAL AREA(ACRES) =      2.90   PEAK FLOW RATE(CFS) =     10.65

****************************************************************************
  FLOW PROCESS FROM NODE    310.10 TO NODE    310.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   817.00
  ELEVATION DATA: UPSTREAM(FEET) =   2825.00  DOWNSTREAM(FEET) =   2695.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   14.906
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.690
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               A       11.80      0.86     1.000    46   14.91
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   11.80   INITIAL SUBAREA RUNOFF(CFS) =   30.05

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  11.08
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.408
  SUBAREA AREA(ACRES) =   11.80      SUBAREA RUNOFF(CFS) =   37.68
  EFFECTIVE AREA(ACRES) =     14.70   AREA-AVERAGED Fm(INCH/HR) =  0.75
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     14.70       PEAK FLOW RATE(CFS) =      48.33

****************************************************************************
  FLOW PROCESS FROM NODE    310.00 TO NODE    320.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) = 32698.00  DOWNSTREAM(FEET) =  2620.00
  FLOW LENGTH(FEET) =   390.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 24.000
  DEPTH OF FLOW IN  24.0 INCH PIPE IS   2.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) = 260.91
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     48.33
  PIPE TRAVEL TIME(MIN.) =   0.02    Tc(MIN.) =  11.11
  LONGEST FLOWPATH FROM NODE    310.11 TO NODE    320.00 =  1014.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    320.00 TO NODE    320.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  11.11
  RAINFALL INTENSITY(INCH/HR) =   4.40
  AREA-AVERAGED Fm(INCH/HR) =  0.75
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =    14.70
  TOTAL STREAM AREA(ACRES) =    14.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     48.33

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    134.57   6.46    6.095  0.66( 0.66) 1.00    27.5     319.11
      2     48.33  11.11    4.402  0.75( 0.75) 1.00    14.7     310.11

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

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    175.72   6.46    6.095  0.68( 0.68) 1.00    36.0     319.11
      2    141.01  11.11    4.402  0.69( 0.69) 1.00    42.2     310.11

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    175.72    Tc(MIN.) =     6.46
  EFFECTIVE AREA(ACRES) =    36.05   AREA-AVERAGED Fm(INCH/HR) =  0.68
  AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     42.20
  LONGEST FLOWPATH FROM NODE    310.11 TO NODE    320.00 =  1014.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    320.00 TO NODE    321.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1087.00
  ELEVATION DATA: UPSTREAM(FEET) =   2620.00  DOWNSTREAM(FEET) =   2478.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   17.381
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.365
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        6.50      0.86     1.000    46   17.38
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    6.50   INITIAL SUBAREA RUNOFF(CFS) =   14.65

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =   6.46
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  6.095
  SUBAREA AREA(ACRES) =    6.50      SUBAREA RUNOFF(CFS) =   30.63
  EFFECTIVE AREA(ACRES) =     42.55   AREA-AVERAGED Fm(INCH/HR) =  0.71
  AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     48.70       PEAK FLOW RATE(CFS) =     206.28

****************************************************************************
  FLOW PROCESS FROM NODE    321.00 TO NODE    321.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   6.46
  RAINFALL INTENSITY(INCH/HR) =   6.10
  AREA-AVERAGED Fm(INCH/HR) =  0.71
  AREA-AVERAGED Fp(INCH/HR) =  0.71
```

```
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =    42.55
  TOTAL STREAM AREA(ACRES) =    48.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    206.28

****************************************************************************
  FLOW PROCESS FROM NODE    321.11 TO NODE    321.10 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   452.00
  ELEVATION DATA: UPSTREAM(FEET) =   3400.00  DOWNSTREAM(FEET) =   3120.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.963
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.007
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                D        2.50      0.33     1.000    83    8.96
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     10.53
  TOTAL AREA(ACRES) =      2.50   PEAK FLOW RATE(CFS) =     10.53

****************************************************************************
  FLOW PROCESS FROM NODE    321.11 TO NODE    321.20 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   627.00
  ELEVATION DATA: UPSTREAM(FEET) =   3120.00  DOWNSTREAM(FEET) =   2840.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.908
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.450
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                D        7.00      0.33     1.000    83   10.91
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    7.00   INITIAL SUBAREA RUNOFF(CFS) =   25.98

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =   8.96
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.007
  SUBAREA AREA(ACRES) =    7.00      SUBAREA RUNOFF(CFS) =   29.49
  EFFECTIVE AREA(ACRES) =      9.50   AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.33  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      9.50       PEAK FLOW RATE(CFS) =      40.02

****************************************************************************
  FLOW PROCESS FROM NODE    321.20 TO NODE    321.30 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   742.00
  ELEVATION DATA: UPSTREAM(FEET) =   2840.00  DOWNSTREAM(FEET) =   2720.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   14.296
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.783
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        8.90      0.61     1.000    66   14.30
  NATURAL FAIR COVER
  "OPEN BRUSH"                D        1.50      0.33     1.000    83   14.30
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.57
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   10.40   INITIAL SUBAREA RUNOFF(CFS) =   30.05

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =   8.96
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.007
  SUBAREA AREA(ACRES) =   10.40      SUBAREA RUNOFF(CFS) =   41.50
  EFFECTIVE AREA(ACRES) =     19.90   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.45  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     19.90       PEAK FLOW RATE(CFS) =      81.52

****************************************************************************
  FLOW PROCESS FROM NODE    321.30 TO NODE    321.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1525.00
  ELEVATION DATA: UPSTREAM(FEET) =   2720.00  DOWNSTREAM(FEET) =   2478.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   19.143
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.175
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A       14.30      0.86     1.000    46   19.14
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   14.30   INITIAL SUBAREA RUNOFF(CFS) =   29.80

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =   8.96
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.007
  SUBAREA AREA(ACRES) =   14.30      SUBAREA RUNOFF(CFS) =   53.37
  EFFECTIVE AREA(ACRES) =     34.20   AREA-AVERAGED Fm(INCH/HR) =  0.62
  AREA-AVERAGED Fp(INCH/HR) =  0.62  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     34.20       PEAK FLOW RATE(CFS) =     134.89

****************************************************************************
  FLOW PROCESS FROM NODE    321.00 TO NODE    321.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   8.96
  RAINFALL INTENSITY(INCH/HR) =   5.01
  AREA-AVERAGED Fm(INCH/HR) =  0.62
  AREA-AVERAGED Fp(INCH/HR) =  0.62
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =    34.20
  TOTAL STREAM AREA(ACRES) =    34.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    134.89

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    206.28   6.46    6.095  0.71( 0.71) 1.00    42.5     319.11
      1    161.65  11.11    4.402  0.71( 0.71) 1.00    48.7     310.11
      2    134.89   8.96    5.007  0.62( 0.62) 1.00    34.2     321.11

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

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    327.59   6.46    6.095  0.68( 0.68) 1.00    67.2     319.11
      2    317.11   8.96    5.007  0.67( 0.67) 1.00    80.1     321.11
      3    277.93  11.11    4.402  0.68( 0.68) 1.00    82.9     310.11

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    327.59    Tc(MIN.) =     6.46
  EFFECTIVE AREA(ACRES) =    67.18   AREA-AVERAGED Fm(INCH/HR) =  0.68
  AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     82.90
  LONGEST FLOWPATH FROM NODE    310.11 TO NODE    321.00 =  1014.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    321.00 TO NODE    322.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1202.00
  ELEVATION DATA: UPSTREAM(FEET) =   2478.00  DOWNSTREAM(FEET) =   2360.00
```

```
  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   19.159
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.174
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        7.00      0.86     1.000    46   19.16
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        4.00      0.61     1.000    66   19.16
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.77
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   11.00   INITIAL SUBAREA RUNOFF(CFS) =   23.79

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =   6.46
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  6.095
  SUBAREA AREA(ACRES) =   11.00      SUBAREA RUNOFF(CFS) =   52.71
  EFFECTIVE AREA(ACRES) =     78.18   AREA-AVERAGED Fm(INCH/HR) =  0.69
  AREA-AVERAGED Fp(INCH/HR) =  0.69  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     93.90       PEAK FLOW RATE(CFS) =     380.31

****************************************************************************
  FLOW PROCESS FROM NODE    322.00 TO NODE    323.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   242.00
  ELEVATION DATA: UPSTREAM(FEET) =   2360.00  DOWNSTREAM(FEET) =   2330.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.631
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.795
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.30      0.61     1.000    66    9.63
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    2.30   INITIAL SUBAREA RUNOFF(CFS) =    8.66

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =   6.46
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  6.095
  SUBAREA AREA(ACRES) =    2.30      SUBAREA RUNOFF(CFS) =   11.35
  EFFECTIVE AREA(ACRES) =     80.48   AREA-AVERAGED Fm(INCH/HR) =  0.69
  AREA-AVERAGED Fp(INCH/HR) =  0.69  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     96.20       PEAK FLOW RATE(CFS) =     391.65

****************************************************************************
  FLOW PROCESS FROM NODE    323.00 TO NODE    324.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2330.00  DOWNSTREAM(FEET) =  2228.00
  FLOW LENGTH(FEET) =   590.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  33.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  48.26
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    391.65
  PIPE TRAVEL TIME(MIN.) =   0.20    Tc(MIN.) =   6.66
  LONGEST FLOWPATH FROM NODE    310.11 TO NODE    324.00 =  1604.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    324.00 TO NODE    324.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   6.66
  RAINFALL INTENSITY(INCH/HR) =   5.98
  AREA-AVERAGED Fm(INCH/HR) =  0.69
  AREA-AVERAGED Fp(INCH/HR) =  0.69
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =    80.48
  TOTAL STREAM AREA(ACRES) =    96.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    391.65

****************************************************************************
  FLOW PROCESS FROM NODE    324.11 TO NODE    324.10 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   527.00
  ELEVATION DATA: UPSTREAM(FEET) =   2394.00  DOWNSTREAM(FEET) =   2286.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.891
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.226
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        3.00      0.86     1.000    46   11.89
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      9.09
  TOTAL AREA(ACRES) =      3.00   PEAK FLOW RATE(CFS) =      9.09

****************************************************************************
  FLOW PROCESS FROM NODE    324.10 TO NODE    324.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2286.00  DOWNSTREAM(FEET) =  2228.00
  FLOW LENGTH(FEET) =   185.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 24.000
  DEPTH OF FLOW IN  24.0 INCH PIPE IS   4.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  22.97
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      9.09
  PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =  12.02
  LONGEST FLOWPATH FROM NODE    324.11 TO NODE    324.00 =   712.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    324.00 TO NODE    324.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  12.02
  RAINFALL INTENSITY(INCH/HR) =   4.20
  AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =     3.00
  TOTAL STREAM AREA(ACRES) =     3.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.09

****************************************************************************
  FLOW PROCESS FROM NODE    324.10 TO NODE    324.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   525.00
  ELEVATION DATA: UPSTREAM(FEET) =   2330.00  DOWNSTREAM(FEET) =   2228.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.210
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.277
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  PUBLIC PARK                A        1.80      0.98     0.850    32    8.21
  PUBLIC PARK                B        1.00      0.75     0.850    56    8.21
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.89
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.850
  SUBAREA RUNOFF(CFS) =     11.38
  TOTAL AREA(ACRES) =      2.80   PEAK FLOW RATE(CFS) =     11.38

****************************************************************************
  FLOW PROCESS FROM NODE    324.00 TO NODE    324.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
```

```
  TIME OF CONCENTRATION(MIN.) =   8.21
  RAINFALL INTENSITY(INCH/HR) =   5.28
  AREA-AVERAGED Fm(INCH/HR) =  0.76
  AREA-AVERAGED Fp(INCH/HR) =  0.89
  AREA-AVERAGED Ap =  0.85
  EFFECTIVE STREAM AREA(ACRES) =     2.80
  TOTAL STREAM AREA(ACRES) =     2.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.38

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    391.65   6.66    5.983  0.69( 0.69) 1.00    80.5     319.11
      1    363.21   9.17    4.939  0.68( 0.68) 1.00    93.4     321.11
      1    321.73  11.32    4.352  0.69( 0.69) 1.00    96.2     310.11
      2      9.09  12.02    4.197  0.86( 0.86) 1.00     3.0     324.11
      3     11.38   8.21    5.277  0.89( 0.76) 0.85     2.8     324.10

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

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    410.06   6.66    5.983  0.70( 0.69) 1.00    84.4     319.11
      2    393.65   8.21    5.277  0.69( 0.69) 1.00    93.3     324.10
      3    382.21   9.17    4.939  0.69( 0.69) 1.00    98.5     321.11
      4    339.73  11.32    4.352  0.70( 0.69) 1.00   101.8     310.11
      5    325.89  12.02    4.197  0.70( 0.69) 1.00   102.0     324.11

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    410.06    Tc(MIN.) =     6.66
  EFFECTIVE AREA(ACRES) =    84.42   AREA-AVERAGED Fm(INCH/HR) =  0.69
  AREA-AVERAGED Fp(INCH/HR) =  0.70  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    102.00
  LONGEST FLOWPATH FROM NODE    310.11 TO NODE    324.00 =  1604.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    324.00 TO NODE    325.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1503.00
  ELEVATION DATA: UPSTREAM(FEET) =   2228.00  DOWNSTREAM(FEET) =   2060.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   20.414
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.055
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                 A       14.50      0.86     1.000    46   20.41
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   14.50   INITIAL SUBAREA RUNOFF(CFS) =   28.65

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =   6.66
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.983
  SUBAREA AREA(ACRES) =   14.50      SUBAREA RUNOFF(CFS) =   66.85
  EFFECTIVE AREA(ACRES) =     98.92   AREA-AVERAGED Fm(INCH/HR) =  0.72
  AREA-AVERAGED Fp(INCH/HR) =  0.72  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    116.50       PEAK FLOW RATE(CFS) =     468.69

****************************************************************************
  FLOW PROCESS FROM NODE    325.00 TO NODE   3325.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2060.00  DOWNSTREAM(FEET) =  2052.00
  FLOW LENGTH(FEET) =    94.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  51.0 INCH PIPE IS  40.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  38.57
  ESTIMATED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    468.69
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =   6.70
  LONGEST FLOWPATH FROM NODE    310.11 TO NODE   3325.00 =  1698.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3325.00 TO NODE   3325.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    468.69   6.70    5.961  0.72( 0.72) 1.00    98.9     319.11
      2    442.65   8.25    5.262  0.72( 0.71) 1.00   107.8     324.10
      3    429.69   9.21    4.926  0.71( 0.71) 1.00   113.0     321.11
      4    380.88  11.36    4.342  0.72( 0.71) 1.00   116.3     310.11
      5    365.21  12.07    4.188  0.72( 0.71) 1.00   116.5     324.11
  LONGEST FLOWPATH FROM NODE    310.11 TO NODE   3325.00 =  1698.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    258.32  10.84    4.467  0.88( 0.47) 0.53    51.5     340.00
      2    262.70  11.40    4.334  0.88( 0.47) 0.53    54.8     340.10
      3    285.10  14.89    3.692  0.87( 0.45) 0.52    75.7     308.10
      4    285.50  14.99    3.677  0.87( 0.45) 0.52    76.3     301.00
      5    287.27  15.58    3.593  0.87( 0.45) 0.52    79.5     300.10
      6    286.23  15.93    3.546  0.87( 0.45) 0.52    81.0     330.10
      7    282.84  16.58    3.462  0.87( 0.45) 0.52    82.9     307.11
      8    271.79  18.13    3.281  0.87( 0.45) 0.52    86.5     305.11
      9    267.89  18.56    3.235  0.88( 0.45) 0.52    87.2     306.10
     10    266.43  18.69    3.221  0.88( 0.45) 0.52    87.3     331.10
     11    264.86  18.85    3.205  0.88( 0.45) 0.52    87.4     302.10
     12    264.12  18.93    3.197  0.88( 0.45) 0.52    87.5     303.10
     13    228.35  22.70    2.867  0.88( 0.46) 0.52    88.6     304.10
  LONGEST FLOWPATH FROM NODE    300.10 TO NODE   3325.00 =  7903.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    688.12   6.70    5.961  0.74( 0.66) 0.88   130.8     319.11
      2    678.39   8.25    5.262  0.74( 0.65) 0.87   147.0     324.10
      3    674.37   9.21    4.926  0.74( 0.64) 0.87   156.7     321.11
      4    651.08  10.84    4.467  0.75( 0.64) 0.85   167.0     340.00
      5    643.32  11.36    4.342  0.75( 0.64) 0.85   170.9     310.11
      6    642.82  11.40    4.334  0.75( 0.64) 0.85   171.1     340.10
      7    632.21  12.07    4.188  0.75( 0.63) 0.84   175.3     324.11
      8    598.15  14.89    3.692  0.76( 0.61) 0.81   192.2     308.10
      9    596.95  14.99    3.677  0.76( 0.61) 0.81   192.8     301.00
     10    589.89  15.58    3.593  0.76( 0.61) 0.80   196.0     300.10
     11    583.92  15.93    3.546  0.76( 0.61) 0.80   197.5     330.10
     12    571.66  16.58    3.462  0.76( 0.61) 0.80   199.4     307.11
     13    541.63  18.13    3.281  0.76( 0.60) 0.79   203.0     305.11
     14    532.88  18.56    3.235  0.76( 0.60) 0.79   203.7     306.10
     15    529.95  18.69    3.221  0.76( 0.60) 0.79   203.8     331.10
     16    526.65  18.85    3.205  0.76( 0.60) 0.79   203.9     302.10
     17    525.11  18.93    3.197  0.76( 0.60) 0.79   204.0     303.10
     18    454.63  22.70    2.867  0.76( 0.60) 0.79   205.1     304.10
    TOTAL AREA(ACRES) =    205.10

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      688.12  Tc(MIN.) =    6.702
  EFFECTIVE AREA(ACRES) =    130.76  AREA-AVERAGED Fm(INCH/HR) =  0.66
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.88
  TOTAL AREA(ACRES) =    205.10
  LONGEST FLOWPATH FROM NODE    300.10 TO NODE   3325.00 =  7903.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3325.00 TO NODE    326.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2052.00  DOWNSTREAM(FEET) =  2046.00
  FLOW LENGTH(FEET) =    93.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  63.0 INCH PIPE IS  48.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  38.56
  ESTIMATED PIPE DIAMETER(INCH) =  63.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    688.12
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =   6.74
  LONGEST FLOWPATH FROM NODE    300.10 TO NODE    326.00 =  7996.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    326.00 TO NODE    327.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
```

```
INITIAL SUBAREA FLOW-LENGTH(FEET) =   325.00
ELEVATION DATA: UPSTREAM(FEET) =   2046.00  DOWNSTREAM(FEET) =   2019.50

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.784
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.249
SUBAREA Tc AND LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
NATURAL FAIR COVER
"OPEN BRUSH"                A        3.00      0.86     1.000    46   11.78
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
SUBAREA AREA(ACRES) =    3.00   INITIAL SUBAREA RUNOFF(CFS) =    9.15

** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
MAINLINE Tc(MIN) =   6.74
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.939
SUBAREA AREA(ACRES) =    3.00      SUBAREA RUNOFF(CFS) =   13.71
EFFECTIVE AREA(ACRES) =    133.76   AREA-AVERAGED Fm(INCH/HR) =  0.66
AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.89
TOTAL AREA(ACRES) =    208.10       PEAK FLOW RATE(CFS) =     688.12
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
============================================================================
END OF STUDY SUMMARY:
TOTAL AREA(ACRES)     =    208.10  TC(MIN.) =      6.74
EFFECTIVE AREA(ACRES) =    133.76  AREA-AVERAGED Fm(INCH/HR)=  0.66
AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap = 0.886
PEAK FLOW RATE(CFS)   =    688.12

** PEAK FLOW RATE TABLE **
 STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
    1    688.12   6.74    5.939  0.75( 0.66) 0.89   133.8     319.11
    2    678.39   8.29    5.246  0.75( 0.65) 0.88   150.0     324.10
    3    674.37   9.25    4.913  0.75( 0.65) 0.87   159.7     321.11
    4    651.08  10.88    4.457  0.75( 0.64) 0.86   170.0     340.00
    5    643.32  11.40    4.333  0.75( 0.64) 0.85   173.9     310.11
    6    642.82  11.44    4.325  0.75( 0.64) 0.85   174.1     340.10
    7    632.21  12.11    4.180  0.75( 0.63) 0.84   178.3     324.11
    8    598.15  14.93    3.686  0.76( 0.62) 0.81   195.2     308.10
    9    596.95  15.03    3.671  0.76( 0.62) 0.81   195.8     301.00
   10    589.89  15.62    3.587  0.76( 0.61) 0.81   199.0     300.10
   11    583.92  15.97    3.540  0.76( 0.61) 0.80   200.5     330.10
   12    571.66  16.62    3.456  0.76( 0.61) 0.80   202.4     307.11
   13    541.63  18.17    3.276  0.76( 0.61) 0.80   206.0     305.11
   14    532.88  18.60    3.230  0.76( 0.61) 0.80   206.7     306.10
   15    529.95  18.74    3.217  0.76( 0.61) 0.80   206.8     331.10
   16    526.65  18.90    3.200  0.76( 0.61) 0.79   206.9     302.10
   17    525.11  18.97    3.193  0.76( 0.61) 0.79   207.0     303.10
   18    454.63  22.75    2.863  0.76( 0.61) 0.79   208.1     304.10
============================================================================
============================================================================
END OF RATIONAL METHOD ANALYSIS
```

```
____________________________________________________________________________
****************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
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                           Analysis prepared by:

                          Rick Engineering Company
                      1223 University Ave., Suite 240
                        Riverside, California 92507


 ************************* DESCRIPTION OF STUDY *************************
* SPRING TRAILS POST-PROJECT CONDITION HYDROLOGY 100YR 1HR                *
* REC 13565C LAF 10-20-09,4-21-11                                         *
* MEYERS CREEK                                                            *
 ****************************************************************************

  FILE NAME: 565PMCH.DAT
  TIME/DATE OF STUDY: 17:01 04/21/2011
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*
  10-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.100
  100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.600
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =  100.00   1-HOUR INTENSITY(INCH/HOUR) = 1.6000
  SLOPE OF INTENSITY DURATION CURVE = 0.6000

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

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
  FLOW PROCESS FROM NODE    901.10 TO NODE    901.20 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   962.00
  ELEVATION DATA: UPSTREAM(FEET) =   4340.00  DOWNSTREAM(FEET) =   3800.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.366
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.127
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                D        8.30      0.33     1.000    83   12.37
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     28.40
  TOTAL AREA(ACRES) =      8.30   PEAK FLOW RATE(CFS) =     28.40

****************************************************************************
  FLOW PROCESS FROM NODE    901.00 TO NODE    902.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   722.00
  ELEVATION DATA: UPSTREAM(FEET) =   3800.00  DOWNSTREAM(FEET) =   3400.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.054
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.415
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                D       12.80      0.33     1.000    83   11.05
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   12.80   INITIAL SUBAREA RUNOFF(CFS) =   47.10

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  12.37
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.127
  SUBAREA AREA(ACRES) =   12.80      SUBAREA RUNOFF(CFS) =   43.79
  EFFECTIVE AREA(ACRES) =     21.10   AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.33  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     21.10       PEAK FLOW RATE(CFS) =      72.19

****************************************************************************
  FLOW PROCESS FROM NODE    902.00 TO NODE    903.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1759.00
  ELEVATION DATA: UPSTREAM(FEET) =   3400.00  DOWNSTREAM(FEET) =   2760.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   17.168
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.390
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                D       59.30      0.33     1.000    83   17.17
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   59.30   INITIAL SUBAREA RUNOFF(CFS) =  163.51

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  12.37
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.127
  SUBAREA AREA(ACRES) =   59.30      SUBAREA RUNOFF(CFS) =  202.88
  EFFECTIVE AREA(ACRES) =     80.40   AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.33  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     80.40       PEAK FLOW RATE(CFS) =     275.07
```
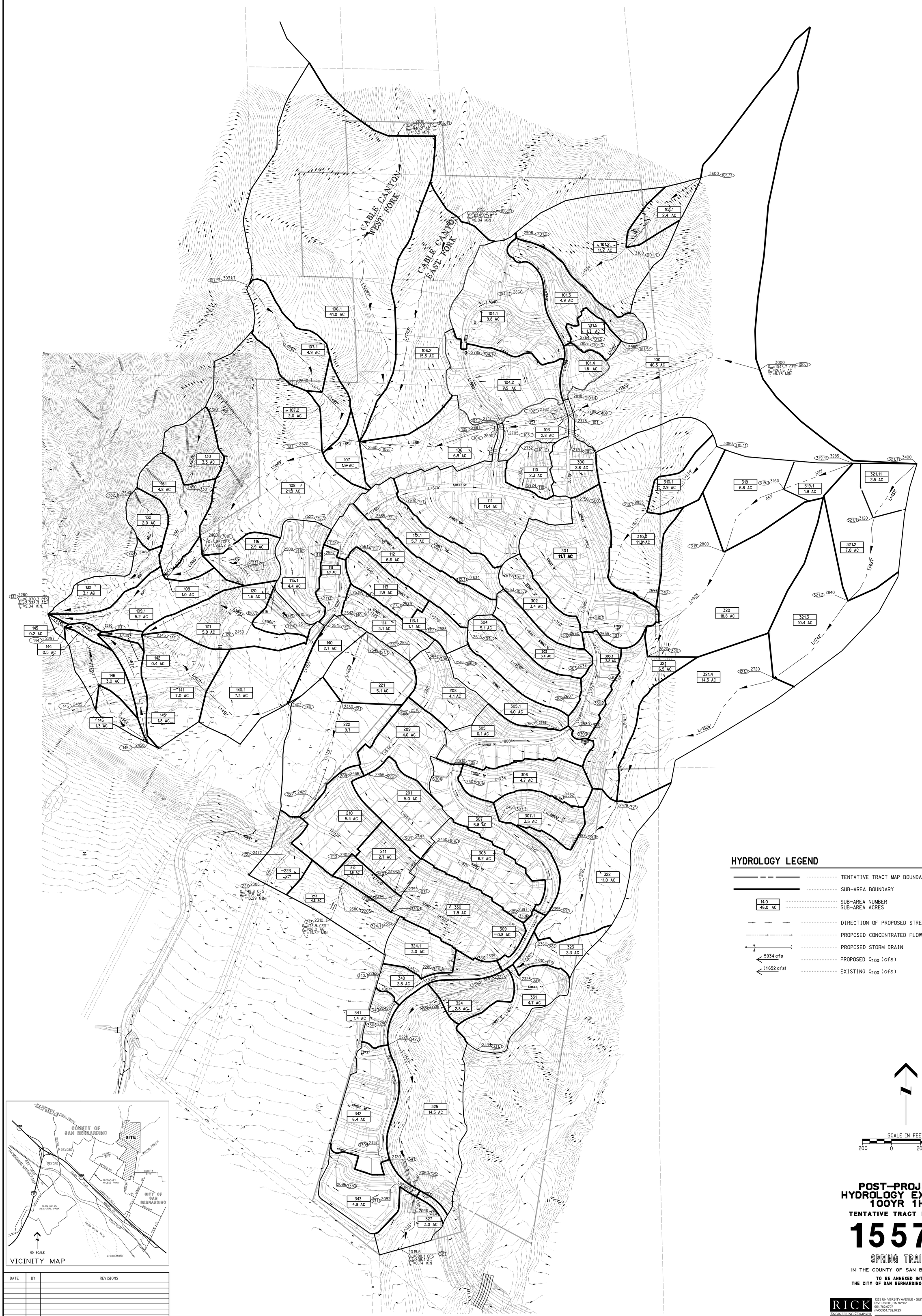

```
****************************************************************************
  FLOW PROCESS FROM NODE    903.00 TO NODE    904.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  3822.00
  ELEVATION DATA: UPSTREAM(FEET) =   2760.00  DOWNSTREAM(FEET) =   2110.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   27.264
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.568
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       41.40      0.61     1.000    66   27.26
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        8.00      0.86     1.000    46   27.26
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.65
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   49.40   INITIAL SUBAREA RUNOFF(CFS) =   85.12

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  12.37
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.127
  SUBAREA AREA(ACRES) =   49.40      SUBAREA RUNOFF(CFS) =  154.43
  EFFECTIVE AREA(ACRES) =    129.80   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.45  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    129.80       PEAK FLOW RATE(CFS) =     429.50

****************************************************************************
  FLOW PROCESS FROM NODE    904.00 TO NODE    904.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    905.10 TO NODE    905.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1127.00
  ELEVATION DATA: UPSTREAM(FEET) =   3480.00  DOWNSTREAM(FEET) =   2880.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.315
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.948
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               D        7.60      0.33     1.000    83   13.31
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     24.78
  TOTAL AREA(ACRES) =      7.60   PEAK FLOW RATE(CFS) =     24.78

****************************************************************************
  FLOW PROCESS FROM NODE    905.00 TO NODE    906.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1528.00
  ELEVATION DATA: UPSTREAM(FEET) =   2880.00  DOWNSTREAM(FEET) =   2640.00
  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   19.197
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.170
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       25.50      0.61     1.000    66   19.20
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        1.40      0.86     1.000    46   19.20
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.63
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   26.90   INITIAL SUBAREA RUNOFF(CFS) =   61.57

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  13.31
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.948
  SUBAREA AREA(ACRES) =   26.90      SUBAREA RUNOFF(CFS) =   80.41
  EFFECTIVE AREA(ACRES) =     34.50   AREA-AVERAGED Fm(INCH/HR) =  0.56
  AREA-AVERAGED Fp(INCH/HR) =  0.56  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     34.50       PEAK FLOW RATE(CFS) =     105.19

****************************************************************************
  FLOW PROCESS FROM NODE    906.00 TO NODE    907.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  2188.00
  ELEVATION DATA: UPSTREAM(FEET) =   2640.00  DOWNSTREAM(FEET) =   2160.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   20.729
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.027
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       31.90      0.61     1.000    66   20.73
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   31.90   INITIAL SUBAREA RUNOFF(CFS) =   69.29

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  13.31
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.948
  SUBAREA AREA(ACRES) =   31.90      SUBAREA RUNOFF(CFS) =   95.73
  EFFECTIVE AREA(ACRES) =     66.40   AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.59  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     66.40       PEAK FLOW RATE(CFS) =     200.92

****************************************************************************
  FLOW PROCESS FROM NODE    907.00 TO NODE    907.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  13.31
  RAINFALL INTENSITY(INCH/HR) =   3.95
  AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.59
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =    66.40
  TOTAL STREAM AREA(ACRES) =    66.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    200.92
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    908.10 TO NODE    908.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   941.00
  ELEVATION DATA: UPSTREAM(FEET) =   2960.00  DOWNSTREAM(FEET) =   2680.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.916
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.845
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        8.80      0.61     1.000    66   13.92
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     25.59
  TOTAL AREA(ACRES) =      8.80   PEAK FLOW RATE(CFS) =     25.59

****************************************************************************
  FLOW PROCESS FROM NODE    908.00 TO NODE    909.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   727.00
  ELEVATION DATA: UPSTREAM(FEET) =   2680.00  DOWNSTREAM(FEET) =   2520.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.332
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.945
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       23.00      0.61     1.000    66   13.33
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   23.00   INITIAL SUBAREA RUNOFF(CFS) =   68.96

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  13.92
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.845
  SUBAREA AREA(ACRES) =   23.00      SUBAREA RUNOFF(CFS) =   66.88
  EFFECTIVE AREA(ACRES) =     31.80   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.61  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     31.80       PEAK FLOW RATE(CFS) =      92.47

****************************************************************************
  FLOW PROCESS FROM NODE    909.00 TO NODE    907.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1341.00
  ELEVATION DATA: UPSTREAM(FEET) =   2480.00  DOWNSTREAM(FEET) =   2160.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   16.758
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.439
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       22.30      0.61     1.000    66   16.76
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   22.30   INITIAL SUBAREA RUNOFF(CFS) =   56.70

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  13.92
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.845
  SUBAREA AREA(ACRES) =   22.30      SUBAREA RUNOFF(CFS) =   64.85
  EFFECTIVE AREA(ACRES) =     54.10   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.61  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     54.10       PEAK FLOW RATE(CFS) =     157.32

****************************************************************************
  FLOW PROCESS FROM NODE    907.00 TO NODE    907.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  13.92
  RAINFALL INTENSITY(INCH/HR) =   3.84
  AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.61
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =    54.10
  TOTAL STREAM AREA(ACRES) =    54.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    157.32

****************************************************************************
  FLOW PROCESS FROM NODE    911.10 TO NODE    911.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1007.00
  ELEVATION DATA: UPSTREAM(FEET) =   2800.00  DOWNSTREAM(FEET) =   2560.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   14.948
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.684
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        9.40      0.61     1.000    66   14.95
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     25.97
  TOTAL AREA(ACRES) =      9.40   PEAK FLOW RATE(CFS) =     25.97

****************************************************************************
  FLOW PROCESS FROM NODE    911.00 TO NODE    907.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1954.00
  ELEVATION DATA: UPSTREAM(FEET) =   2560.00  DOWNSTREAM(FEET) =   2160.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   20.088
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.085
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
```

```
  NATURAL FAIR COVER
  "OPEN BRUSH"                B       34.50      0.61     1.000    66   20.09
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   34.50   INITIAL SUBAREA RUNOFF(CFS) =   76.72

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  14.95
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.684
  SUBAREA AREA(ACRES) =   34.50      SUBAREA RUNOFF(CFS) =   95.31
  EFFECTIVE AREA(ACRES) =     43.90   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.61  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     43.90       PEAK FLOW RATE(CFS) =     121.28

****************************************************************************
  FLOW PROCESS FROM NODE    907.00 TO NODE    907.00 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.) =  14.95
  RAINFALL INTENSITY(INCH/HR) =   3.68
  AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.61
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =    43.90
  TOTAL STREAM AREA(ACRES) =    43.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    121.28

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    200.92  13.31    3.948  0.59( 0.59) 1.00    66.4     905.10
      2    157.32  13.92    3.845  0.61( 0.61) 1.00    54.1     908.10
      3    121.28  14.95    3.684  0.61( 0.61) 1.00    43.9     911.10

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

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    473.59  13.31    3.948  0.60( 0.60) 1.00   157.3     905.10
      2    470.91  13.92    3.845  0.60( 0.60) 1.00   161.4     908.10
      3    455.83  14.95    3.684  0.60( 0.60) 1.00   164.4     911.10

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    473.59    Tc(MIN.) =    13.31
  EFFECTIVE AREA(ACRES) =   157.26   AREA-AVERAGED Fm(INCH/HR) =  0.60
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    164.40
  LONGEST FLOWPATH FROM NODE    905.10 TO NODE    907.00 =  1127.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    907.00 TO NODE    904.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   814.00
  ELEVATION DATA: UPSTREAM(FEET) =   2200.00  DOWNSTREAM(FEET) =   2100.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   15.674
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.580
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        8.50      0.61     1.000    66   15.67
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    8.50   INITIAL SUBAREA RUNOFF(CFS) =   22.69

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  13.31
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.948
  SUBAREA AREA(ACRES) =    8.50      SUBAREA RUNOFF(CFS) =   25.51
  EFFECTIVE AREA(ACRES) =    165.76   AREA-AVERAGED Fm(INCH/HR) =  0.60
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    172.90       PEAK FLOW RATE(CFS) =     499.10

****************************************************************************
  FLOW PROCESS FROM NODE    904.00 TO NODE    904.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    499.10  13.31    3.948  0.60( 0.60) 1.00   165.8     905.10
      2    495.62  13.92    3.845  0.60( 0.60) 1.00   169.9     908.10
      3    479.31  14.95    3.684  0.60( 0.60) 1.00   172.9     911.10
  LONGEST FLOWPATH FROM NODE    905.10 TO NODE    904.00 =  1127.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    429.50  12.37    4.127  0.45( 0.45) 1.00   129.8     901.10
  LONGEST FLOWPATH FROM NODE    901.10 TO NODE    904.00 =   962.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    917.85  12.37    4.127  0.53( 0.53) 1.00   283.8     901.10
      2    907.69  13.31    3.948  0.54( 0.54) 1.00   295.6     905.10
      3    892.14  13.92    3.845  0.54( 0.54) 1.00   299.7     908.10
      4    856.96  14.95    3.684  0.54( 0.54) 1.00   302.7     911.10
    TOTAL AREA(ACRES) =    302.70

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      917.85  Tc(MIN.) =   12.366
  EFFECTIVE AREA(ACRES) =    283.75  AREA-AVERAGED Fm(INCH/HR) =  0.53
  AREA-AVERAGED Fp(INCH/HR) =  0.54  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    302.70
  LONGEST FLOWPATH FROM NODE    905.10 TO NODE    904.00 =  1127.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    904.00 TO NODE    914.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   622.00
  ELEVATION DATA: UPSTREAM(FEET) =   2110.00  DOWNSTREAM(FEET) =   2065.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   15.647
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.584
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
```

```
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        9.40      0.61     1.000    66   15.65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    9.40   INITIAL SUBAREA RUNOFF(CFS) =   25.12

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  12.37
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.127
  SUBAREA AREA(ACRES) =    9.40      SUBAREA RUNOFF(CFS) =   29.72
  EFFECTIVE AREA(ACRES) =    293.15   AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.54  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    312.10       PEAK FLOW RATE(CFS) =     947.57

****************************************************************************
  FLOW PROCESS FROM NODE    914.00 TO NODE    915.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   398.00
  ELEVATION DATA: UPSTREAM(FEET) =   2065.00  DOWNSTREAM(FEET) =   2035.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.981
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.009
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                B       10.50      0.61     1.000    66   12.98
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   10.50   INITIAL SUBAREA RUNOFF(CFS) =   32.08

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  12.37
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.127
  SUBAREA AREA(ACRES) =   10.50      SUBAREA RUNOFF(CFS) =   33.20
  EFFECTIVE AREA(ACRES) =    303.65   AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.54  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    322.60       PEAK FLOW RATE(CFS) =     980.77

****************************************************************************
  FLOW PROCESS FROM NODE    915.00 TO NODE    916.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   374.00
  ELEVATION DATA: UPSTREAM(FEET) =   2036.00  DOWNSTREAM(FEET) =   2010.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.869
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.030
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        8.10      0.61     1.000    66   12.87
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    8.10   INITIAL SUBAREA RUNOFF(CFS) =   24.90

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  12.37
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.127
  SUBAREA AREA(ACRES) =    8.10      SUBAREA RUNOFF(CFS) =   25.61
  EFFECTIVE AREA(ACRES) =    311.75   AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.54  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    330.70       PEAK FLOW RATE(CFS) =    1006.38

****************************************************************************
  FLOW PROCESS FROM NODE    916.00 TO NODE    917.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   335.00
  ELEVATION DATA: UPSTREAM(FEET) =   2010.00  DOWNSTREAM(FEET) =   1990.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.695
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.063
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        7.10      0.61     1.000    66   12.69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    7.10   INITIAL SUBAREA RUNOFF(CFS) =   22.04

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  12.37
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.127
  SUBAREA AREA(ACRES) =    7.10      SUBAREA RUNOFF(CFS) =   22.45
  EFFECTIVE AREA(ACRES) =    318.85   AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.54  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    337.80       PEAK FLOW RATE(CFS) =    1028.84

****************************************************************************
  FLOW PROCESS FROM NODE    917.00 TO NODE    918.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   428.00
  ELEVATION DATA: UPSTREAM(FEET) =   1990.00  DOWNSTREAM(FEET) =   1960.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.560
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.905
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        5.50      0.61     1.000    66   13.56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    5.50   INITIAL SUBAREA RUNOFF(CFS) =   16.29

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  12.37
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.127
  SUBAREA AREA(ACRES) =    5.50      SUBAREA RUNOFF(CFS) =   17.39
  EFFECTIVE AREA(ACRES) =    324.35   AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.54  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    343.30       PEAK FLOW RATE(CFS) =    1046.23
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =    343.30  TC(MIN.) =     12.37
  EFFECTIVE AREA(ACRES) =    324.35  AREA-AVERAGED Fm(INCH/HR)=  0.54
```

```
  AREA-AVERAGED Fp(INCH/HR) =  0.54  AREA-AVERAGED Ap = 1.000
  PEAK FLOW RATE(CFS)   =   1046.23

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1   1046.23  12.37    4.127  0.54( 0.54) 1.00   324.4     901.10
      2   1029.52  13.31    3.948  0.55( 0.55) 1.00   336.2     905.10
      3   1010.20  13.92    3.845  0.55( 0.55) 1.00   340.3     908.10
      4    969.12  14.95    3.684  0.55( 0.55) 1.00   343.3     911.10
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```



DATE	BY	REVISIONS

POST-PROJECT HYDROLOGY EXHIBIT 100YR 1HR

TENTATIVE TRACT MAP NO.

15576

SPRING TRAILS

IN THE COUNTY OF SAN BERNARDINO

TO BE ANNEXED INTO THE CITY OF SAN BERNARDINO, CALIFORNIA

RICK ENGINEERING COMPANY
1223 UNIVERSITY AVENUE - SUITE 240
RIVERSIDE, CA 92507
951.782.0707
(FAX)951.782.0723
rickengineering.com
Riverside San Diego Orange Sacramento Phoenix Tucson

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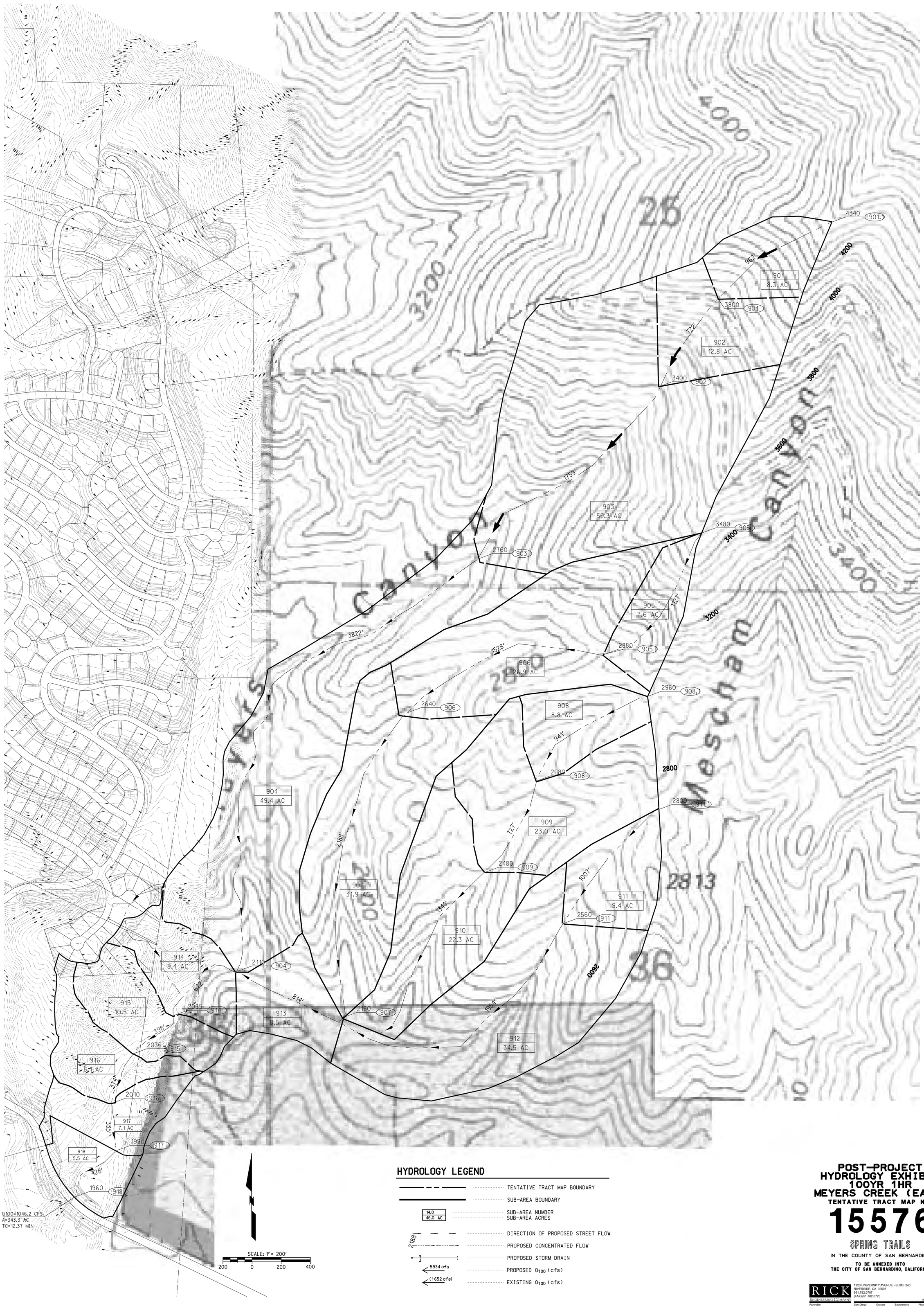

HYDROLOGY LEGEND

- TENTATIVE TRACT MAP BOUNDARY
- SUB-AREA BOUNDARY
- 14.0 / 46.0 AC — SUB-AREA NUMBER / SUB-AREA ACRES
- 2188' — DIRECTION OF PROPOSED STREET FLOW
- PROPOSED CONCENTRATED FLOW
- PROPOSED STORM DRAIN
- 5934 cfs — PROPOSED Q_{100} (cfs)
- (1652 cfs) — EXISTING Q_{100} (cfs)

POST-PROJECT HYDROLOGY EXHIBIT 100YR 1HR MEYERS CREEK (EAST)

TENTATIVE TRACT MAP NO.

15576

SPRING TRAILS

IN THE COUNTY OF SAN BERNARDINO

TO BE ANNEXED INTO
THE CITY OF SAN BERNARDINO, CALIFORNIA

RICK ENGINEERING COMPANY
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San Diego Orange Sacramento Phoenix Tucson

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****************************************************************************
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              Ver. 8.0  Release Date: 01/01/2003  License ID 1261

                           Analysis prepared by:



 ************************** DESCRIPTION OF STUDY **************************
* SPRING TRAILS POST-PROJECT CONDITION HYDROLOGY 100YR 1HR                 *
* REC 13565C LAF 4-22-11                                                   *
* SECONDARY ACCESS ROAD                                                    *
 ****************************************************************************

  FILE NAME: 565PSAR.DAT
  TIME/DATE OF STUDY: 15:25 04/25/2011
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*
  10-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.100
  100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.600
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =  100.00   1-HOUR INTENSITY(INCH/HOUR) = 1.6000
  SLOPE OF INTENSITY DURATION CURVE = 0.6000

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

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
  FLOW PROCESS FROM NODE    500.10 TO NODE    500.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   469.00
  ELEVATION DATA: UPSTREAM(FEET) =   2466.00  DOWNSTREAM(FEET) =   2442.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   14.978
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.679
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        1.50      0.86     1.000    46   14.98
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      3.81
  TOTAL AREA(ACRES) =      1.50   PEAK FLOW RATE(CFS) =      3.81

****************************************************************************
  FLOW PROCESS FROM NODE    500.00 TO NODE    501.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   484.00
  ELEVATION DATA: UPSTREAM(FEET) =   2442.00  DOWNSTREAM(FEET) =   2392.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.180
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.972
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        4.40      0.86     1.000    46   13.18
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    4.40   INITIAL SUBAREA RUNOFF(CFS) =   12.33

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  14.98
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.679
  SUBAREA AREA(ACRES) =    4.40      SUBAREA RUNOFF(CFS) =   11.16
  EFFECTIVE AREA(ACRES) =      5.90   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      5.90       PEAK FLOW RATE(CFS) =      14.97

****************************************************************************
  FLOW PROCESS FROM NODE    501.00 TO NODE    501.10 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2388.00  DOWNSTREAM(FEET) =  2355.00
  FLOW LENGTH(FEET) =   150.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 24.000
  DEPTH OF FLOW IN  24.0 INCH PIPE IS   6.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  23.44
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     14.97
  PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =  15.09
  LONGEST FLOWPATH FROM NODE    500.10 TO NODE    501.10 =   619.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    501.10 TO NODE    502.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   447.00
  ELEVATION DATA: UPSTREAM(FEET) =   2350.00  DOWNSTREAM(FEET) =   2262.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.223
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.375
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
```

```
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        4.60      0.86     1.000    46   11.22
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    4.60   INITIAL SUBAREA RUNOFF(CFS) =   14.55

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  15.09
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.663
  SUBAREA AREA(ACRES) =    4.60      SUBAREA RUNOFF(CFS) =   11.61
  EFFECTIVE AREA(ACRES) =     10.50   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     10.50       PEAK FLOW RATE(CFS) =      26.49

****************************************************************************
  FLOW PROCESS FROM NODE    502.00 TO NODE    503.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1014.00
  ELEVATION DATA: UPSTREAM(FEET) =   2262.00  DOWNSTREAM(FEET) =   2150.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   17.482
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.353
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        3.40      0.86     1.000    46   17.48
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    3.40   INITIAL SUBAREA RUNOFF(CFS) =    7.63

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  15.09
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.663
  SUBAREA AREA(ACRES) =    3.40      SUBAREA RUNOFF(CFS) =    8.58
  EFFECTIVE AREA(ACRES) =     13.90   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     13.90       PEAK FLOW RATE(CFS) =      35.07

****************************************************************************
  FLOW PROCESS FROM NODE    503.00 TO NODE    503.10 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2135.00  DOWNSTREAM(FEET) =  2110.00
  FLOW LENGTH(FEET) =   340.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 24.000
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  13.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  19.79
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     35.07
  PIPE TRAVEL TIME(MIN.) =   0.29    Tc(MIN.) =  15.37
  LONGEST FLOWPATH FROM NODE    500.10 TO NODE    503.10 =   959.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    503.10 TO NODE    503.10 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  15.37
  RAINFALL INTENSITY(INCH/HR) =   3.62
  AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =    13.90
  TOTAL STREAM AREA(ACRES) =    13.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     35.07

****************************************************************************
  FLOW PROCESS FROM NODE    504.10 TO NODE    504.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   312.00
  ELEVATION DATA: UPSTREAM(FEET) =   2380.00  DOWNSTREAM(FEET) =   2292.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.045
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.979
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        1.10      0.86     1.000    46    9.04
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      4.08
  TOTAL AREA(ACRES) =      1.10   PEAK FLOW RATE(CFS) =      4.08

****************************************************************************
  FLOW PROCESS FROM NODE    504.00 TO NODE    505.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   766.00
  ELEVATION DATA: UPSTREAM(FEET) =   2292.00  DOWNSTREAM(FEET) =   2205.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   15.540
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.599
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        2.40      0.86     1.000    46   15.54
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    2.40   INITIAL SUBAREA RUNOFF(CFS) =    5.92

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =   9.04
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.979
  SUBAREA AREA(ACRES) =    2.40      SUBAREA RUNOFF(CFS) =    8.90
  EFFECTIVE AREA(ACRES) =      3.50   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      3.50       PEAK FLOW RATE(CFS) =      12.98

****************************************************************************
  FLOW PROCESS FROM NODE    505.00 TO NODE    506.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
```

```
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   658.00
  ELEVATION DATA: UPSTREAM(FEET) =   2205.00  DOWNSTREAM(FEET) =   2120.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   14.251
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.791
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        3.20      0.86     1.000    46   14.25
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    3.20   INITIAL SUBAREA RUNOFF(CFS) =    8.44

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =   9.04
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.979
  SUBAREA AREA(ACRES) =    3.20      SUBAREA RUNOFF(CFS) =   11.86
  EFFECTIVE AREA(ACRES) =      6.70   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      6.70       PEAK FLOW RATE(CFS) =      24.84

****************************************************************************
  FLOW PROCESS FROM NODE    506.00 TO NODE    503.10 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2115.00  DOWNSTREAM(FEET) =  2110.00
  FLOW LENGTH(FEET) =    70.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 24.000
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  10.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.96
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     24.84
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =   9.11
  LONGEST FLOWPATH FROM NODE    504.10 TO NODE    503.10 =   382.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    503.10 TO NODE    503.10 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.11
  RAINFALL INTENSITY(INCH/HR) =   4.96
  AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =     6.70
  TOTAL STREAM AREA(ACRES) =     6.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     24.84

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     35.07  15.37    3.622  0.86( 0.86) 1.00    13.9     500.10
      2     24.84   9.11    4.958  0.86( 0.86) 1.00     6.7     504.10

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

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     55.67   9.11    4.958  0.86( 0.86) 1.00    14.9     504.10
      2     51.81  15.37    3.622  0.86( 0.86) 1.00    20.6     500.10

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     55.67    Tc(MIN.) =     9.11
  EFFECTIVE AREA(ACRES) =    14.94   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     20.60
  LONGEST FLOWPATH FROM NODE    500.10 TO NODE    503.10 =   959.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    503.10 TO NODE    503.20 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2110.00  DOWNSTREAM(FEET) =  2095.00
  FLOW LENGTH(FEET) =   135.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  25.73
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     55.67
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =   9.20
  LONGEST FLOWPATH FROM NODE    500.10 TO NODE    503.20 =  1094.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    503.20 TO NODE    503.20 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.20
  RAINFALL INTENSITY(INCH/HR) =   4.93
  AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =    14.94
  TOTAL STREAM AREA(ACRES) =    20.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     55.67

****************************************************************************
  FLOW PROCESS FROM NODE    507.10 TO NODE    507.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   495.00
  ELEVATION DATA: UPSTREAM(FEET) =   2444.60  DOWNSTREAM(FEET) =   2380.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.692
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.063
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        3.20      0.86     1.000    46   12.69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      9.23
  TOTAL AREA(ACRES) =      3.20   PEAK FLOW RATE(CFS) =      9.23

****************************************************************************
  FLOW PROCESS FROM NODE    507.00 TO NODE    508.00 IS CODE =  82
----------------------------------------------------------------------------
```

```
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   822.00
  ELEVATION DATA: UPSTREAM(FEET) =   2380.00  DOWNSTREAM(FEET) =   2230.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   14.538
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.745
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A       10.60      0.86     1.000    46   14.54
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   10.60   INITIAL SUBAREA RUNOFF(CFS) =   27.53

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  12.69
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.063
  SUBAREA AREA(ACRES) =   10.60      SUBAREA RUNOFF(CFS) =   30.56
  EFFECTIVE AREA(ACRES) =     13.80   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     13.80       PEAK FLOW RATE(CFS) =      39.79

****************************************************************************
  FLOW PROCESS FROM NODE    508.00 TO NODE    509.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1213.00
  ELEVATION DATA: UPSTREAM(FEET) =   2230.00  DOWNSTREAM(FEET) =   2100.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   18.894
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.200
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A       12.40      0.86     1.000    46   18.89
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   12.40   INITIAL SUBAREA RUNOFF(CFS) =   26.12

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  12.69
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.063
  SUBAREA AREA(ACRES) =   12.40      SUBAREA RUNOFF(CFS) =   35.75
  EFFECTIVE AREA(ACRES) =     26.20   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     26.20       PEAK FLOW RATE(CFS) =      75.54

****************************************************************************
  FLOW PROCESS FROM NODE    509.00 TO NODE    503.20 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2095.50  DOWNSTREAM(FEET) =  2095.00
  FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  33.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.18
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     75.54
  PIPE TRAVEL TIME(MIN.) =   0.15    Tc(MIN.) =  12.84
  LONGEST FLOWPATH FROM NODE    507.10 TO NODE    503.20 =   575.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    503.20 TO NODE    503.20 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  12.84
  RAINFALL INTENSITY(INCH/HR) =   4.04
  AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =    26.20
  TOTAL STREAM AREA(ACRES) =    26.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     75.54

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     55.67   9.20    4.930  0.86( 0.86) 1.00    14.9     504.10
      1     51.81  15.46    3.610  0.86( 0.86) 1.00    20.6     500.10
      2     75.54  12.84    4.036  0.86( 0.86) 1.00    26.2     507.10

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

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    125.03   9.20    4.930  0.86( 0.86) 1.00    33.7     504.10
      2    128.97  12.84    4.036  0.86( 0.86) 1.00    44.4     507.10
      3    117.22  15.46    3.610  0.86( 0.86) 1.00    46.8     500.10

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    128.97    Tc(MIN.) =    12.84
  EFFECTIVE AREA(ACRES) =    44.43   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     46.80
  LONGEST FLOWPATH FROM NODE    500.10 TO NODE    503.20 =  1094.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    503.20 TO NODE    503.30 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2095.00  DOWNSTREAM(FEET) =  1990.00
  FLOW LENGTH(FEET) =   910.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  23.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  31.48
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    128.97
  PIPE TRAVEL TIME(MIN.) =   0.48    Tc(MIN.) =  13.32
  LONGEST FLOWPATH FROM NODE    500.10 TO NODE    503.30 =  2004.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    503.30 TO NODE    503.30 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  13.32
```

```
  RAINFALL INTENSITY(INCH/HR) =   3.95
  AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =    44.43
  TOTAL STREAM AREA(ACRES) =    46.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    128.97

****************************************************************************
  FLOW PROCESS FROM NODE    510.10 TO NODE    510.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   443.00
  ELEVATION DATA: UPSTREAM(FEET) =   2440.60  DOWNSTREAM(FEET) =   2320.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.480
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.558
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        1.30      0.86     1.000    46   10.48
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      4.33
  TOTAL AREA(ACRES) =      1.30   PEAK FLOW RATE(CFS) =      4.33

****************************************************************************
  FLOW PROCESS FROM NODE    510.00 TO NODE    511.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   357.00
  ELEVATION DATA: UPSTREAM(FEET) =   2320.00  DOWNSTREAM(FEET) =   2270.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.980
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.432
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        1.60      0.86     1.000    46   10.98
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    1.60   INITIAL SUBAREA RUNOFF(CFS) =    5.14

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  10.48
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.558
  SUBAREA AREA(ACRES) =    1.60      SUBAREA RUNOFF(CFS) =    5.33
  EFFECTIVE AREA(ACRES) =      2.90   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      2.90       PEAK FLOW RATE(CFS) =       9.65

****************************************************************************
  FLOW PROCESS FROM NODE    511.00 TO NODE    512.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   950.00
  ELEVATION DATA: UPSTREAM(FEET) =   2270.00  DOWNSTREAM(FEET) =   2180.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   17.563
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.344
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        3.40      0.86     1.000    46   17.56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    3.40   INITIAL SUBAREA RUNOFF(CFS) =    7.60

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  10.48
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.558
  SUBAREA AREA(ACRES) =    3.40      SUBAREA RUNOFF(CFS) =   11.32
  EFFECTIVE AREA(ACRES) =      6.30   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      6.30       PEAK FLOW RATE(CFS) =      20.97

****************************************************************************
  FLOW PROCESS FROM NODE    512.00 TO NODE    513.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   855.00
  ELEVATION DATA: UPSTREAM(FEET) =   2180.00  DOWNSTREAM(FEET) =   2100.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   16.880
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.424
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        3.20      0.86     1.000    46   16.88
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    3.20   INITIAL SUBAREA RUNOFF(CFS) =    7.39

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  10.48
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.558
  SUBAREA AREA(ACRES) =    3.20      SUBAREA RUNOFF(CFS) =   10.65
  EFFECTIVE AREA(ACRES) =      9.50   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      9.50       PEAK FLOW RATE(CFS) =      31.62

****************************************************************************
  FLOW PROCESS FROM NODE    513.00 TO NODE    514.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   652.00
  ELEVATION DATA: UPSTREAM(FEET) =   2100.00  DOWNSTREAM(FEET) =   2015.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   14.173
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.803
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        4.80      0.86     1.000    46   14.17
```

```
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    4.80   INITIAL SUBAREA RUNOFF(CFS) =   12.71

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  10.48
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.558
  SUBAREA AREA(ACRES) =    4.80      SUBAREA RUNOFF(CFS) =   15.98
  EFFECTIVE AREA(ACRES) =     14.30   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     14.30       PEAK FLOW RATE(CFS) =      47.59

****************************************************************************
  FLOW PROCESS FROM NODE    514.00 TO NODE    503.40 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2010.00  DOWNSTREAM(FEET) =  1990.00
  FLOW LENGTH(FEET) =   100.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 24.000
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  11.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  31.11
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     47.59
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =  10.53
  LONGEST FLOWPATH FROM NODE    510.10 TO NODE    503.40 =   543.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    503.30 TO NODE    503.30 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  10.53
  RAINFALL INTENSITY(INCH/HR) =   4.54
  AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =    14.30
  TOTAL STREAM AREA(ACRES) =    14.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     47.59

  ** CONFLUENCE DATA **
   STREAM     Q      Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    125.03   9.68    4.781  0.86( 0.86) 1.00    33.7     504.10
      1    128.97  13.32    3.948  0.86( 0.86) 1.00    44.4     507.10
      1    117.22  15.95    3.543  0.86( 0.86) 1.00    46.8     500.10
      2     47.59  10.53    4.544  0.86( 0.86) 1.00    14.3     510.10

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

  ** PEAK FLOW RATE TABLE **
   STREAM     Q      Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    171.57   9.68    4.781  0.86( 0.86) 1.00    46.9     504.10
      2    173.55  10.53    4.544  0.86( 0.86) 1.00    50.5     510.10
      3    168.86  13.32    3.948  0.86( 0.86) 1.00    58.7     507.10
      4    151.88  15.95    3.543  0.86( 0.86) 1.00    61.1     500.10

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    173.55    Tc(MIN.) =    10.53
  EFFECTIVE AREA(ACRES) =    50.52   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     61.10
  LONGEST FLOWPATH FROM NODE    500.10 TO NODE    503.30 =  2004.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    503.30 TO NODE    503.40 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1990.00  DOWNSTREAM(FEET) =  1954.00
  FLOW LENGTH(FEET) =   220.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  23.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  39.27
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    173.55
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =  10.63
  LONGEST FLOWPATH FROM NODE    500.10 TO NODE    503.40 =  2224.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    503.40 TO NODE    503.40 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  10.63
  RAINFALL INTENSITY(INCH/HR) =   4.52
  AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =    50.52
  TOTAL STREAM AREA(ACRES) =    61.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    173.55

****************************************************************************
  FLOW PROCESS FROM NODE    515.10 TO NODE    515.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   597.00
  ELEVATION DATA: UPSTREAM(FEET) =   2262.00  DOWNSTREAM(FEET) =   2207.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   14.666
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.726
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        1.00      0.86     1.000    46   14.67
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      2.58
  TOTAL AREA(ACRES) =      1.00   PEAK FLOW RATE(CFS) =      2.58

****************************************************************************
  FLOW PROCESS FROM NODE    515.00 TO NODE    516.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1014.00
  ELEVATION DATA: UPSTREAM(FEET) =   2207.00  DOWNSTREAM(FEET) =   2109.00

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

```
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   17.955
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.300
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        3.20      0.86     1.000    46   17.95
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    3.20   INITIAL SUBAREA RUNOFF(CFS) =    7.03

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  14.67
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.726
  SUBAREA AREA(ACRES) =    3.20      SUBAREA RUNOFF(CFS) =    8.25
  EFFECTIVE AREA(ACRES) =      4.20   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      4.20       PEAK FLOW RATE(CFS) =      10.83

****************************************************************************
  FLOW PROCESS FROM NODE    516.00 TO NODE    517.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1013.00
  ELEVATION DATA: UPSTREAM(FEET) =   2109.00  DOWNSTREAM(FEET) =   1960.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   16.502
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.471
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        5.60      0.86     1.000    46   16.50
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    5.60   INITIAL SUBAREA RUNOFF(CFS) =   13.16

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  14.67
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.726
  SUBAREA AREA(ACRES) =    5.60      SUBAREA RUNOFF(CFS) =   14.44
  EFFECTIVE AREA(ACRES) =      9.80   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      9.80       PEAK FLOW RATE(CFS) =      25.28

****************************************************************************
  FLOW PROCESS FROM NODE    517.00 TO NODE    503.40 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1955.00  DOWNSTREAM(FEET) =  1954.00
  FLOW LENGTH(FEET) =   100.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  18.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.50
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     25.28
  PIPE TRAVEL TIME(MIN.) =   0.20    Tc(MIN.) =  14.86
  LONGEST FLOWPATH FROM NODE    515.10 TO NODE    503.40 =   697.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    503.40 TO NODE    503.40 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
```

```
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  14.86
  RAINFALL INTENSITY(INCH/HR) =   3.70
  AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =     9.80
  TOTAL STREAM AREA(ACRES) =     9.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     25.28

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    171.57   9.77    4.753  0.86( 0.86) 1.00    46.9     504.10
      1    173.55  10.63    4.520  0.86( 0.86) 1.00    50.5     510.10
      1    168.86  13.41    3.931  0.86( 0.86) 1.00    58.7     507.10
      1    151.88  16.05    3.530  0.86( 0.86) 1.00    61.1     500.10
      2     25.28  14.86    3.696  0.86( 0.86) 1.00     9.8     515.10

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

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    194.39   9.77    4.753  0.86( 0.86) 1.00    53.3     504.10
      2    196.87  10.63    4.520  0.86( 0.86) 1.00    57.5     510.10
      3    193.56  13.41    3.931  0.86( 0.86) 1.00    67.6     507.10
      4    184.79  14.86    3.696  0.86( 0.86) 1.00    69.8     515.10
      5    175.68  16.05    3.530  0.86( 0.86) 1.00    70.9     500.10

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    196.87    Tc(MIN.) =    10.63
  EFFECTIVE AREA(ACRES) =    57.53   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     70.90
  LONGEST FLOWPATH FROM NODE    500.10 TO NODE    503.40 =  2224.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    503.40 TO NODE    503.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1954.00  DOWNSTREAM(FEET) =  1950.00
  FLOW LENGTH(FEET) =   100.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  31.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  23.89
  ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    196.87
  PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =  10.70
  LONGEST FLOWPATH FROM NODE    500.10 TO NODE    503.50 =  2324.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    503.50 TO NODE    503.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  10.70
  RAINFALL INTENSITY(INCH/HR) =   4.50
  AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86
```

```
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =    57.53
  TOTAL STREAM AREA(ACRES) =    70.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    196.87

****************************************************************************
  FLOW PROCESS FROM NODE    518.10 TO NODE    518.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   667.00
  ELEVATION DATA: UPSTREAM(FEET) =   2265.00  DOWNSTREAM(FEET) =   2200.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   15.160
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.653
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        0.50      0.86     1.000    46   15.16
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      1.26
  TOTAL AREA(ACRES) =      0.50   PEAK FLOW RATE(CFS) =      1.26

****************************************************************************
  FLOW PROCESS FROM NODE    518.00 TO NODE    519.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   708.00
  ELEVATION DATA: UPSTREAM(FEET) =   2200.00  DOWNSTREAM(FEET) =   2135.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   15.712
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.575
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        1.50      0.86     1.000    46   15.71
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    1.50   INITIAL SUBAREA RUNOFF(CFS) =    3.67

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  15.16
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.653
  SUBAREA AREA(ACRES) =    1.50      SUBAREA RUNOFF(CFS) =    3.77
  EFFECTIVE AREA(ACRES) =      2.00   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      2.00       PEAK FLOW RATE(CFS) =       5.03

****************************************************************************
  FLOW PROCESS FROM NODE    519.00 TO NODE    520.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1306.00
  ELEVATION DATA: UPSTREAM(FEET) =   2135.00  DOWNSTREAM(FEET) =   1955.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   18.506
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.241
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        6.00      0.86     1.000    46   18.51
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    6.00   INITIAL SUBAREA RUNOFF(CFS) =   12.86

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  15.16
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.653
  SUBAREA AREA(ACRES) =    6.00      SUBAREA RUNOFF(CFS) =   15.08
  EFFECTIVE AREA(ACRES) =      8.00   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      8.00       PEAK FLOW RATE(CFS) =      20.11

****************************************************************************
  FLOW PROCESS FROM NODE    520.00 TO NODE    520.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  15.16
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.653
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        2.30      0.86     1.000    46
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    2.30      SUBAREA RUNOFF(CFS) =    5.78
  EFFECTIVE AREA(ACRES) =     10.30   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     10.30       PEAK FLOW RATE(CFS) =      25.89

****************************************************************************
  FLOW PROCESS FROM NODE    520.00 TO NODE    503.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1951.00  DOWNSTREAM(FEET) =  1950.00
  FLOW LENGTH(FEET) =   120.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  20.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.88
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     25.89
  PIPE TRAVEL TIME(MIN.) =   0.25    Tc(MIN.) =  15.41
  LONGEST FLOWPATH FROM NODE    518.10 TO NODE    503.50 =   787.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    503.50 TO NODE    503.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  15.41
  RAINFALL INTENSITY(INCH/HR) =   3.62
  AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =    10.30
  TOTAL STREAM AREA(ACRES) =    10.30
```

```
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     25.89

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    194.39   9.85    4.732  0.86( 0.86) 1.00    53.3     504.10
      1    196.87  10.70    4.502  0.86( 0.86) 1.00    57.5     510.10
      1    193.56  13.48    3.918  0.86( 0.86) 1.00    67.6     507.10
      1    184.79  14.93    3.686  0.86( 0.86) 1.00    69.8     515.10
      1    175.68  16.12    3.521  0.86( 0.86) 1.00    70.9     500.10
      2     25.89  15.41    3.616  0.86( 0.86) 1.00    10.3     518.10

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

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    217.62   9.85    4.732  0.86( 0.86) 1.00    59.9     504.10
      2    220.61  10.70    4.502  0.86( 0.86) 1.00    64.7     510.10
      3    218.68  13.48    3.918  0.86( 0.86) 1.00    76.6     507.10
      4    210.50  14.93    3.686  0.86( 0.86) 1.00    79.8     515.10
      5    206.98  15.41    3.616  0.86( 0.86) 1.00    80.6     518.10
      6    200.67  16.12    3.521  0.86( 0.86) 1.00    81.2     500.10

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    220.61    Tc(MIN.) =    10.70
  EFFECTIVE AREA(ACRES) =    64.68   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     81.20
  LONGEST FLOWPATH FROM NODE    500.10 TO NODE    503.50 =  2324.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    503.50 TO NODE    503.60 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1950.00  DOWNSTREAM(FEET) =  1882.50
  FLOW LENGTH(FEET) =   850.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  31.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  31.15
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    220.61
  PIPE TRAVEL TIME(MIN.) =   0.45    Tc(MIN.) =  11.15
  LONGEST FLOWPATH FROM NODE    500.10 TO NODE    503.60 =  3174.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    503.60 TO NODE    503.60 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  11.15
  RAINFALL INTENSITY(INCH/HR) =   4.39
  AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =    64.68
  TOTAL STREAM AREA(ACRES) =    81.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    220.61

****************************************************************************
  FLOW PROCESS FROM NODE    521.10 TO NODE    521.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   694.00
  ELEVATION DATA: UPSTREAM(FEET) =   2030.00  DOWNSTREAM(FEET) =   1915.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.851
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.856
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        2.10      0.86     1.000    46   13.85
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      5.66
  TOTAL AREA(ACRES) =      2.10   PEAK FLOW RATE(CFS) =      5.66

****************************************************************************
  FLOW PROCESS FROM NODE    521.00 TO NODE    503.60 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   472.00
  ELEVATION DATA: UPSTREAM(FEET) =   1915.00  DOWNSTREAM(FEET) =   1887.50

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   14.632
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.731
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        2.90      0.86     1.000    46   14.63
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    2.90   INITIAL SUBAREA RUNOFF(CFS) =    7.49

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  13.85
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.856
  SUBAREA AREA(ACRES) =    2.90      SUBAREA RUNOFF(CFS) =    7.82
  EFFECTIVE AREA(ACRES) =      5.00   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      5.00       PEAK FLOW RATE(CFS) =      13.48

****************************************************************************
  FLOW PROCESS FROM NODE    503.60 TO NODE    503.60 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  13.85
  RAINFALL INTENSITY(INCH/HR) =   3.86
  AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =     5.00
  TOTAL STREAM AREA(ACRES) =     5.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     13.48

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
```

```
    1    217.62  10.30    4.606  0.86( 0.86) 1.00    59.9     504.10
    1    220.61  11.15    4.391  0.86( 0.86) 1.00    64.7     510.10
    1    218.68  13.94    3.841  0.86( 0.86) 1.00    76.6     507.10
    1    210.50  15.39    3.620  0.86( 0.86) 1.00    79.8     515.10
    1    206.98  15.87    3.553  0.86( 0.86) 1.00    80.6     518.10
    1    200.67  16.58    3.462  0.86( 0.86) 1.00    81.2     500.10
    2     13.48  13.85    3.856  0.86( 0.86) 1.00     5.0     521.10

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

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
    1    230.15  10.30    4.606  0.86( 0.86) 1.00    63.6     504.10
    2    233.41  11.15    4.391  0.86( 0.86) 1.00    68.7     510.10
    3    232.23  13.85    3.856  0.86( 0.86) 1.00    81.2     521.10
    4    232.10  13.94    3.841  0.86( 0.86) 1.00    81.6     507.10
    5    222.92  15.39    3.620  0.86( 0.86) 1.00    84.8     515.10
    6    219.10  15.87    3.553  0.86( 0.86) 1.00    85.6     518.10
    7    212.38  16.58    3.462  0.86( 0.86) 1.00    86.2     500.10

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    233.41    Tc(MIN.) =    11.15
  EFFECTIVE AREA(ACRES) =    68.71   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     86.20
  LONGEST FLOWPATH FROM NODE    500.10 TO NODE    503.60 =  3174.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    503.60 TO NODE    503.60 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    523.10 TO NODE    523.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   663.00
  ELEVATION DATA: UPSTREAM(FEET) =   2305.00  DOWNSTREAM(FEET) =   2222.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   14.385
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.769
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        3.00      0.86     1.000    46   14.38
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      7.86
  TOTAL AREA(ACRES) =      3.00   PEAK FLOW RATE(CFS) =      7.86

****************************************************************************
  FLOW PROCESS FROM NODE    523.00 TO NODE    524.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   618.00
  ELEVATION DATA: UPSTREAM(FEET) =   2222.00  DOWNSTREAM(FEET) =   2164.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   14.815
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.703
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        3.90      0.86     1.000    46   14.82
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    3.90   INITIAL SUBAREA RUNOFF(CFS) =    9.98

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  14.38
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.769
  SUBAREA AREA(ACRES) =    3.90      SUBAREA RUNOFF(CFS) =   10.21
  EFFECTIVE AREA(ACRES) =      6.90   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      6.90       PEAK FLOW RATE(CFS) =      18.07

****************************************************************************
  FLOW PROCESS FROM NODE    524.00 TO NODE    524.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  14.38
  RAINFALL INTENSITY(INCH/HR) =   3.77
  AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =     6.90
  TOTAL STREAM AREA(ACRES) =     6.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     18.07

****************************************************************************
  FLOW PROCESS FROM NODE    525.10 TO NODE    525.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   626.00
  ELEVATION DATA: UPSTREAM(FEET) =   2305.00  DOWNSTREAM(FEET) =   2220.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.831
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.859
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        2.80      0.86     1.000    46   13.83
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      7.56
  TOTAL AREA(ACRES) =      2.80   PEAK FLOW RATE(CFS) =      7.56

****************************************************************************
  FLOW PROCESS FROM NODE    525.00 TO NODE    524.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   593.00
  ELEVATION DATA: UPSTREAM(FEET) =   2220.00  DOWNSTREAM(FEET) =   2164.00

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

```
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   14.555
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.743
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        5.00      0.86     1.000    46   14.55
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    5.00   INITIAL SUBAREA RUNOFF(CFS) =   12.97

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  13.83
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.859
  SUBAREA AREA(ACRES) =    5.00      SUBAREA RUNOFF(CFS) =   13.50
  EFFECTIVE AREA(ACRES) =      7.80   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      7.80       PEAK FLOW RATE(CFS) =      21.05

****************************************************************************
  FLOW PROCESS FROM NODE    524.00 TO NODE    524.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  13.83
  RAINFALL INTENSITY(INCH/HR) =   3.86
  AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =     7.80
  TOTAL STREAM AREA(ACRES) =     7.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     21.05

  ** CONFLUENCE DATA **
   STREAM     Q      Tc   Intensity   Fp(Fm)      Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     18.07  14.38    3.769  0.86( 0.86) 1.00     6.9     523.10
      2     21.05  13.83    3.859  0.86( 0.86) 1.00     7.8     525.10

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

  ** PEAK FLOW RATE TABLE **
   STREAM     Q      Tc   Intensity   Fp(Fm)      Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     38.96  13.83    3.859  0.86( 0.86) 1.00    14.4     525.10
      2     38.49  14.38    3.769  0.86( 0.86) 1.00    14.7     523.10

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     38.96    Tc(MIN.) =    13.83
  EFFECTIVE AREA(ACRES) =    14.43   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     14.70
  LONGEST FLOWPATH FROM NODE    523.10 TO NODE    524.00 =   663.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    524.00 TO NODE    527.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   476.00
  ELEVATION DATA: UPSTREAM(FEET) =   2164.00  DOWNSTREAM(FEET) =   2122.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.512
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.914
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        2.90      0.86     1.000    46   13.51
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    2.90   INITIAL SUBAREA RUNOFF(CFS) =    7.97

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  13.83
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.859
  SUBAREA AREA(ACRES) =    2.90      SUBAREA RUNOFF(CFS) =    7.83
  EFFECTIVE AREA(ACRES) =     17.33   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     17.60       PEAK FLOW RATE(CFS) =      46.79

****************************************************************************
  FLOW PROCESS FROM NODE    528.00 TO NODE    528.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   610.00
  ELEVATION DATA: UPSTREAM(FEET) =   2122.00  DOWNSTREAM(FEET) =   2055.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   14.282
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.786
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        7.20      0.86     1.000    46   14.28
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    7.20   INITIAL SUBAREA RUNOFF(CFS) =   18.96

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  13.83
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.859
  SUBAREA AREA(ACRES) =    7.20      SUBAREA RUNOFF(CFS) =   19.43
  EFFECTIVE AREA(ACRES) =     24.53   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     24.80       PEAK FLOW RATE(CFS) =      66.22

****************************************************************************
  FLOW PROCESS FROM NODE    528.00 TO NODE    529.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1201.00
  ELEVATION DATA: UPSTREAM(FEET) =   2055.00  DOWNSTREAM(FEET) =   1888.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   17.864
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.310
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A       12.80      0.86     1.000    46   17.86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
```

```
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   12.80   INITIAL SUBAREA RUNOFF(CFS) =   28.22

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  13.83
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.859
  SUBAREA AREA(ACRES) =   12.80      SUBAREA RUNOFF(CFS) =   34.55
  EFFECTIVE AREA(ACRES) =     37.33   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     37.60       PEAK FLOW RATE(CFS) =     100.77

****************************************************************************
  FLOW PROCESS FROM NODE    529.00 TO NODE    503.60 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1884.00  DOWNSTREAM(FEET) =  1882.50
  FLOW LENGTH(FEET) =   100.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  29.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.98
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    100.77
  PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =  13.95
  LONGEST FLOWPATH FROM NODE    523.10 TO NODE    503.60 =   763.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    503.60 TO NODE    503.60 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    100.77  13.95    3.839  0.86( 0.86) 1.00    37.3     525.10
      2     98.45  14.51    3.750  0.86( 0.86) 1.00    37.6     523.10
  LONGEST FLOWPATH FROM NODE    523.10 TO NODE    503.60 =   763.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    230.15  10.30    4.606  0.86( 0.86) 1.00    63.6     504.10
      2    233.41  11.15    4.391  0.86( 0.86) 1.00    68.7     510.10
      3    232.23  13.85    3.856  0.86( 0.86) 1.00    81.2     521.10
      4    232.10  13.94    3.841  0.86( 0.86) 1.00    81.6     507.10
      5    222.92  15.39    3.620  0.86( 0.86) 1.00    84.8     515.10
      6    219.10  15.87    3.553  0.86( 0.86) 1.00    85.6     518.10
      7    212.38  16.58    3.462  0.86( 0.86) 1.00    86.2     500.10
  LONGEST FLOWPATH FROM NODE    500.10 TO NODE    503.60 =  3174.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    323.70  10.30    4.606  0.86( 0.86) 1.00    91.2     504.10
      2    328.89  11.15    4.391  0.86( 0.86) 1.00    98.5     510.10
      3    332.84  13.85    3.856  0.86( 0.86) 1.00   118.3     521.10
      4    332.86  13.94    3.841  0.86( 0.86) 1.00   118.9     507.10
      5    332.80  13.95    3.839  0.86( 0.86) 1.00   118.9     525.10
      6    326.96  14.51    3.750  0.86( 0.86) 1.00   120.4     523.10
      7    316.92  15.39    3.620  0.86( 0.86) 1.00   122.4     515.10
      8    310.85  15.87    3.553  0.86( 0.86) 1.00   123.2     518.10
      9    301.01  16.58    3.462  0.86( 0.86) 1.00   123.8     500.10
    TOTAL AREA(ACRES) =    123.80

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      332.86  Tc(MIN.) =   13.939
  EFFECTIVE AREA(ACRES) =    118.89  AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    123.80
  LONGEST FLOWPATH FROM NODE    500.10 TO NODE    503.60 =  3174.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    530.10 TO NODE    530.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   448.00
  ELEVATION DATA: UPSTREAM(FEET) =   1926.00  DOWNSTREAM(FEET) =   1917.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   17.731
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.325
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        1.20      0.86     1.000    46   17.73
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      2.66
  TOTAL AREA(ACRES) =      1.20   PEAK FLOW RATE(CFS) =      2.66

****************************************************************************
  FLOW PROCESS FROM NODE    530.00 TO NODE    531.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   461.00
  ELEVATION DATA: UPSTREAM(FEET) =   1917.00  DOWNSTREAM(FEET) =   1907.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   17.661
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.333
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        3.20      0.86     1.000    46   17.66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    3.20   INITIAL SUBAREA RUNOFF(CFS) =    7.12

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  17.73
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.325
  SUBAREA AREA(ACRES) =    3.20      SUBAREA RUNOFF(CFS) =    7.10
  EFFECTIVE AREA(ACRES) =      4.40   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      4.40       PEAK FLOW RATE(CFS) =       9.76

****************************************************************************
  FLOW PROCESS FROM NODE    531.00 TO NODE    532.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   976.00
  ELEVATION DATA: UPSTREAM(FEET) =   1907.00  DOWNSTREAM(FEET) =   1885.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   23.659
```

```
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.797
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        9.80      0.86     1.000    46   23.66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    9.80   INITIAL SUBAREA RUNOFF(CFS) =   17.08

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  17.73
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.325
  SUBAREA AREA(ACRES) =    9.80      SUBAREA RUNOFF(CFS) =   21.74
  EFFECTIVE AREA(ACRES) =     14.20   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     14.20       PEAK FLOW RATE(CFS) =      31.50

****************************************************************************
  FLOW PROCESS FROM NODE    532.00 TO NODE    533.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   878.00
  ELEVATION DATA: UPSTREAM(FEET) =   1885.00  DOWNSTREAM(FEET) =   1865.00

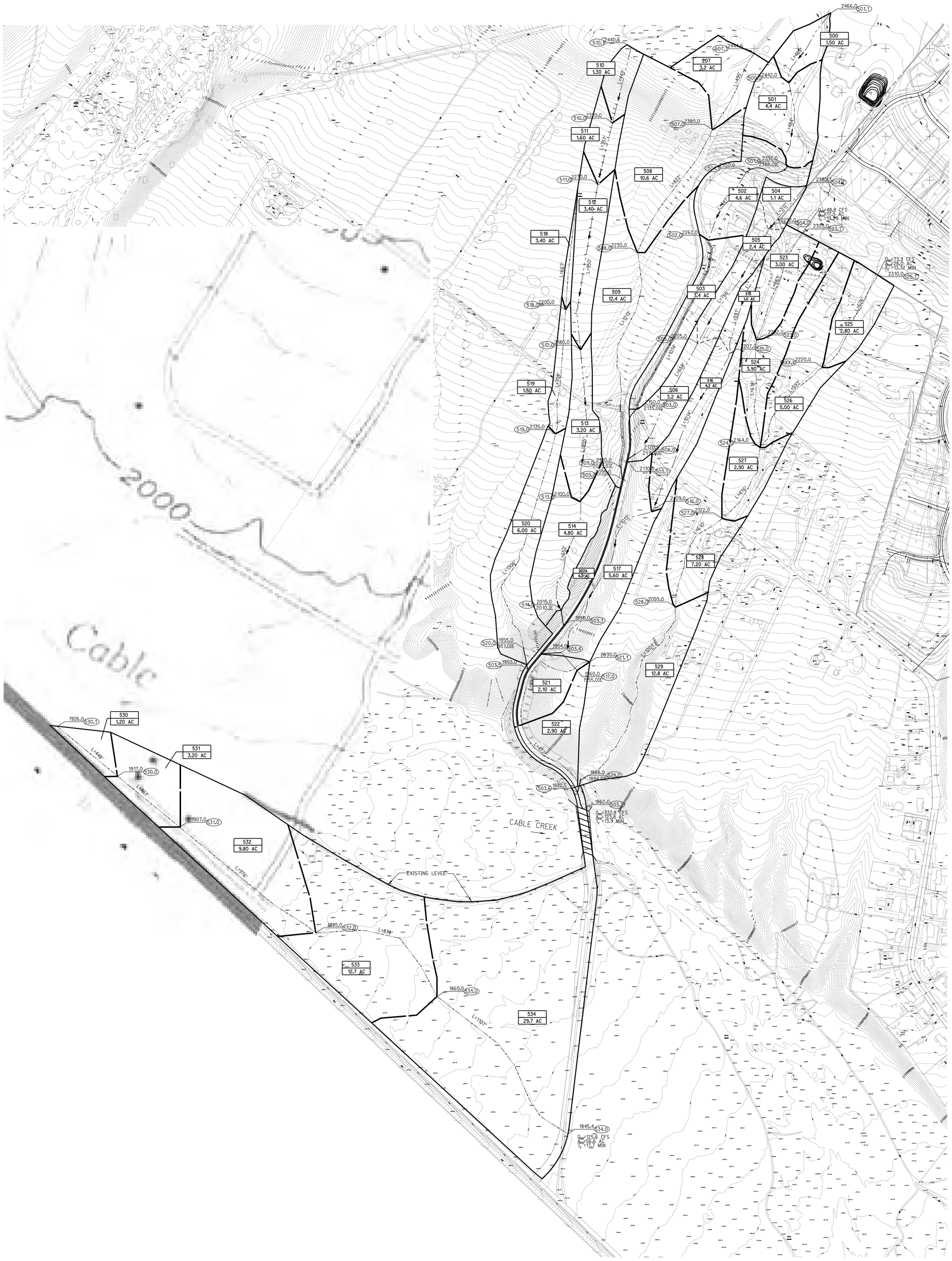
  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   22.631
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.872
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A       12.70      0.86     1.000    46   22.63
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   12.70   INITIAL SUBAREA RUNOFF(CFS) =   23.00

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  17.73
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.325
  SUBAREA AREA(ACRES) =   12.70      SUBAREA RUNOFF(CFS) =   28.17
  EFFECTIVE AREA(ACRES) =     26.90   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     26.90       PEAK FLOW RATE(CFS) =      59.67

****************************************************************************
  FLOW PROCESS FROM NODE    533.00 TO NODE    534.00 IS CODE =  82
----------------------------------------------------------------------------
  >>>>>ADD SUBAREA RUNOFF TO MAINLINE, AT MAINLINE Tc,<<<<<
  >>>>>(AND COMPUTE INITIAL SUBAREA RUNOFF)<<<<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1107.00
  ELEVATION DATA: UPSTREAM(FEET) =   1865.00  DOWNSTREAM(FEET) =   1845.40

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   26.112
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.636
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A       29.70      0.86     1.000    46   26.11
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   29.70   INITIAL SUBAREA RUNOFF(CFS) =   47.47

  ** ADD SUBAREA RUNOFF TO MAINLINE AT MAINLINE Tc:
  MAINLINE Tc(MIN) =  17.73
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.325
  SUBAREA AREA(ACRES) =   29.70      SUBAREA RUNOFF(CFS) =   65.89
  EFFECTIVE AREA(ACRES) =     56.60   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     56.60       PEAK FLOW RATE(CFS) =     125.56
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =     56.60  TC(MIN.) =     17.73
  EFFECTIVE AREA(ACRES) =     56.60  AREA-AVERAGED Fm(INCH/HR)=  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap = 1.000
  PEAK FLOW RATE(CFS)   =    125.56
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```



HYDROLOGY LEGEND

- TENTATIVE TRACT MAP BOUNDARY
- SUB-AREA BOUNDARY
- 14.0 / 46.0 AC — SUB-AREA NUMBER / SUB-AREA ACRES
- DIRECTION OF PROPOSED STREET FLOW
- PROPOSED CONCENTRATED FLOW
- PROPOSED STORM DRAIN

SCALE: 1" = 200'

200 0 200 400

POST-PROJECT HYDROLOGY EXHIBIT 100YR 1HR SECONDARY ACCESS RD.

TENTATIVE TRACT MAP NO.

15576

SPRING TRAILS

IN THE COUNTY OF SAN BERNARDINO

TO BE ANNEXED INTO
THE CITY OF SAN BERNARDINO, CALIFORNIA

RICK ENGINEERING COMPANY
Riverside
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San Diego Orange Sacramento Phoenix Tucson

F. ARMY CORPS OF ENGINEER SEDIMENT YIELD CALCULATIONS AND CORRESPONDING FLOODSCX MODELS

- Cable Canyon-East Branch (Node 106)
- Cable Canyon-East Branch (Node 101.2)
- Meyers Canyon-West Branch (Node 310)
- Meyers Canyon-West Branch (Node 323)
- Meyers Canyon-West Branch (Node 325)
- Meyers Canyon-West Branch (Node 917)
- FLOOD-SCX Input/Output Summary 10yr AMC II Cable Canyon Offsite Watershed.
- FLOOD-SCX Input/Output Summary 10yr AMC II Meyers Canyon (West) Offsite Watershed.
- FLOOD-SCX Input/Output Summary 10yr AMC II Meyers Canyon (East) Watershed.

RICK ENGINEERING COMPANY

Job Name: Spring Trails
Job Number: 13565-C
Date: 6/1/2011
Page : 1 of 6

Army Corps of Engineers - Sediment Yield

Project Site Location: Cable Canyon - East Branch

Treatment Location # : Node 106
Description : Road Crossings across Cable Canyon

For Drainage Areas < 3 mi^2
Equation 2: Log Dy = 0.85 (Log Q) + 0.53 (Log RR) + 0.04 (Log A) + 0.22 FF

Peak Discharge From FloodSCx Calculations
100-yr = 968.1 cfs 10-yr = 611.3 cfs

Unit Peak Discharge: (Q)
100-yr = 1,735.0 cfs / sq mi 10-yr = 1,095.6 cfs / sq mi

Relief Ratio: (RR)
Upstream Elevation = 5099 feet
Downstream Elevation = 2550 feet
Stream Length = 7807 feet
Stream Length = 1.48 mile
RR = 1724 feet/mile

Area : (A)
Area = 357.1 acres
0.558 square-miles

Frequency Factor: (FF)
Years Since Fire = 4 years Years Since Fire = 1 year
FF = 4.5 FF = 6.5

Un-adjusted Debris Yield:
Log Dy (100-yr) = 5.561 Log Dy (10-yr) = 5.831
100-yr Dy = 363,815 cu yds/sq-mi 10-yr Dy = 677,899 cu yds/sq-mi

Adjustment-Transportation Factor:
A-T = 1 *per City & County of SB direction*

Adjusted Debris Yield:
Total 100-yr Debris Load = 202,997 cu yds Total 10-yr Debris Load = 378,246 cu yds

Bulking Factor Calculation:
100-yr Storm Volume = 305.5 acre-feet 10-yr Storm Volume = 39.5 acre-feet
100-yr Debris Volume = 125.8 acre-feet 10-yr Debris Volume = 234.5 acre-feet
Total Volume = 431.3 acre-feet Total Volume = 274.0 acre-feet

Bulking Factor (Total/VolQ) = 1.41 Bulking Factor (Total/VolQ) = 6.93

100-year Bulked Flow = 1,367 cfs **10-year Bulked Flow = 4,235 cfs**

Max Bulked Flow = 4,235 cfs

Notes:

Bulked Flows calculated to design crossings for Street "A" and Street "DD" at Cable Canyon (East Branch)

RICK ENGINEERING COMPANY

Job Name: Spring Trails
Job Number: 13565-C
Date: 6/1/2011
Page : 2 of 6

Army Corps of Engineers - Sediment Yield

Project Site Location: Cable Canyon - East Branch

Treatment Location # : Node 101.2
Description : Hillside Area adacent to development - drains to Cable Canyon (East Branch)

For Drainage Areas < 3 mi^2
Equation 2: Log Dy = 0.85 (Log Q) + 0.53 (Log RR) + 0.04 (Log A) + 0.22 FF

Peak Discharge From FloodSCx Calculations
100-yr = 36.3 cfs 10-yr = 23.1 cfs

Unit Peak Discharge: (Q)
100-yr = 1,708.2 cfs / sq mi 10-yr = 1,087.1 cfs / sq mi

Relief Ratio: (RR)
Upstream Elevation = 3600 feet
Downstream Elevation = 2908 feet
Stream Length = 1649 feet
Stream Length = 0.31 mile
RR = 2216 feet/mile

Area : (A)
Area = 13.6 acres
0.021 square-miles

Frequency Factor: (FF)
Years Since Fire = 4 years Years Since Fire = 1 year
FF = 4.5 FF = 6.5

Un-adjusted Debris Yield:
Log Dy (100-yr) = 5.556 Log Dy (10-yr) = 5.829
100-yr Dy = 359,859 cu yds/sq-mi 10-yr Dy = 674,966 cu yds/sq-mi

Adjustment-Transportation Factor:
A-T = 1 *per City & County of SB direction*

Adjusted Debris Yield:
Total 100-yr Debris Load = 7,647 cu yds Total 10-yr Debris Load = 14,343 cu yds

Bulking Factor Calculation:
100-yr Storm Volume = 12.3 acre-feet 10-yr Storm Volume = 1.7 acre-feet
100-yr Debris Volume = 4.7 acre-feet 10-yr Debris Volume = 8.9 acre-feet
Total Volume = 17.1 acre-feet Total Volume = 10.6 acre-feet

Bulking Factor (Total/VolQ) = 1.38 Bulking Factor (Total/VolQ) = 6.17

100-year Bulked Flow = 50 cfs **10-year Bulked Flow = 143 cfs**

Max Bulked Flow = 143 cfs

Notes:

Bulked Flows used to design Street "A" Storm Drain for offsite Hillside Area

RICK ENGINEERING COMPANY

Job Name: Spring Trails
Job Number: 13565-C
Date: 6/1/2011
Page : 3 of 6

Army Corps of Engineers - Sediment Yield

Project Site Location: Meyers Canyon - West Branch

Treatment Location # : Node 310
Description : Basin 3 - Hillside area adjacent to Meyers Canyon

For Drainage Areas < 3 mi^2
Equation 2: Log Dy = 0.85 (Log Q) + 0.53 (Log RR) + 0.04 (Log A) + 0.22 FF

Peak Discharge From FloodSCx Calculations

100-yr =	34.4	cfs	10-yr =	18.3	cfs

Unit Peak Discharge: (Q)

100-yr =	1,497.7	cfs / sq mi	10-yr =	796.7	cfs / sq mi

Relief Ratio: (RR)

Upstream Elevation =	3080	feet
Downstream Elevation =	2698	feet
Stream Length =	1441	feet
Stream Length =	0.27	mile
RR =	1400	feet/mile

Area : (A)

Area =	14.7	acres
	0.023	square-miles

Frequency Factor: (FF)

Years Since Fire =	4	years	Years Since Fire =	1	year
FF =	4.5		FF =	6.5	

Un-adjusted Debris Yield:

Log Dy (100-yr) =	5.403		Log Dy (10-yr) =	5.610	
100-yr Dy =	253,045	cu yds/sq-mi	10-yr Dy =	407,575	cu yds/sq-mi

Adjustment-Transportation Factor:
A-T = 1 *per City & County of SB direction*

Adjusted Debris Yield:

Total 100-yr Debris Load =	5,812	cu yds	Total 10-yr Debris Load =	9,361	cu yds

Bulking Factor Calculation:

100-yr Storm Volume =	4.8	acre-feet	10-yr Storm Volume =	0.5	acre-feet
100-yr Debris Volume =	3.6	acre-feet	10-yr Debris Volume =	5.8	acre-feet
Total Volume =	8.4	acre-feet	Total Volume =	6.3	acre-feet
Bulking Factor (Total/VolQ) =	1.75		Bulking Factor (Total/VolQ) =	11.62	
100-year Bulked Flow =	**60**	**cfs**	**10-year Bulked Flow =**	**213**	**cfs**

Max Bulked Flow = 213 cfs

Notes:

Bulked Flows used to size storm drain for Hillside Area

RICK ENGINEERING COMPANY

Job Name:	Spring Trails
Job Number:	13565-C
Date:	6/1/2011
Page :	4 of 6

Army Corps of Engineers - Sediment Yield

Project Site Location: Meyers Canyon - West Branch

Treatment Location # : Node 323
Description : Basin 3 - Road Crossing middle of Meyers Canyon

For Drainage Areas < 3 mi^2
Equation 2: Log Dy = 0.85 (Log Q) + 0.53 (Log RR) + 0.04 (Log A) + 0.22 FF

Peak Discharge From FloodSCx Calculations

100-yr =	253.8	cfs	10-yr =	144.4	cfs

Unit Peak Discharge: (Q)

100-yr =	1,688.5	cfs / sq mi	10-yr =	960.7	cfs / sq mi

Relief Ratio: (RR)

Upstream Elevation =	3400	feet
Downstream Elevation =	2330	feet
Stream Length =	4790	feet
Stream Length =	0.91	mile
RR =	1179	feet/mile

Area : (A)

Area =	96.2	acres
	0.150	square-miles

Frequency Factor: (FF)

Years Since Fire =	4	years	Years Since Fire =	1	year
FF =	4.5		FF =	6.5	

Un-adjusted Debris Yield:

Log Dy (100-yr) =	5.441		Log Dy (10-yr) =	5.673	
100-yr Dy =	275,861	cu yds/sq-mi	10-yr Dy =	470,441	cu yds/sq-mi

Adjustment-Transportation Factor:
A-T = 1 *per City & County of SB direction*

Adjusted Debris Yield:

Total 100-yr Debris Load =	41,465	cu yds	Total 10-yr Debris Load =	70,713	cu yds

Bulking Factor Calculation:

100-yr Storm Volume =	41.0	acre-feet	10-yr Storm Volume =	4.0	acre-feet
100-yr Debris Volume =	25.7	acre-feet	10-yr Debris Volume =	43.8	acre-feet
Total Volume =	66.7	acre-feet	Total Volume =	47.8	acre-feet
Bulking Factor (Total/VolQ) =	1.63		Bulking Factor (Total/VolQ) =	11.96	
100-year Bulked Flow =	**413**	**cfs**	**10-year Bulked Flow =**	**1,727**	**cfs**

Max Bulked Flow = 1,727 cfs

Notes:

Bulked Flows calculated to design crossing for Street "G" Meyers Canyon (West Branch)

RICK ENGINEERING COMPANY

Job Name: Spring Trails
Job Number: 13565-C
Date: 6/1/2011
Page : 5 of 6

Army Corps of Engineers - Sediment Yield

Project Site Location: Meyers Canyon - West Branch

Treatment Location # : Node 325
Description : Basin 3 - Southern Road Crossing - Meyers Canyon

For Drainage Areas < 3 mi^2
Equation 2: Log Dy = 0.85 (Log Q) + 0.53 (Log RR) + 0.04 (Log A) + 0.22 FF

Peak Discharge From FloodSCx Calculations
100-yr = 303.5 cfs 10-yr = 171.2 cfs

Unit Peak Discharge: (Q)
100-yr = 1,667.3 cfs / sq mi 10-yr = 940.5 cfs / sq mi

Relief Ratio: (RR)
Upstream Elevation = 3400 feet
Downstream Elevation = 2060 feet
Stream Length = 6883 feet
Stream Length = 1.30 mile
RR = 1028 feet/mile

Area : (A)
Area = 116.5 acres
0.182 square-miles

Frequency Factor: (FF)
Years Since Fire = 4 years Years Since Fire = 1 year
FF = 4.5 FF = 6.5

Un-adjusted Debris Yield:
Log Dy (100-yr) = 5.408 Log Dy (10-yr) = 5.636
100-yr Dy = 255,684 cu yds/sq-mi 10-yr Dy = 432,859 cu yds/sq-mi

Adjustment-Transportation Factor:
A-T = 1 *per City & County of SB direction*

Adjusted Debris Yield:
Total 100-yr Debris Load = 46,542 cu yds Total 10-yr Debris Load = 78,794 cu yds

Bulking Factor Calculation:
100-yr Storm Volume = 42.7 acre-feet 10-yr Storm Volume = 4.5 acre-feet
100-yr Debris Volume = 28.8 acre-feet 10-yr Debris Volume = 48.8 acre-feet
Total Volume = 71.5 acre-feet Total Volume = 53.4 acre-feet

Bulking Factor (Total/VolQ) = 1.68 Bulking Factor (Total/VolQ) = 11.74

100-year Bulked Flow = 509 cfs **10-year Bulked Flow = 2,010 cfs**

Max Bulked Flow = 2,010 cfs

Notes:

Bulked Flows calculated to design the Western Road crossing for Street "A" Meyers Canyon (West Branch)

RICK ENGINEERING COMPANY

Job Name: Spring Trails
Job Number: 13565-C
Date: 6/1/2011
Page : 6 of 6

Army Corps of Engineers - Sediment Yield

Project Site Location: Meyers Canyon - East Branch

Treatment Location # : Node 917
Description : Basin 900 - Offsite Watershed for Meyers Canyon Crossing

For Drainage Areas < 3 mi^2
Equation 2: Log Dy = 0.85 (Log Q) + 0.53 (Log RR) + 0.04 (Log A) + 0.22 FF

Peak Discharge From FloodSCx Calculations

100-yr =	821.0	cfs	10-yr =	469.6	cfs

Unit Peak Discharge: (Q)

100-yr =	1,530.6	cfs / sq mi	10-yr =	875.5	cfs / sq mi

Relief Ratio: (RR)

Upstream Elevation =	4360	feet
Downstream Elevation =	1990	feet
Stream Length =	8332	feet
Stream Length =	1.58	mile
RR =	1502	feet/mile

Area : (A)

Area =	343.3	acres
	0.536	square-miles

Frequency Factor: (FF)

Years Since Fire =	4	years	Years Since Fire =	1	year
FF =	4.5		FF =	6.5	

Un-adjusted Debris Yield:

Log Dy (100-yr) =	5.482		Log Dy (10-yr) =	5.716	
100-yr Dy =	303,504	cu yds/sq-mi	10-yr Dy =	519,926	cu yds/sq-mi

Adjustment-Transportation Factor:
A-T = 1 *per City & County of SB direction*

Adjusted Debris Yield:

Total 100-yr Debris Load =	162,801	cu yds	Total 10-yr Debris Load =	278,892	cu yds

Bulking Factor Calculation:

100-yr Storm Volume =	225.0	acre-feet	10-yr Storm Volume =	19.2	acre-feet
100-yr Debris Volume =	100.9	acre-feet	10-yr Debris Volume =	172.9	acre-feet
Total Volume =	325.9	acre-feet	Total Volume =	192.1	acre-feet
Bulking Factor (Total/VolQ) =	1.45		Bulking Factor (Total/VolQ) =	9.99	
100-year Bulked Flow =	**1,189**	**cfs**	**10-year Bulked Flow =**	**4,691**	**cfs**

Max Bulked Flow = 4,691 cfs

Notes:

Bulked Flows calculated to design the Eastern Road crossing for Street "A" Meyers Canyon (East Branch)

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             F L O O D    R O U T I N G    A N A L Y S I S
          USING COUNTY HYDROLOGY MANUAL OF SAN BERNARDINO(1986)
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             Ver. 8.0  Release Date: 01/01/2003  License ID 1261

                           Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* SPRING TRAILS                JUNE, 2011                J - 13565-C       *
* 100-YR AMC III - TO SUPPORT BULKING FACTOR CALCULATIONS                  *
* BASIN 100 - CABLE CANYON OFFSITE WATERSHSEDS                             *
 ****************************************************************************

  FILE NAME: ST100PS.DAT
  TIME/DATE OF STUDY: 12:09 06/08/2011


****************************************************************************
  FLOW PROCESS FROM NODE    100.10 TO NODE    106.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
============================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERSHED AREA =     357.100 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.118 HOURS
         FOOTHILL S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.155
         LOW LOSS FRACTION = 0.970
         *HYDROGRAPH MODEL #7 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.32
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  1.04
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.60
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  3.25
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  5.00
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) = 14.00

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
           5-MINUTE FACTOR = 0.984
          30-MINUTE FACTOR = 0.984
           1-HOUR FACTOR = 0.984
           3-HOUR FACTOR = 0.998
           6-HOUR FACTOR = 0.999
          24-HOUR FACTOR = 0.999

         UNIT HYDROGRAPH TIME UNIT =   1.000 MINUTES
         UNIT INTERVAL PERCENTAGE OF LAG-TIME =  14.124


         RUNOFF HYDROGRAPH LISTING LIMITS:
         MODEL TIME(HOURS) FOR BEGINNING OF RESULTS =  14.00
         MODEL TIME(HOURS) FOR END OF RESULTS =  18.00


============================================================================
                       UNIT HYDROGRAPH DETERMINATION

----------------------------------------------------------------------------
    INTERVAL          "S" GRAPH          UNIT HYDROGRAPH
     NUMBER          MEAN VALUES          ORDINATES(CFS)
```

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	0.918	198.244
2	3.106	472.353
3	6.277	684.886
4	10.273	862.759
5	15.823	1198.501
6	23.781	1718.424
7	38.373	3150.899
8	53.902	3353.250
9	61.605	1663.369
10	66.801	1121.841
11	71.104	929.235
12	74.835	805.694
13	77.948	672.139
14	80.487	548.245
15	83.004	543.632
16	85.026	436.532
17	86.915	407.957
18	88.515	345.402
19	89.917	302.761
20	91.220	281.443
21	92.409	256.777
22	93.457	226.245
23	94.367	196.537
24	95.131	164.855
25	95.874	160.525
26	96.393	111.913
27	96.848	98.418
28	97.304	98.357
29	97.759	98.387
30	98.034	59.361
31	98.108	15.825
32	98.181	15.736
33	98.254	15.796
34	98.327	15.796
35	98.400	15.766
36	98.473	15.707
37	98.546	15.825
38	98.619	15.766
39	98.692	15.766
40	98.765	15.766
41	98.838	15.764
42	98.911	15.766
43	98.984	15.766
44	99.057	15.825
45	99.130	15.766
46	99.203	15.766
47	99.276	15.766
48	99.349	15.766
49	99.422	15.766
50	99.495	15.766
51	99.568	15.766
52	99.641	15.766
53	99.714	15.766
54	99.787	15.766
55	99.860	15.766
56	99.933	15.766
57	100.000	14.385

```
----------------------------------------------------------------------------
    TOTAL SOIL-LOSS VOLUME(ACRE-FEET) =     110.7002
    TOTAL STORM RUNOFF VOLUME(ACRE-FEET) =     305.4565
----------------------------------------------------------------------------
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============================================================================

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

============================================================================
               HYDROGRAPH IN  ONE-MINUTE UNIT INTERVALS(CFS)
        (Notes: Time indicated is at END of Each Unit Intervals.
                Peak 5-minute rainfall intensity is modeled as
                a constant value for entire 5-minute period.)
----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.      250.0     500.0     750.0    1000.0
----------------------------------------------------------------------------
  14.000    146.1257    179.31  .      Q  .        V.         .         .
  14.017    146.3737    180.12  .      Q  .        V.         .         .
  14.033    146.6232    181.10  .      Q  .        V.         .         .
  14.050    146.8742    182.22  .      Q  .        V.         .         .
  14.067    147.1269    183.46  .      Q  .        V.         .         .
  14.083    147.3816    184.91  .      Q  .        V.         .         .
  14.100    147.6387    186.69  .      Q  .        V.         .         .
  14.117    147.8996    189.36  .      Q  .        V.         .         .
  14.133    148.1643    192.16  .      Q  .        V.         .         .
  14.150    148.4314    193.92  .      Q  .        V.         .         .
  14.167    148.7004    195.35  .      Q  .        V.         .         .
  14.183    148.9713    196.66  .      Q  .        V.         .         .
  14.200    149.2439    197.91  .      Q  .        V.         .         .
  14.217    149.5182    199.09  .      Q  .        V.         .         .
  14.233    149.7939    200.19  .       Q .        V.         .         .
  14.250    150.0712    201.30  .       Q .        V.         .         .
  14.267    150.3499    202.35  .       Q .        V.         .         .
  14.283    150.6300    203.39  .       Q .        V.         .         .
  14.300    150.9116    204.41  .       Q .        V.         .         .
  14.317    151.1945    205.40  .       Q .        V.         .         .
  14.333    151.4788    206.40  .       Q .        V.         .         .
  14.350    151.7645    207.38  .       Q .        V.         .         .
  14.367    152.0515    208.36  .       Q .        V.         .         .
  14.383    152.3398    209.33  .       Q .        V.         .         .
  14.400    152.6295    210.29  .       Q .        V.         .         .
  14.417    152.9205    211.26  .       Q .         V         .         .
  14.433    153.2128    212.21  .       Q .         V         .         .
  14.450    153.5064    213.17  .       Q .         V         .         .
  14.467    153.8013    214.13  .       Q .         V         .         .
  14.483    154.0976    215.11  .       Q .         V         .         .
  14.500    154.3952    216.07  .       Q .         V         .         .
  14.517    154.6942    217.02  .       Q .         V         .         .
  14.533    154.9944    217.99  .       Q .         V         .         .
  14.550    155.2960    218.96  .       Q .         V         .         .
  14.567    155.5990    219.95  .       Q .         V         .         .
  14.583    155.9034    220.96  .       Q .         V         .         .
  14.600    156.2091    221.98  .       Q .         V         .         .
  14.617    156.5163    223.01  .       Q .         V         .         .
  14.633    156.8249    224.06  .       Q .         V         .         .
  14.650    157.1350    225.12  .        Q.         V         .         .
  14.667    157.4465    226.20  .        Q.         V         .         .
  14.683    157.7596    227.29  .        Q.         V         .         .
  14.700    158.0742    228.40  .        Q.         V         .         .
  14.717    158.3904    229.53  .        Q.         V         .         .
  14.733    158.7081    230.68  .        Q.         V         .         .
  14.750    159.0275    231.84  .        Q.         V         .         .
  14.767    159.3484    233.03  .        Q.         V         .         .
  14.783    159.6711    234.23  .        Q.         V         .         .
  14.800    159.9954    235.45  .        Q.         V         .         .
  14.817    160.3214    236.69  .        Q.         V         .         .
  14.833    160.6492    237.95  .        Q.         .V        .         .
  14.850    160.9787    239.24  .        Q.         .V        .         .
  14.867    161.3100    240.54  .        Q.         .V        .         .
  14.883    161.6432    241.87  .        Q.         .V        .         .
  14.900    161.9782    243.22  .        Q.         .V        .         .
  14.917    162.3151    244.60  .        Q.         .V        .         .
  14.933    162.6539    246.00  .        Q.         .V        .         .
  14.950    162.9948    247.43  .        Q.         .V        .         .
  14.967    163.3375    248.87  .        Q.         .V        .         .
  14.983    163.6824    250.34  .         Q         .V        .         .
  15.000    164.0293    251.84  .         Q         .V        .         .
  15.017    164.3783    253.37  .         Q         .V        .         .
  15.033    164.7294    254.93  .         Q         .V        .         .
  15.050    165.0827    256.52  .         Q         .V        .         .
  15.067    165.4383    258.14  .         Q         .V        .         .
  15.083    165.7961    259.80  .         Q         .V        .         .
  15.100    166.1563    261.49  .         Q         .V        .         .
  15.117    166.5189    263.22  .         Q         .V        .         .
  15.133    166.8839    264.99  .         Q         .V        .         .
  15.150    167.2514    266.80  .         Q         .V        .         .
  15.167    167.6214    268.64  .         Q         .V        .         .
  15.183    167.9940    270.53  .         Q         .V        .         .
  15.200    168.3694    272.47  .         Q         . V       .         .
  15.217    168.7474    274.45  .         Q         . V       .         .
  15.233    169.1282    276.48  .         .Q        . V       .         .
  15.250    169.5119    278.55  .         .Q        . V       .         .
  15.267    169.8985    280.69  .         .Q        . V       .         .
  15.283    170.2881    282.87  .         .Q        . V       .         .
  15.300    170.6808    285.11  .         .Q        . V       .         .
  15.317    171.0767    287.42  .         .Q        . V       .         .
  15.333    171.4759    289.79  .         .Q        . V       .         .
  15.350    171.8781    292.03  .         .Q        . V       .         .
  15.367    172.2832    294.09  .         .Q        . V       .         .
  15.383    172.6909    296.02  .         .Q        . V       .         .
  15.400    173.1012    297.87  .         .Q        . V       .         .
  15.417    173.5138    299.49  .         .Q        . V       .         .
  15.433    173.9280    300.71  .         . Q       . V       .         .
  15.450    174.3421    300.69  .         . Q       . V       .         .
  15.467    174.7562    300.59  .         . Q       . V       .         .
  15.483    175.1724    302.21  .         . Q       . V       .         .
  15.500    175.5918    304.47  .         . Q       . V       .         .
  15.517    176.0148    307.04  .         . Q       .  V      .         .
  15.533    176.4416    309.87  .         . Q       .  V      .         .
  15.550    176.8727    312.96  .         . Q       .  V      .         .
  15.567    177.3083    316.32  .         . Q       .  V      .         .
  15.583    177.7489    319.85  .         . Q       .  V      .         .
  15.600    178.1947    323.66  .         . Q       .  V      .         .
  15.617    178.6461    327.68  .         .  Q      .  V      .         .
  15.633    179.1033    331.96  .         .  Q      .  V      .         .
  15.650    179.5668    336.50  .         .  Q      .  V      .         .
  15.667    180.0369    341.30  .         .  Q      .  V      .         .
  15.683    180.5144    346.62  .         .  Q      .  V      .         .
  15.700    181.0000    352.59  .         .   Q     .  V      .         .
  15.717    181.4947    359.14  .         .   Q     .  V      .         .
  15.733    181.9992    366.27  .         .   Q     .  V      .         .
  15.750    182.5146    374.18  .         .   Q     .  V      .         .
  15.767    183.0424    383.16  .         .    Q    .  V      .         .
  15.783    183.5855    394.34  .         .    Q    .   V     .         .
  15.800    184.1451    406.22  .         .     Q   .   V     .         .
  15.817    184.7188    416.54  .         .     Q   .   V     .         .
  15.833    185.3067    426.83  .         .      Q  .   V     .         .
  15.850    185.9096    437.64  .         .      Q  .   V     .         .
  15.867    186.5282    449.12  .         .      Q  .   V     .         .
  15.883    187.1638    461.43  .         .       Q .   V     .         .
  15.900    187.8177    474.73  .         .       Q .   V     .         .
  15.917    188.4919    489.49  .         .        Q.   V     .         .
  15.933    189.1886    505.84  .         .         Q   V     .         .
  15.950    189.9111    524.51  .         .         Q   V     .         .
  15.967    190.6687    549.99  .         .         .Q  V     .         .
  15.983    191.4727    583.71  .         .         .  Q V    .         .
  16.000    192.3322    624.01  .         .         .   QV    .         .
  16.017    193.2554    670.26  .         .         .    VQ   .         .
  16.033    194.2549    725.60  .         .         .    V   Q.         .
  16.050    195.3409    788.46  .         .         .    V    .Q        .
  16.067    196.5423    872.22  .         .         .    V    .   Q     .
  16.083    197.8434    944.58  .         .         .    V    .      Q  .
  16.100    199.1768    968.09  .         .         .     V   .       Q .
  16.117    200.5083    966.67  .         .         .     V   .       Q .
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16.133    201.8074    943.10  .         .         .     V   .      Q  .
16.150    203.0125    874.91  .         .         .     V   .   Q     .
16.167    204.0972    787.46  .         .         .     V   .Q        .
16.183    205.1040    730.96  .         .         .     V  Q.         .
16.200    206.0527    688.78  .         .         .     VQ  .         .
16.217    206.9497    651.21  .         .         .     QV  .         .
16.233    207.8005    617.68  .         .         .   Q  V  .         .
16.250    208.6093    587.18  .         .         .  Q   V  .         .
16.267    209.3801    559.61  .         .         . Q    V  .         .
16.283    210.1119    531.30  .         .         .Q     V  .         .
16.300    210.8084    505.63  .         .         Q      V  .         .
16.317    211.4738    483.10  .         .        Q.      V  .         .
16.333    212.1114    462.90  .         .      Q .      V  .         .
16.350    212.7235    444.39  .         .     Q  .      V  .         .
16.367    213.3123    427.45  .         .     Q  .      V  .         .
16.383    213.8786    411.11  .         .    Q   .       V .         .
16.400    214.4243    396.22  .         .   Q    .       V .         .
16.417    214.9518    383.00  .         .   Q    .       V .         .
16.433    215.4639    371.72  .         .  Q     .       V .         .
16.450    215.9619    361.61  .         .  Q     .       V .         .
16.467    216.4476    352.62  .         .  Q     .       V .         .
16.483    216.9203    343.14  .         . Q      .       V .         .
16.500    217.3801    333.80  .         . Q      .       V .         .
16.517    217.8275    324.79  .         .Q       .       V .         .
16.533    218.2642    317.08  .         .Q       .       V .         .
16.550    218.6924    310.89  .         .Q       .       V .         .
16.567    219.1129    305.24  .         .Q       .       V .         .
16.583    219.5262    300.06  .         .Q       .       V .         .
16.600    219.9328    295.22  .         Q.       .       V .         .
16.617    220.3332    290.69  .         Q.       .       V .         .
16.633    220.7277    286.37  .         Q.       .       V .         .
16.650    221.1164    282.25  .         Q.       .       V .         .
16.667    221.4999    278.38  .         Q.       .        V.         .
16.683    221.8783    274.73  .         Q        .        V.         .
16.700    222.2519    271.22  .         Q        .        V.         .
16.717    222.6208    267.85  .         Q        .        V.         .
16.733    222.9853    264.58  .         Q        .        V.         .
16.750    223.3454    261.44  .         Q        .        V.         .
16.767    223.7012    258.37  .         Q        .        V.         .
16.783    224.0530    255.39  .         Q        .        V.         .
16.800    224.4008    252.49  .         Q        .        V.         .
16.817    224.7448    249.69  .        Q.        .        V.         .
16.833    225.0849    246.92  .        Q.        .        V.         .
16.850    225.4212    244.18  .        Q.        .        V.         .
16.867    225.7538    241.48  .        Q.        .        V.         .
16.883    226.0828    238.83  .        Q.        .        V.         .
16.900    226.4081    236.16  .        Q.        .        V.         .
16.917    226.7293    233.23  .        Q.        .        V.         .
16.933    227.0466    230.37  .        Q.        .        V.         .
16.950    227.3601    227.56  .        Q.        .        V.         .
16.967    227.6697    224.82  .       Q .        .        V.         .
16.983    227.9757    222.16  .       Q .        .        V.         .
17.000    228.2786    219.92  .       Q .        .        V.         .
17.017    228.5785    217.68  .       Q .        .        V.         .
17.033    228.8751    215.36  .       Q .        .        V.         .
17.050    229.1685    212.99  .       Q .        .         V         .
17.067    229.4585    210.57  .       Q .        .         V         .
17.083    229.7450    208.00  .       Q .        .         V         .
17.100    230.0276    205.17  .       Q .        .         V         .
17.117    230.3052    201.50  .       Q .        .         V         .
17.133    230.5776    197.76  .      Q  .        .         V         .
17.150    230.8463    195.10  .      Q  .        .         V         .
17.167    231.1119    192.82  .      Q  .        .         V         .
17.183    231.3745    190.69  .      Q  .        .         V         .
17.200    231.6344    188.68  .      Q  .        .         V         .
17.217    231.8917    186.78  .      Q  .        .         V         .
17.233    232.1465    184.99  .      Q  .        .         V         .
17.250    232.3989    183.24  .      Q  .        .         V         .
17.267    232.6490    181.59  .      Q  .        .         V         .
17.283    232.8969    179.99  .      Q  .        .         V         .
17.300    233.1427    178.43  .      Q  .        .         V         .
17.317    233.3864    176.93  .      Q  .        .         V         .
17.333    233.6281    175.48  .      Q  .        .         V         .
17.350    233.8679    174.06  .     Q   .        .         V         .
17.367    234.1057    172.69  .     Q   .        .         V         .
17.383    234.3418    171.36  .     Q   .        .         V         .
17.400    234.5760    170.07  .     Q   .        .         V         .
17.417    234.8085    168.80  .     Q   .        .         V         .
17.433    235.0394    167.59  .     Q   .        .         V         .
17.450    235.2686    166.41  .     Q   .        .         V         .
17.467    235.4962    165.25  .     Q   .        .         V         .
17.483    235.7222    164.11  .     Q   .        .         V         .
17.500    235.9468    163.01  .     Q   .        .         V         .
17.517    236.1699    161.96  .     Q   .        .         V         .
17.533    236.3915    160.93  .     Q   .        .         V         .
17.550    236.6118    159.91  .     Q   .        .         V         .
17.567    236.8307    158.91  .     Q   .        .         .V        .
17.583    237.0482    157.93  .     Q   .        .         .V        .
17.600    237.2644    156.96  .     Q   .        .         .V        .
17.617    237.4793    156.01  .     Q   .        .         .V        .
17.633    237.6929    155.08  .     Q   .        .         .V        .
17.650    237.9052    154.16  .     Q   .        .         .V        .
17.667    238.1163    153.25  .     Q   .        .         .V        .
17.683    238.3262    152.36  .     Q   .        .         .V        .
17.700    238.5349    151.48  .     Q   .        .         .V        .
17.717    238.7423    150.62  .     Q   .        .         .V        .
17.733    238.9486    149.76  .    Q    .        .         .V        .
17.750    239.1537    148.92  .    Q    .        .         .V        .
17.767    239.3577    148.10  .    Q    .        .         .V        .
17.783    239.5606    147.28  .    Q    .        .         .V        .
17.800    239.7623    146.48  .    Q    .        .         .V        .
17.817    239.9630    145.68  .    Q    .        .         .V        .
17.833    240.1626    144.90  .    Q    .        .         .V        .
17.850    240.3611    144.13  .    Q    .        .         .V        .
17.867    240.5586    143.37  .    Q    .        .         .V        .
17.883    240.7550    142.62  .    Q    .        .         .V        .
17.900    240.9505    141.88  .    Q    .        .         .V        .
17.917    241.1449    141.15  .    Q    .        .         .V        .
17.933    241.3383    140.43  .    Q    .        .         .V        .
17.950    241.5308    139.72  .    Q    .        .         .V        .
17.967    241.7223    139.03  .    Q    .        .         .V        .
17.983    241.9128    138.34  .    Q    .        .         .V        .
18.000    242.1024    137.67  .    Q    .        .         .V        .

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  FLOW PROCESS FROM NODE    101.11 TO NODE    101.20 IS CODE =   1
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  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
============================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #2)

         WATERSHED AREA =      13.600 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.140 HOURS
         FOOTHILL S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.130
         LOW LOSS FRACTION = 0.990
         *HYDROGRAPH MODEL #7 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.32
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  1.04
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.60
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  3.25
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  5.00
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) = 14.00

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
           5-MINUTE FACTOR = 0.999
          30-MINUTE FACTOR = 0.999
           1-HOUR FACTOR = 0.999
```

3-HOUR FACTOR = 1.000
6-HOUR FACTOR = 1.000
24-HOUR FACTOR = 1.000

UNIT HYDROGRAPH TIME UNIT = 1.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME = 11.905

RUNOFF HYDROGRAPH LISTING LIMITS:
MODEL TIME(HOURS) FOR BEGINNING OF RESULTS = 14.00
MODEL TIME(HOURS) FOR END OF RESULTS = 18.00

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	0.774	6.364
2	2.501	14.202
3	4.844	19.268
4	8.069	26.523
5	11.579	28.870
6	16.739	42.432
7	23.488	55.500
8	34.786	92.912
9	50.267	127.310
10	58.120	64.584
11	63.770	46.465
12	67.699	32.308
13	71.244	29.152
14	74.402	25.971
15	77.206	23.060
16	79.368	17.782
17	81.574	18.140
18	83.514	15.959
19	85.220	14.026
20	86.805	13.037
21	88.191	11.397
22	89.395	9.903
23	90.532	9.352
24	91.613	8.883
25	92.568	7.856
26	93.450	7.253
27	94.240	6.498
28	94.885	5.308
29	95.529	5.293
30	96.096	4.661
31	96.487	3.215
32	96.871	3.160
33	97.255	3.156
34	97.639	3.160
35	97.972	2.742
36	98.065	0.764
37	98.127	0.507
38	98.189	0.507
39	98.250	0.503
40	98.312	0.507
41	98.373	0.507
42	98.435	0.507
43	98.496	0.502
44	98.558	0.513
45	98.620	0.505
46	98.681	0.507
47	98.743	0.505
48	98.804	0.507
49	98.866	0.507
50	98.928	0.507
51	98.989	0.502
52	99.051	0.510
53	99.112	0.502
54	99.173	0.502
55	99.234	0.502
56	99.295	0.502
57	99.356	0.502
58	99.417	0.502
59	99.478	0.502
60	99.539	0.502
61	99.600	0.502
62	99.661	0.502
63	99.722	0.502
64	99.783	0.502
65	99.844	0.502
66	99.905	0.502
67	99.966	0.502
68	100.000	0.278

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 3.5360
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 12.3238

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

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

==========================================================================
              HYDROGRAPH IN  ONE-MINUTE UNIT INTERVALS(CFS)
       (Notes: Time indicated is at END of Each Unit Intervals.
               Peak 5-minute rainfall intensity is modeled as
               a constant value for entire 5-minute period.)
--------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.        10.0      20.0      30.0      40.0
--------------------------------------------------------------------------
  14.000     5.9415     7.12 .      Q  .        V.         .         .
  14.017     5.9514     7.15 .      Q  .        V.         .         .
  14.033     5.9612     7.18 .      Q  .        V.         .         .
  14.050     5.9712     7.22 .      Q  .        V.         .         .
  14.067     5.9812     7.26 .      Q  .        V.         .         .
  14.083     5.9912     7.30 .      Q  .        V.         .         .
  14.100     6.0013     7.34 .      Q  .        V.         .         .
  14.117     6.0115     7.39 .      Q  .        V.         .         .
  14.133     6.0218     7.46 .      Q  .        V.         .         .
  14.150     6.0322     7.54 .      Q  .        V.         .         .
  14.167     6.0427     7.60 .      Q  .        V.         .         .
  14.183     6.0532     7.65 .      Q  .        V.         .         .
  14.200     6.0638     7.69 .      Q  .        V.         .         .
  14.217     6.0744     7.73 .      Q  .        V.         .         .
  14.233     6.0851     7.77 .      Q  .        V.         .         .
  14.250     6.0959     7.81 .      Q  .        V.         .         .
  14.267     6.1067     7.85 .      Q  .        V.         .         .
  14.283     6.1176     7.89 .      Q  .        V.         .         .
  14.300     6.1285     7.92 .      Q  .        V.         .         .
  14.317     6.1395     7.96 .      Q  .        V.         .         .
  14.333     6.1505     8.00 .      Q  .        V.         .         .
  14.350     6.1615     8.03 .       Q .        V.         .         .
  14.367     6.1727     8.07 .       Q .         V         .         .
  14.383     6.1838     8.11 .       Q .         V         .         .
  14.400     6.1950     8.14 .       Q .         V         .         .
  14.417     6.2063     8.18 .       Q .         V         .         .
  14.433     6.2176     8.22 .       Q .         V         .         .
  14.450     6.2290     8.25 .       Q .         V         .         .
  14.467     6.2404     8.29 .       Q .         V         .         .
  14.483     6.2519     8.33 .       Q .         V         .         .
  14.500     6.2634     8.36 .       Q .         V         .         .
  14.517     6.2750     8.40 .       Q .         V         .         .
  14.533     6.2866     8.44 .       Q .         V         .         .
  14.550     6.2983     8.48 .       Q .         V         .         .
  14.567     6.3100     8.52 .       Q .         V         .         .
  14.583     6.3218     8.56 .       Q .         V         .         .
  14.600     6.3336     8.59 .       Q .         V         .         .
  14.617     6.3455     8.63 .       Q .         V         .         .
  14.633     6.3575     8.67 .       Q .         V         .         .
  14.650     6.3695     8.71 .       Q .         V         .         .
  14.667     6.3815     8.75 .       Q .         V         .         .
  14.683     6.3937     8.80 .       Q .         V         .         .
  14.700     6.4058     8.84 .       Q .         V         .         .
  14.717     6.4181     8.88 .       Q .         V         .         .
  14.733     6.4304     8.92 .       Q .         V         .         .
  14.750     6.4427     8.97 .       Q .         V         .         .
  14.767     6.4551     9.01 .        Q.         V         .         .
  14.783     6.4676     9.06 .        Q.         V         .         .
  14.800     6.4801     9.10 .        Q.         .V        .         .
  14.817     6.4927     9.15 .        Q.         .V        .         .
  14.833     6.5054     9.20 .        Q.         .V        .         .
  14.850     6.5182     9.25 .        Q.         .V        .         .
  14.867     6.5310     9.30 .        Q.         .V        .         .
  14.883     6.5438     9.35 .        Q.         .V        .         .
  14.900     6.5568     9.40 .        Q.         .V        .         .
  14.917     6.5698     9.45 .        Q.         .V        .         .
  14.933     6.5829     9.50 .        Q.         .V        .         .
  14.950     6.5961     9.56 .        Q.         .V        .         .
  14.967     6.6093     9.61 .        Q.         .V        .         .
  14.983     6.6226     9.67 .        Q.         .V        .         .
  15.000     6.6360     9.73 .        Q.         .V        .         .
  15.017     6.6495     9.78 .        Q.         .V        .         .
  15.033     6.6630     9.84 .        Q.         .V        .         .
  15.050     6.6767     9.90 .        Q.         .V        .         .
  15.067     6.6904     9.97 .        Q.         .V        .         .
  15.083     6.7042    10.03 .         Q         .V        .         .
  15.100     6.7181    10.09 .         Q         .V        .         .
  15.117     6.7321    10.16 .         Q         .V        .         .
  15.133     6.7462    10.22 .         Q         .V        .         .
  15.150     6.7604    10.29 .         Q         .V        .         .
  15.167     6.7747    10.36 .         Q         .V        .         .
  15.183     6.7890    10.44 .         Q         . V       .         .
  15.200     6.8035    10.51 .         Q         . V       .         .
  15.217     6.8181    10.58 .         Q         . V       .         .
  15.233     6.8328    10.66 .         Q         . V       .         .
  15.250     6.8476    10.74 .         Q         . V       .         .
  15.267     6.8625    10.82 .         Q         . V       .         .
  15.283     6.8775    10.90 .         Q         . V       .         .
  15.300     6.8926    10.98 .         Q         . V       .         .
  15.317     6.9079    11.07 .         .Q        . V       .         .
  15.333     6.9232    11.16 .         .Q        . V       .         .
  15.350     6.9387    11.25 .         .Q        . V       .         .
  15.367     6.9543    11.33 .         .Q        . V       .         .
  15.383     6.9701    11.42 .         .Q        . V       .         .
  15.400     6.9859    11.50 .         .Q        . V       .         .
  15.417     7.0019    11.59 .         .Q        . V       .         .
  15.433     7.0179    11.67 .         .Q        . V       .         .
  15.450     7.0341    11.74 .         .Q        . V       .         .
  15.467     7.0503    11.79 .         .Q        . V       .         .
  15.483     7.0666    11.83 .         .Q        . V       .         .
  15.500     7.0831    11.91 .         .Q        . V       .         .
  15.517     7.0996    12.01 .         . Q       .  V      .         .
  15.533     7.1163    12.12 .         . Q       .  V      .         .
  15.550     7.1331    12.24 .         . Q       .  V      .         .
  15.567     7.1502    12.36 .         . Q       .  V      .         .
  15.583     7.1674    12.50 .         . Q       .  V      .         .
  15.600     7.1848    12.64 .         . Q       .  V      .         .
  15.617     7.2024    12.79 .         . Q       .  V      .         .
  15.633     7.2203    12.95 .         . Q       .  V      .         .
  15.650     7.2383    13.12 .         .  Q      .  V      .         .
  15.667     7.2566    13.29 .         .  Q      .  V      .         .
  15.683     7.2752    13.49 .         .  Q      .  V      .         .
  15.700     7.2941    13.70 .         .  Q      .  V      .         .
  15.717     7.3133    13.93 .         .  Q      .  V      .         .
  15.733     7.3328    14.18 .         .   Q     .  V      .         .
  15.750     7.3527    14.45 .         .   Q     .  V      .         .
  15.767     7.3730    14.75 .         .   Q     .  V      .         .
  15.783     7.3938    15.08 .         .    Q    .  V      .         .
  15.800     7.4151    15.47 .         .    Q    .   V     .         .
  15.817     7.4370    15.93 .         .    Q    .   V     .         .
  15.833     7.4595    16.32 .         .     Q   .   V     .         .
  15.850     7.4826    16.73 .         .     Q   .   V     .         .
  15.867     7.5061    17.13 .         .      Q  .   V     .         .
  15.883     7.5304    17.57 .         .      Q  .   V     .         .
  15.900     7.5552    18.04 .         .       Q .   V     .         .
  15.917     7.5808    18.56 .         .       Q .   V     .         .
  15.933     7.6071    19.12 .         .        Q.   V     .         .
  15.950     7.6343    19.77 .         .        Q.   V     .         .
  15.967     7.6627    20.62 .         .         Q   V     .         .
  15.983     7.6927    21.73 .         .         .Q  V     .         .
  16.000     7.7243    23.00 .         .         .  Q V    .         .
  16.017     7.7581    24.51 .         .         .   QV    .         .
  16.033     7.7941    26.12 .         .         .    VQ   .         .
  16.050     7.8326    27.95 .         .         .    V Q  .         .
  16.067     7.8737    29.85 .         .         .    V   Q.         .
  16.083     7.9183    32.40 .         .         .    V    . Q       .
  16.100     7.9667    35.15 .         .         .    V    .    Q    .
  16.117     8.0166    36.18 .         .         .     V   .     Q   .
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16.133      8.0665     36.29  .         .         .     V   .     Q   .
16.150      8.1156     35.58  .         .         .     V   .    Q    .
16.167      8.1619     33.66  .         .         .     V   .  Q      .
16.183      8.2039     30.47  .         .         .     V   Q         .
16.200      8.2430     28.41  .         .         .     V Q .         .
16.217      8.2798     26.71  .         .         .     Q   .         .
16.233      8.3148     25.43  .         .         .    QV   .         .
16.250      8.3482     24.26  .         .         .   Q  V  .         .
16.267      8.3801     23.16  .         .         .  Q   V  .         .
16.283      8.4106     22.14  .         .         . Q    V  .         .
16.300      8.4398     21.21  .         .         .Q     V  .         .
16.317      8.4677     20.24  .         .         Q      V  .         .
16.333      8.4945     19.41  .         .        Q.      V  .         .
16.350      8.5202     18.69  .         .       Q .      V  .         .
16.367      8.5450     18.01  .         .       Q .      V  .         .
16.383      8.5690     17.39  .         .      Q  .      V  .         .
16.400      8.5921     16.82  .         .     Q   .      V  .         .
16.417      8.6145     16.27  .         .     Q   .      V  .         .
16.433      8.6363     15.77  .         .    Q    .       V .         .
16.450      8.6573     15.30  .         .    Q    .       V .         .
16.467      8.6778     14.87  .         .   Q     .       V .         .
16.483      8.6978     14.49  .         .   Q     .       V .         .
16.500      8.7172     14.12  .         .   Q     .       V .         .
16.517      8.7362     13.75  .         .  Q      .       V .         .
16.533      8.7546     13.40  .         .  Q      .       V .         .
16.550      8.7726     13.05  .         .  Q      .       V .         .
16.567      8.7901     12.71  .         . Q       .       V .         .
16.583      8.8072     12.39  .         . Q       .       V .         .
16.600      8.8238     12.08  .         . Q       .       V .         .
16.617      8.8401     11.80  .         .Q        .       V .         .
16.633      8.8560     11.58  .         .Q        .       V .         .
16.650      8.8717     11.38  .         .Q        .       V .         .
16.667      8.8871     11.19  .         .Q        .       V .         .
16.683      8.9023     11.03  .         .Q        .       V .         .
16.700      8.9173     10.87  .         Q         .       V .         .
16.717      8.9320     10.71  .         Q         .       V .         .
16.733      8.9466     10.57  .         Q         .        V.         .
16.750      8.9609     10.43  .         Q         .        V.         .
16.767      8.9751     10.31  .         Q         .        V.         .
16.783      8.9892     10.18  .         Q         .        V.         .
16.800      9.0030     10.07  .         Q         .        V.         .
16.817      9.0167      9.95  .        Q.         .        V.         .
16.833      9.0303      9.84  .        Q.         .        V.         .
16.850      9.0437      9.73  .        Q.         .        V.         .
16.867      9.0570      9.63  .        Q.         .        V.         .
16.883      9.0701      9.53  .        Q.         .        V.         .
16.900      9.0831      9.43  .        Q.         .        V.         .
16.917      9.0959      9.34  .        Q.         .        V.         .
16.933      9.1087      9.24  .        Q.         .        V.         .
16.950      9.1213      9.15  .        Q.         .        V.         .
16.967      9.1338      9.06  .        Q.         .        V.         .
16.983      9.1461      8.98  .       Q .         .        V.         .
17.000      9.1584      8.89  .       Q .         .        V.         .
17.017      9.1705      8.80  .       Q .         .        V.         .
17.033      9.1825      8.72  .       Q .         .        V.         .
17.050      9.1944      8.63  .       Q .         .        V.         .
17.067      9.2061      8.53  .       Q .         .        V.         .
17.083      9.2178      8.43  .       Q .         .        V.         .
17.100      9.2292      8.33  .       Q .         .        V.         .
17.117      9.2405      8.21  .       Q .         .        V.         .
17.133      9.2517      8.08  .       Q .         .         V         .
17.150      9.2626      7.94  .      Q  .         .         V         .
17.167      9.2734      7.84  .      Q  .         .         V         .
17.183      9.2841      7.74  .      Q  .         .         V         .
17.200      9.2946      7.66  .      Q  .         .         V         .
17.217      9.3051      7.59  .      Q  .         .         V         .
17.233      9.3154      7.51  .      Q  .         .         V         .
17.250      9.3257      7.44  .      Q  .         .         V         .
17.267      9.3358      7.38  .      Q  .         .         V         .
17.283      9.3459      7.31  .      Q  .         .         V         .
17.300      9.3559      7.25  .      Q  .         .         V         .
17.317      9.3658      7.19  .      Q  .         .         V         .
17.333      9.3756      7.13  .      Q  .         .         V         .
17.350      9.3854      7.08  .      Q  .         .         V         .
17.367      9.3950      7.02  .      Q  .         .         V         .
17.383      9.4046      6.97  .     Q   .         .         V         .
17.400      9.4142      6.92  .     Q   .         .         V         .
17.417      9.4236      6.87  .     Q   .         .         V         .
17.433      9.4330      6.82  .     Q   .         .         V         .
17.450      9.4424      6.77  .     Q   .         .         V         .
17.467      9.4516      6.73  .     Q   .         .         V         .
17.483      9.4608      6.68  .     Q   .         .         V         .
17.500      9.4700      6.63  .     Q   .         .         V         .
17.517      9.4790      6.59  .     Q   .         .         V         .
17.533      9.4881      6.55  .     Q   .         .         V         .
17.550      9.4970      6.51  .     Q   .         .         V         .
17.567      9.5059      6.47  .     Q   .         .         V         .
17.583      9.5148      6.43  .     Q   .         .         V         .
17.600      9.5236      6.39  .     Q   .         .         V         .
17.617      9.5323      6.35  .     Q   .         .         V         .
17.633      9.5410      6.31  .     Q   .         .         V         .
17.650      9.5497      6.28  .     Q   .         .         V         .
17.667      9.5583      6.24  .     Q   .         .         .V        .
17.683      9.5668      6.21  .     Q   .         .         .V        .
17.700      9.5753      6.17  .     Q   .         .         .V        .
17.717      9.5838      6.14  .     Q   .         .         .V        .
17.733      9.5922      6.10  .     Q   .         .         .V        .
17.750      9.6005      6.07  .     Q   .         .         .V        .
17.767      9.6089      6.04  .     Q   .         .         .V        .
17.783      9.6171      6.01  .     Q   .         .         .V        .
17.800      9.6254      5.97  .    Q    .         .         .V        .
17.817      9.6336      5.94  .    Q    .         .         .V        .
17.833      9.6417      5.91  .    Q    .         .         .V        .
17.850      9.6498      5.88  .    Q    .         .         .V        .
17.867      9.6579      5.85  .    Q    .         .         .V        .
17.883      9.6659      5.82  .    Q    .         .         .V        .
17.900      9.6739      5.79  .    Q    .         .         .V        .
17.917      9.6818      5.77  .    Q    .         .         .V        .
17.933      9.6897      5.74  .    Q    .         .         .V        .
17.950      9.6976      5.71  .    Q    .         .         .V        .
17.967      9.7054      5.68  .    Q    .         .         .V        .
17.983      9.7132      5.66  .    Q    .         .         .V        .
18.000      9.7209      5.63  .    Q    .         .         .V        .
=====================================================================

  END OF FLOODSCx ROUTING ANALYSIS
```

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             Ver. 8.0  Release Date: 01/01/2003  License ID 1261

                          Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* SPRING TRAILS                JUNE, 2011                J - 13565-C      *
* 10-YR AMC II - TO SUPPORT BULKING FACTOR CALCULATIONS                   *
* BASIN 100 - CABLE CANYON OFFSITE WATERSHSEDS                            *
 ***************************************************************************

  FILE NAME: ST110PS.DAT
  TIME/DATE OF STUDY: 12:11 06/08/2011


                          ** INPUT SUMMARY **


****************************************************************************
  FLOW PROCESS FROM NODE    100.10 TO NODE    106.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #1<<<<<
============================================================================
  WATERSHED AREA =     357.100 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.118 HOURS
  FOOTHILL S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.370; LOW LOSS FRACTION = 0.970
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.24; 30-MINUTE =  0.72;  1-HOUR =  1.12
    3-HOUR =  2.15;    6-HOUR =  3.40; 24-HOUR =  8.50
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.984; 30-MINUTE = 0.984;  1-HOUR = 0.984
    3-HOUR = 0.998;    6-HOUR = 0.999; 24-HOUR = 0.999


****************************************************************************
  FLOW PROCESS FROM NODE    101.11 TO NODE    101.20 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERSHED AREA =      13.600 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.140 HOURS
  FOOTHILL S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.330; LOW LOSS FRACTION = 0.990
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.24; 30-MINUTE =  0.72;  1-HOUR =  1.12
    3-HOUR =  2.15;    6-HOUR =  3.40; 24-HOUR =  8.50
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.999; 30-MINUTE = 0.999;  1-HOUR = 0.999
    3-HOUR = 1.000;    6-HOUR = 1.000; 24-HOUR = 1.000
============================================================================
```

```
+-----------------------------------------------------------------------------------------------------------------------+
|                                        * AES FLOODSCx PROGRAM RESULTS SUMMARY *                                       |
|INPUT FILENAME: [ST110PS.DAT    ]                                                                   Page:   1 of    |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|UPSTREAM  DOWNSTREAM|                               | UPSTREAM   DOWNSTREAM| TIME(2) TO | MAX. STORAGE|           |
| NODE #     NODE #  | HYDROLOGIC/HYDRAULIC PROCESS  |PEAK (CFS)  PEAK (CFS)| PEAK (HR)  | MODELED (AF)| FOOTNOTES |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|   100.10     106.00| Subarea (UH) Added to Stream #1|       0.0       611.3|     16.100 |             |           |
|   101.11     101.20| Subarea (UH) Added to Stream #2|       0.0        23.1|     16.133 |             |           |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|Notes: 1 = BASIN MODEL VOLUME EXCEEDED; 2 = TIME IS AT END OF 1-MINUTE UNIT INTERVAL                                   |
|       3 = RUNOFF ESTIMATES DO NOT EXTEND PAST 2 DAYS AFTER THE PEAK DAY OF THE DESIGN STORM                            |
+-----------------------------------------------------------------------------------------------------------------------+

  END OF FLOODSCx ROUTING ANALYSIS
```

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                           Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* SPRING TRAILS                JUNE, 2011                J - 13565-C       *
* 100-YR AMC III - TO SUPPORT BULKING FACTOR CALCULATIONS                  *
* BASIN 100 - CABLE CANYON OFFSITE WATERSHSEDS                             *
 ****************************************************************************

  FILE NAME: ST100PS.DAT
  TIME/DATE OF STUDY: 12:02 06/08/2011


                          ** INPUT SUMMARY **


****************************************************************************
  FLOW PROCESS FROM NODE    100.10 TO NODE    106.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #1<<<<<
============================================================================
  WATERSHED AREA =     357.100 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.118 HOURS
  FOOTHILL S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.155; LOW LOSS FRACTION = 0.970
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.32; 30-MINUTE =  1.04;  1-HOUR =  1.60
    3-HOUR =  3.25;    6-HOUR =  5.00; 24-HOUR = 14.00
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.984; 30-MINUTE = 0.984;  1-HOUR = 0.984
    3-HOUR = 0.998;    6-HOUR = 0.999; 24-HOUR = 0.999


****************************************************************************
  FLOW PROCESS FROM NODE    101.11 TO NODE    101.20 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERSHED AREA =      13.600 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.140 HOURS
  FOOTHILL S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.130; LOW LOSS FRACTION = 0.990
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.32; 30-MINUTE =  1.04;  1-HOUR =  1.60
    3-HOUR =  3.25;    6-HOUR =  5.00; 24-HOUR = 14.00
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.999; 30-MINUTE = 0.999;  1-HOUR = 0.999
    3-HOUR = 1.000;    6-HOUR = 1.000; 24-HOUR = 1.000
============================================================================
```

```
+-----------------------------------------------------------------------------------------------------------------------+
|                                    * AES FLOODSCx PROGRAM RESULTS SUMMARY *                                           |
|INPUT FILENAME: [ST100PS.DAT    ]                                                                   Page:   1 of    |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|UPSTREAM  DOWNSTREAM|                               | UPSTREAM   DOWNSTREAM| TIME(2) TO | MAX. STORAGE|           |
| NODE #     NODE #  | HYDROLOGIC/HYDRAULIC PROCESS  |PEAK (CFS)  PEAK (CFS)| PEAK (HR)  | MODELED (AF)| FOOTNOTES |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|   100.10     106.00| Subarea (UH) Added to Stream #1|       0.0       968.1|     16.100 |             |           |
|   101.11     101.20| Subarea (UH) Added to Stream #2|       0.0        36.3|     16.133 |             |           |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|Notes: 1 = BASIN MODEL VOLUME EXCEEDED; 2 = TIME IS AT END OF 1-MINUTE UNIT INTERVAL                                   |
|       3 = RUNOFF ESTIMATES DO NOT EXTEND PAST 2 DAYS AFTER THE PEAK DAY OF THE DESIGN STORM                            |
+-----------------------------------------------------------------------------------------------------------------------+

  END OF FLOODSCx ROUTING ANALYSIS
```

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****************************************************************************

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                           Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* SPRING TRAILS                JUNE, 2011                J - 13565-C      *
* 10-YR AMC II - TO SUPPORT BULKING FACTOR CALCULATIONS                   *
* BASIN 100 - CABLE CANYON OFFSITE WATERSHSEDS                            *
 ************************************************************************

  FILE NAME: ST110PS.DAT
  TIME/DATE OF STUDY: 12:12 06/08/2011


****************************************************************************
  FLOW PROCESS FROM NODE    100.10 TO NODE    106.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
============================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERSHED AREA =     357.100 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.118 HOURS
         FOOTHILL S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.370
         LOW LOSS FRACTION = 0.970
         *HYDROGRAPH MODEL #7 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.24
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.72
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.12
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  2.15
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  3.40
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  8.50

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
           5-MINUTE FACTOR = 0.984
          30-MINUTE FACTOR = 0.984
           1-HOUR FACTOR = 0.984
           3-HOUR FACTOR = 0.998
           6-HOUR FACTOR = 0.999
          24-HOUR FACTOR = 0.999

         UNIT HYDROGRAPH TIME UNIT =   1.000 MINUTES
         UNIT INTERVAL PERCENTAGE OF LAG-TIME =  14.124


         RUNOFF HYDROGRAPH LISTING LIMITS:
         MODEL TIME(HOURS) FOR BEGINNING OF RESULTS =  14.00
         MODEL TIME(HOURS) FOR END OF RESULTS =  18.00


============================================================================
                        UNIT HYDROGRAPH DETERMINATION

----------------------------------------------------------------------------
    INTERVAL          "S" GRAPH          UNIT HYDROGRAPH
     NUMBER          MEAN VALUES          ORDINATES(CFS)
```

1	0.918	198.244
2	3.106	472.353
3	6.277	684.886
4	10.273	862.759
5	15.823	1198.501
6	23.781	1718.424
7	38.373	3150.899
8	53.902	3353.250
9	61.605	1663.369
10	66.801	1121.841
11	71.104	929.235
12	74.835	805.694
13	77.948	672.139
14	80.487	548.245
15	83.004	543.632
16	85.026	436.532
17	86.915	407.957
18	88.515	345.402
19	89.917	302.761
20	91.220	281.443
21	92.409	256.777
22	93.457	226.245
23	94.367	196.537
24	95.131	164.855
25	95.874	160.525
26	96.393	111.913
27	96.848	98.418
28	97.304	98.357
29	97.759	98.387
30	98.034	59.361
31	98.108	15.825
32	98.181	15.736
33	98.254	15.796
34	98.327	15.796
35	98.400	15.766
36	98.473	15.707
37	98.546	15.825
38	98.619	15.766
39	98.692	15.766
40	98.765	15.766
41	98.838	15.764
42	98.911	15.766
43	98.984	15.766
44	99.057	15.825
45	99.130	15.766
46	99.203	15.766
47	99.276	15.766
48	99.349	15.766
49	99.422	15.766
50	99.495	15.766
51	99.568	15.766
52	99.641	15.766
53	99.714	15.766
54	99.787	15.766
55	99.860	15.766
56	99.933	15.766
57	100.000	14.385

```
----------------------------------------------------------------------------
    TOTAL SOIL-LOSS VOLUME(ACRE-FEET) =     213.1914
    TOTAL STORM RUNOFF VOLUME(ACRE-FEET) =      39.5489
----------------------------------------------------------------------------
```

```
========================================================================

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

========================================================================
              HYDROGRAPH IN  ONE-MINUTE UNIT INTERVALS(CFS)
       (Notes: Time indicated is at END of Each Unit Intervals.
               Peak 5-minute rainfall intensity is modeled as
               a constant value for entire 5-minute period.)
------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.      175.0     350.0     525.0     700.0
------------------------------------------------------------------------
  14.000      5.3841     32.80  .Q   V    .         .         .         .
  14.017      5.4297     33.10  .Q   V    .         .         .         .
  14.033      5.4754     33.22  .Q   V    .         .         .         .
  14.050      5.5211     33.20  .Q   V    .         .         .         .
  14.067      5.5667     33.06  .Q   V    .         .         .         .
  14.083      5.6117     32.71  .Q   V    .         .         .         .
  14.100      5.6558     32.00  .Q   V    .         .         .         .
  14.117      5.6976     30.34  .Q   V    .         .         .         .
  14.133      5.7369     28.55  .Q   V    .         .         .         .
  14.150      5.7754     27.91  .Q   V    .         .         .         .
  14.167      5.8135     27.65  .Q   V    .         .         .         .
  14.183      5.8514     27.52  .Q   V    .         .         .         .
  14.200      5.8892     27.49  .Q   V    .         .         .         .
  14.217      5.9272     27.56  .Q   V    .         .         .         .
  14.233      5.9654     27.71  .Q    V   .         .         .         .
  14.250      6.0038     27.88  .Q    V   .         .         .         .
  14.267      6.0425     28.13  .Q    V   .         .         .         .
  14.283      6.0816     28.40  .Q    V   .         .         .         .
  14.300      6.1212     28.72  .Q    V   .         .         .         .
  14.317      6.1612     29.08  .Q    V   .         .         .         .
  14.333      6.2018     29.46  .Q    V   .         .         .         .
  14.350      6.2430     29.87  .Q    V   .         .         .         .
  14.367      6.2847     30.30  .Q    V   .         .         .         .
  14.383      6.3271     30.77  .Q    V   .         .         .         .
  14.400      6.3701     31.26  .Q    V   .         .         .         .
  14.417      6.4139     31.76  .Q    V   .         .         .         .
  14.433      6.4584     32.31  .Q    V   .         .         .         .
  14.450      6.5037     32.87  .Q    V   .         .         .         .
  14.467      6.5497     33.44  .Q    V   .         .         .         .
  14.483      6.5966     34.02  .Q    V   .         .         .         .
  14.500      6.6443     34.64  .Q    V   .         .         .         .
  14.517      6.6929     35.29  . Q   V   .         .         .         .
  14.533      6.7424     35.95  . Q   V   .         .         .         .
  14.550      6.7929     36.63  . Q   V   .         .         .         .
  14.567      6.8443     37.31  . Q   V   .         .         .         .
  14.583      6.8966     38.01  . Q   V   .         .         .         .
  14.600      6.9499     38.71  . Q    V  .         .         .         .
  14.617      7.0042     39.43  . Q    V  .         .         .         .
  14.633      7.0596     40.15  . Q    V  .         .         .         .
  14.650      7.1159     40.89  . Q    V  .         .         .         .
  14.667      7.1732     41.64  . Q    V  .         .         .         .
  14.683      7.2316     42.40  . Q    V  .         .         .         .
  14.700      7.2911     43.18  . Q    V  .         .         .         .
  14.717      7.3517     43.97  . Q    V  .         .         .         .
  14.733      7.4133     44.77  . Q    V  .         .         .         .
  14.750      7.4761     45.58  . Q    V  .         .         .         .
  14.767      7.5400     46.40  . Q    V  .         .         .         .
  14.783      7.6051     47.25  . Q    V  .         .         .         .
  14.800      7.6714     48.10  . Q    V  .         .         .         .
  14.817      7.7388     48.97  . Q    V  .         .         .         .
  14.833      7.8075     49.86  . Q    V  .         .         .         .
  14.850      7.8774     50.76  . Q    V  .         .         .         .
  14.867      7.9486     51.68  . Q     V .         .         .         .
  14.883      8.0211     52.61  .  Q    V .         .         .         .
  14.900      8.0949     53.57  .  Q    V .         .         .         .
  14.917      8.1700     54.54  .  Q    V .         .         .         .
  14.933      8.2465     55.53  .  Q    V .         .         .         .
  14.950      8.3243     56.54  .  Q    V .         .         .         .
  14.967      8.4036     57.58  .  Q    V .         .         .         .
  14.983      8.4844     58.64  .  Q    V .         .         .         .
  15.000      8.5667     59.72  .  Q    V .         .         .         .
  15.017      8.6504     60.82  .  Q    V .         .         .         .
  15.033      8.7358     61.95  .  Q    V .         .         .         .
  15.050      8.8227     63.10  .  Q    V .         .         .         .
  15.067      8.9112     64.27  .  Q     V.         .         .         .
  15.083      9.0014     65.47  .  Q     V.         .         .         .
  15.100      9.0933     66.70  .  Q     V.         .         .         .
  15.117      9.1869     67.95  .  Q     V.         .         .         .
  15.133      9.2822     69.24  .  Q     V.         .         .         .
  15.150      9.3794     70.55  .   Q    V.         .         .         .
  15.167      9.4784     71.89  .   Q    V.         .         .         .
  15.183      9.5793     73.26  .   Q    V.         .         .         .
  15.200      9.6822     74.67  .   Q    V.         .         .         .
  15.217      9.7870     76.12  .   Q    V.         .         .         .
  15.233      9.8939     77.60  .   Q     V         .         .         .
  15.250     10.0029     79.12  .   Q     V         .         .         .
  15.267     10.1140     80.67  .   Q     V         .         .         .
  15.283     10.2273     82.27  .   Q     V         .         .         .
  15.300     10.3429     83.92  .   Q     V         .         .         .
  15.317     10.4608     85.61  .   Q     V         .         .         .
  15.333     10.5812     87.34  .   Q     V         .         .         .
  15.350     10.7041     89.25  .    Q    V         .         .         .
  15.367     10.8299     91.36  .    Q    V         .         .         .
  15.383     10.9589     93.65  .    Q    .V        .         .         .
  15.400     11.0913     96.09  .    Q    .V        .         .         .
  15.417     11.2273     98.79  .    Q    .V        .         .         .
  15.433     11.3676    101.85  .    Q    .V        .         .         .
  15.450     11.5134    105.80  .     Q   .V        .         .         .
  15.467     11.6648    109.92  .     Q   .V        .         .         .
  15.483     11.8206    113.14  .     Q   .V        .         .         .
  15.500     11.9805    116.11  .     Q   . V       .         .         .
  15.517     12.1445    119.06  .     Q   . V       .         .         .
  15.533     12.3126    122.02  .     Q   . V       .         .         .
  15.550     12.4848    125.00  .      Q  . V       .         .         .
  15.567     12.6611    128.00  .      Q  . V       .         .         .
  15.583     12.8417    131.11  .      Q  . V       .         .         .
  15.600     13.0266    134.28  .      Q  .  V      .         .         .
  15.617     13.2161    137.55  .      Q  .  V      .         .         .
  15.633     13.4102    140.92  .       Q .  V      .         .         .
  15.650     13.6091    144.41  .       Q .  V      .         .         .
  15.667     13.8130    148.05  .       Q .  V      .         .         .
  15.683     14.0220    151.73  .       Q .   V     .         .         .
  15.700     14.2361    155.43  .       Q .   V     .         .         .
  15.717     14.4554    159.20  .        Q.   V     .         .         .
  15.733     14.6801    163.08  .        Q.   V     .         .         .
  15.750     14.9101    167.03  .        Q.    V    .         .         .
  15.767     15.1456    170.95  .        Q.    V    .         .         .
  15.783     15.3858    174.36  .        Q.    V    .         .         .
  15.800     15.6310    178.04  .         Q    V    .         .         .
  15.817     15.8832    183.13  .         Q     V   .         .         .
  15.833     16.1435    188.99  .         Q     V   .         .         .
  15.850     16.4128    195.50  .         .Q    V   .         .         .
  15.867     16.6920    202.71  .         .Q    V   .         .         .
  15.883     16.9824    210.77  .         . Q    V  .         .         .
  15.900     17.2851    219.80  .         . Q    V  .         .         .
  15.917     17.6019    229.95  .         .  Q   V  .         .         .
  15.933     17.9345    241.51  .         .  Q    V .         .         .
  15.950     18.2857    254.93  .         .   Q   V .         .         .
  15.967     18.6632    274.07  .         .    Q  V .         .         .
  15.983     19.0766    300.13  .         .      Q V.         .         .
  16.000     19.5334    331.69  .         .       QV.         .         .
  16.017     20.0407    368.25  .         .         VQ        .         .
  16.033     20.6089    412.50  .         .         V  Q      .         .
  16.050     21.2469    463.23  .         .         .V    Q   .         .
  16.067     21.9798    532.08  .         .         . V       Q         .
  16.083     22.7953    592.07  .         .         .  V      .  Q      .
  16.100     23.6374    611.32  .         .         .  V      .   Q     .
  16.117     24.4775    609.92  .         .         .   V     .   Q     .
```

```
16.133     25.2905    590.25  .         .         .    V    .  Q      .
16.150     26.0254    533.55  .         .         .     V   Q         .
16.167     26.6611    461.53  .         .         .     Q   .         .
16.183     27.2348    416.52  .         .         .  Q   V  .         .
16.200     27.7638    384.04  .         .         .Q      V .         .
16.217     28.2538    355.70  .         .         Q       V .         .
16.233     28.7097    330.99  .         .       Q .        V.         .
16.250     29.1357    309.30  .         .      Q  .        V.         .
16.267     29.5363    290.86  .         .     Q   .        V.         .
16.283     29.9138    274.06  .         .    Q    .         V         .
16.300     30.2717    259.84  .         .   Q     .         V         .
16.317     30.6099    245.50  .         .   Q     .         V         .
16.333     30.9297    232.19  .         .  Q      .         .V        .
16.350     31.2322    219.63  .         . Q       .         .V        .
16.367     31.5184    207.73  .         .Q        .         .V        .
16.383     31.7880    195.73  .         .Q        .         . V       .
16.400     32.0420    184.41  .         Q         .         . V       .
16.417     32.2816    173.95  .        Q.         .         . V       .
16.433     32.5077    164.15  .        Q.         .         . V       .
16.450     32.7187    153.22  .       Q .         .         .  V      .
16.467     32.9153    142.73  .       Q .         .         .  V      .
16.483     33.0998    133.96  .      Q  .         .         .  V      .
16.500     33.2733    125.94  .      Q  .         .         .  V      .
16.517     33.4363    118.35  .     Q   .         .         .  V      .
16.533     33.5905    111.93  .     Q   .         .         .  V      .
16.550     33.7377    106.87  .     Q   .         .         .   V     .
16.567     33.8786    102.31  .    Q    .         .         .   V     .
16.583     34.0138     98.10  .    Q    .         .         .   V     .
16.600     34.1435     94.21  .    Q    .         .         .   V     .
16.617     34.2683     90.56  .    Q    .         .         .   V     .
16.633     34.3883     87.16  .   Q     .         .         .   V     .
16.650     34.5040     83.96  .   Q     .         .         .   V     .
16.667     34.6154     80.90  .   Q     .         .         .    V    .
16.683     34.7228     77.98  .   Q     .         .         .    V    .
16.700     34.8264     75.19  .   Q     .         .         .    V    .
16.717     34.9263     72.54  .   Q     .         .         .    V    .
16.733     35.0227     70.01  .   Q     .         .         .    V    .
16.750     35.1158     67.57  .  Q      .         .         .    V    .
16.767     35.2056     65.23  .  Q      .         .         .    V    .
16.783     35.2924     62.99  .  Q      .         .         .    V    .
16.800     35.3762     60.81  .  Q      .         .         .    V    .
16.817     35.4570     58.70  .  Q      .         .         .    V    .
16.833     35.5351     56.65  .  Q      .         .         .    V    .
16.850     35.6104     54.69  .  Q      .         .         .     V   .
16.867     35.6830     52.75  .  Q      .         .         .     V   .
16.883     35.7531     50.85  . Q       .         .         .     V   .
16.900     35.8205     48.94  . Q       .         .         .     V   .
16.917     35.8849     46.79  . Q       .         .         .     V   .
16.933     35.9465     44.69  . Q       .         .         .     V   .
16.950     36.0052     42.64  . Q       .         .         .     V   .
16.967     36.0612     40.63  . Q       .         .         .     V   .
16.983     36.1145     38.69  . Q       .         .         .     V   .
17.000     36.1656     37.09  . Q       .         .         .     V   .
17.017     36.2148     35.72  . Q       .         .         .     V   .
17.033     36.2625     34.61  .Q        .         .         .     V   .
17.050     36.3089     33.70  .Q        .         .         .     V   .
17.067     36.3543     32.96  .Q        .         .         .     V   .
17.083     36.3990     32.50  .Q        .         .         .     V   .
17.100     36.4437     32.44  .Q        .         .         .     V   .
17.117     36.4897     33.38  .Q        .         .         .     V   .
17.133     36.5372     34.50  .Q        .         .         .     V   .
17.150     36.5848     34.52  .Q        .         .         .      V  .
17.167     36.6319     34.20  .Q        .         .         .      V  .
17.183     36.6784     33.79  .Q        .         .         .      V  .
17.200     36.7243     33.32  .Q        .         .         .      V  .
17.217     36.7695     32.78  .Q        .         .         .      V  .
17.233     36.8138     32.19  .Q        .         .         .      V  .
17.250     36.8574     31.62  .Q        .         .         .      V  .
17.267     36.9001     31.00  .Q        .         .         .      V  .
17.283     36.9419     30.38  .Q        .         .         .      V  .
17.300     36.9829     29.75  .Q        .         .         .      V  .
17.317     37.0230     29.10  .Q        .         .         .      V  .
17.333     37.0622     28.47  .Q        .         .         .      V  .
17.350     37.1005     27.83  .Q        .         .         .      V  .
17.367     37.1380     27.19  .Q        .         .         .      V  .
17.383     37.1745     26.55  .Q        .         .         .      V  .
17.400     37.2102     25.90  .Q        .         .         .      V  .
17.417     37.2450     25.26  .Q        .         .         .      V  .
17.433     37.2789     24.60  .Q        .         .         .      V  .
17.450     37.3119     23.95  .Q        .         .         .      V  .
17.467     37.3440     23.32  .Q        .         .         .      V  .
17.483     37.3753     22.69  .Q        .         .         .      V  .
17.500     37.4056     22.05  .Q        .         .         .      V  .
17.517     37.4351     21.40  .Q        .         .         .      V  .
17.533     37.4637     20.75  .Q        .         .         .      V  .
17.550     37.4914     20.12  .Q        .         .         .      V  .
17.567     37.5183     19.50  .Q        .         .         .      V  .
17.583     37.5443     18.88  .Q        .         .         .      V  .
17.600     37.5695     18.28  .Q        .         .         .      V  .
17.617     37.5938     17.69  .Q        .         .         .       V .
17.633     37.6174     17.11  Q         .         .         .       V .
17.650     37.6402     16.53  Q         .         .         .       V .
17.667     37.6621     15.97  Q         .         .         .       V .
17.683     37.6834     15.41  Q         .         .         .       V .
17.700     37.7039     14.87  Q         .         .         .       V .
17.717     37.7236     14.33  Q         .         .         .       V .
17.733     37.7426     13.80  Q         .         .         .       V .
17.750     37.7609     13.28  Q         .         .         .       V .
17.767     37.7785     12.76  Q         .         .         .       V .
17.783     37.7953     12.26  Q         .         .         .       V .
17.800     37.8115     11.76  Q         .         .         .       V .
17.817     37.8271     11.26  Q         .         .         .       V .
17.833     37.8419     10.78  Q         .         .         .       V .
17.850     37.8561     10.30  Q         .         .         .       V .
17.867     37.8696      9.83  Q         .         .         .       V .
17.883     37.8825      9.36  Q         .         .         .       V .
17.900     37.8948      8.90  Q         .         .         .       V .
17.917     37.9064      8.45  Q         .         .         .       V .
17.933     37.9174      8.01  Q         .         .         .       V .
17.950     37.9279      7.57  Q         .         .         .       V .
17.967     37.9377      7.15  Q         .         .         .       V .
17.983     37.9470      6.75  Q         .         .         .       V .
18.000     37.9558      6.37  Q         .         .         .       V .
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  FLOW PROCESS FROM NODE    101.11 TO NODE    101.20 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
============================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #2)

         WATERSHED AREA =      13.600 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.140 HOURS
         FOOTHILL S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.330
         LOW LOSS FRACTION = 0.990
         *HYDROGRAPH MODEL #7 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.24
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.72
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.12
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  2.15
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  3.40
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  8.50

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
           5-MINUTE FACTOR = 0.999
          30-MINUTE FACTOR = 0.999
           1-HOUR FACTOR = 0.999
```

3-HOUR FACTOR = 1.000
6-HOUR FACTOR = 1.000
24-HOUR FACTOR = 1.000

UNIT HYDROGRAPH TIME UNIT = 1.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME = 11.905

RUNOFF HYDROGRAPH LISTING LIMITS:
MODEL TIME(HOURS) FOR BEGINNING OF RESULTS = 14.00
MODEL TIME(HOURS) FOR END OF RESULTS = 18.00

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	0.774	6.364
2	2.501	14.202
3	4.844	19.268
4	8.069	26.523
5	11.579	28.870
6	16.739	42.432
7	23.488	55.500
8	34.786	92.912
9	50.267	127.310
10	58.120	64.584
11	63.770	46.465
12	67.699	32.308
13	71.244	29.152
14	74.402	25.971
15	77.206	23.060
16	79.368	17.782
17	81.574	18.140
18	83.514	15.959
19	85.220	14.026
20	86.805	13.037
21	88.191	11.397
22	89.395	9.903
23	90.532	9.352
24	91.613	8.883
25	92.568	7.856
26	93.450	7.253
27	94.240	6.498
28	94.885	5.308
29	95.529	5.293
30	96.096	4.661
31	96.487	3.215
32	96.871	3.160
33	97.255	3.156
34	97.639	3.160
35	97.972	2.742
36	98.065	0.764
37	98.127	0.507
38	98.189	0.507
39	98.250	0.503
40	98.312	0.507
41	98.373	0.507
42	98.435	0.507
43	98.496	0.502
44	98.558	0.513
45	98.620	0.505
46	98.681	0.507
47	98.743	0.505
48	98.804	0.507
49	98.866	0.507
50	98.928	0.507
51	98.989	0.502
52	99.051	0.510
53	99.112	0.502
54	99.173	0.502
55	99.234	0.502
56	99.295	0.502
57	99.356	0.502
58	99.417	0.502
59	99.478	0.502
60	99.539	0.502
61	99.600	0.502
62	99.661	0.502
63	99.722	0.502
64	99.783	0.502
65	99.844	0.502
66	99.905	0.502
67	99.966	0.502
68	100.000	0.278

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 7.9135
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 1.7185

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

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

=============================================================================
               HYDROGRAPH IN  ONE-MINUTE UNIT INTERVALS(CFS)
        (Notes: Time indicated is at END of Each Unit Intervals.
                Peak 5-minute rainfall intensity is modeled as
                a constant value for entire 5-minute period.)
-----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.        7.5      15.0      22.5      30.0
-----------------------------------------------------------------------------
  14.000      0.2406      1.77  . Q  V    .         .         .         .
  14.017      0.2430      1.78  . Q  V    .         .         .         .
  14.033      0.2455      1.78  . Q  V    .         .         .         .
  14.050      0.2480      1.79  . Q  V    .         .         .         .
  14.067      0.2504      1.78  . Q  V    .         .         .         .
  14.083      0.2529      1.77  . Q  V    .         .         .         .
  14.100      0.2553      1.76  . Q  V    .         .         .         .
  14.117      0.2577      1.73  . Q  V    .         .         .         .
  14.133      0.2600      1.67  . Q   V   .         .         .         .
  14.150      0.2622      1.59  . Q   V   .         .         .         .
  14.167      0.2643      1.56  . Q   V   .         .         .         .
  14.183      0.2664      1.54  . Q   V   .         .         .         .
  14.200      0.2685      1.53  . Q   V   .         .         .         .
  14.217      0.2706      1.53  . Q   V   .         .         .         .
  14.233      0.2727      1.53  . Q   V   .         .         .         .
  14.250      0.2749      1.53  . Q   V   .         .         .         .
  14.267      0.2770      1.54  . Q   V   .         .         .         .
  14.283      0.2791      1.54  . Q   V   .         .         .         .
  14.300      0.2812      1.55  . Q   V   .         .         .         .
  14.317      0.2834      1.56  . Q   V   .         .         .         .
  14.333      0.2855      1.57  . Q   V   .         .         .         .
  14.350      0.2877      1.58  . Q   V   .         .         .         .
  14.367      0.2899      1.60  . Q   V   .         .         .         .
  14.383      0.2921      1.61  . Q   V   .         .         .         .
  14.400      0.2944      1.63  . Q   V   .         .         .         .
  14.417      0.2967      1.65  . Q   V   .         .         .         .
  14.433      0.2989      1.66  . Q   V   .         .         .         .
  14.450      0.3013      1.68  . Q    V  .         .         .         .
  14.467      0.3036      1.70  . Q    V  .         .         .         .
  14.483      0.3060      1.72  . Q    V  .         .         .         .
  14.500      0.3084      1.74  . Q    V  .         .         .         .
  14.517      0.3108      1.77  . Q    V  .         .         .         .
  14.533      0.3133      1.79  . Q    V  .         .         .         .
  14.550      0.3158      1.81  . Q    V  .         .         .         .
  14.567      0.3183      1.83  . Q    V  .         .         .         .
  14.583      0.3208      1.86  . Q    V  .         .         .         .
  14.600      0.3234      1.89  . Q    V  .         .         .         .
  14.617      0.3261      1.91  . Q    V  .         .         .         .
  14.633      0.3288      1.94  . Q    V  .         .         .         .
  14.650      0.3315      1.97  . Q    V  .         .         .         .
  14.667      0.3342      2.00  . Q    V  .         .         .         .
  14.683      0.3370      2.03  . Q    V  .         .         .         .
  14.700      0.3398      2.05  . Q    V  .         .         .         .
  14.717      0.3427      2.08  . Q    V  .         .         .         .
  14.733      0.3456      2.11  . Q     V .         .         .         .
  14.750      0.3486      2.15  . Q     V .         .         .         .
  14.767      0.3516      2.18  . Q     V .         .         .         .
  14.783      0.3546      2.21  . Q     V .         .         .         .
  14.800      0.3577      2.24  . Q     V .         .         .         .
  14.817      0.3608      2.27  .  Q    V .         .         .         .
  14.833      0.3640      2.31  .  Q    V .         .         .         .
  14.850      0.3672      2.34  .  Q    V .         .         .         .
  14.867      0.3705      2.37  .  Q    V .         .         .         .
  14.883      0.3738      2.41  .  Q    V .         .         .         .
  14.900      0.3772      2.45  .  Q    V .         .         .         .
  14.917      0.3806      2.48  .  Q    V .         .         .         .
  14.933      0.3841      2.52  .  Q    V .         .         .         .
  14.950      0.3876      2.56  .  Q     V.         .         .         .
  14.967      0.3912      2.60  .  Q     V.         .         .         .
  14.983      0.3948      2.64  .  Q     V.         .         .         .
  15.000      0.3985      2.68  .  Q     V.         .         .         .
  15.017      0.4022      2.72  .  Q     V.         .         .         .
  15.033      0.4060      2.76  .  Q     V.         .         .         .
  15.050      0.4099      2.80  .  Q     V.         .         .         .
  15.067      0.4138      2.85  .  Q     V.         .         .         .
  15.083      0.4178      2.89  .  Q     V.         .         .         .
  15.100      0.4218      2.94  .  Q     V.         .         .         .
  15.117      0.4260      2.98  .  Q     V.         .         .         .
  15.133      0.4301      3.03  .   Q     V         .         .         .
  15.150      0.4344      3.08  .   Q     V         .         .         .
  15.167      0.4387      3.13  .   Q     V         .         .         .
  15.183      0.4431      3.18  .   Q     V         .         .         .
  15.200      0.4475      3.24  .   Q     V         .         .         .
  15.217      0.4521      3.29  .   Q     V         .         .         .
  15.233      0.4567      3.34  .   Q     V         .         .         .
  15.250      0.4614      3.40  .   Q     V         .         .         .
  15.267      0.4661      3.46  .   Q     V         .         .         .
  15.283      0.4710      3.52  .   Q     V         .         .         .
  15.300      0.4759      3.58  .   Q     .V        .         .         .
  15.317      0.4809      3.65  .   Q     .V        .         .         .
  15.333      0.4860      3.71  .   Q     .V        .         .         .
  15.350      0.4912      3.78  .    Q    .V        .         .         .
  15.367      0.4966      3.86  .    Q    .V        .         .         .
  15.383      0.5020      3.95  .    Q    .V        .         .         .
  15.400      0.5076      4.04  .    Q    .V        .         .         .
  15.417      0.5133      4.14  .    Q    .V        .         .         .
  15.433      0.5191      4.25  .    Q    . V       .         .         .
  15.450      0.5252      4.38  .    Q    . V       .         .         .
  15.467      0.5314      4.53  .     Q   . V       .         .         .
  15.483      0.5379      4.72  .     Q   . V       .         .         .
  15.500      0.5446      4.86  .     Q   . V       .         .         .
  15.517      0.5515      4.99  .     Q   . V       .         .         .
  15.533      0.5585      5.10  .     Q   . V       .         .         .
  15.550      0.5657      5.22  .     Q   .  V      .         .         .
  15.567      0.5731      5.34  .      Q  .  V      .         .         .
  15.583      0.5806      5.47  .      Q  .  V      .         .         .
  15.600      0.5883      5.59  .      Q  .  V      .         .         .
  15.617      0.5961      5.71  .      Q  .  V      .         .         .
  15.633      0.6042      5.84  .      Q  .   V     .         .         .
  15.650      0.6124      5.97  .      Q  .   V     .         .         .
  15.667      0.6208      6.11  .       Q .   V     .         .         .
  15.683      0.6294      6.25  .       Q .   V     .         .         .
  15.700      0.6382      6.39  .       Q .   V     .         .         .
  15.717      0.6472      6.53  .       Q .    V    .         .         .
  15.733      0.6564      6.68  .       Q .    V    .         .         .
  15.750      0.6658      6.83  .        Q.    V    .         .         .
  15.767      0.6755      6.98  .        Q.    V    .         .         .
  15.783      0.6853      7.14  .        Q.    V    .         .         .
  15.800      0.6953      7.29  .        Q.     V   .         .         .
  15.817      0.7056      7.43  .        Q.     V   .         .         .
  15.833      0.7161      7.62  .         Q     V   .         .         .
  15.850      0.7269      7.85  .         Q     V   .         .         .
  15.867      0.7380      8.10  .         Q      V  .         .         .
  15.883      0.7496      8.38  .         .Q     V  .         .         .
  15.900      0.7615      8.69  .         .Q     V  .         .         .
  15.917      0.7740      9.04  .         . Q     V .         .         .
  15.933      0.7870      9.43  .         . Q     V .         .         .
  15.950      0.8006      9.89  .         .  Q    V .         .         .
  15.967      0.8151     10.52  .         .   Q   V .         .         .
  15.983      0.8308     11.36  .         .    Q   V.         .         .
  16.000      0.8478     12.35  .         .     Q  V.         .         .
  16.017      0.8664     13.53  .         .       Q V         .         .
  16.033      0.8868     14.80  .         .        QV         .         .
  16.050      0.9092     16.25  .         .         .Q        .         .
  16.067      0.9336     17.77  .         .         .V Q      .         .
  16.083      0.9610     19.85  .         .         . V   Q   .         .
  16.100      0.9915     22.13  .         .         .  V     Q.         .
  16.117      1.0231     22.97  .         .         .  V      Q         .
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16.133      1.0549     23.05  .         .         .   V     Q         .
16.150      1.0858     22.46  .         .         .    V   Q.         .
16.167      1.1145     20.86  .         .         .    V Q  .         .
16.183      1.1396     18.23  .         .         .   Q V   .         .
16.200      1.1625     16.59  .         .         . Q    V  .         .
16.217      1.1835     15.27  .         .         Q      V  .         .
16.233      1.2032     14.31  .         .       Q.       V .         .
16.250      1.2218     13.44  .         .      Q  .       V .         .
16.267      1.2392     12.66  .         .     Q   .       V .         .
16.283      1.2557     11.97  .         .    Q    .        V.         .
16.300      1.2714     11.41  .         .    Q    .        V.         .
16.317      1.2864     10.87  .         .   Q     .        V.         .
16.333      1.3006     10.35  .         .  Q      .         V         .
16.350      1.3142      9.88  .         .  Q      .         V         .
16.367      1.3272      9.41  .         . Q       .         V         .
16.383      1.3395      8.97  .         .Q        .         .V        .
16.400      1.3513      8.56  .         .Q        .         .V        .
16.417      1.3626      8.15  .         Q         .         .V        .
16.433      1.3732      7.76  .         Q         .         .V        .
16.450      1.3834      7.37  .        Q.         .         . V       .
16.467      1.3930      6.95  .        Q.         .         . V       .
16.483      1.4020      6.52  .       Q .         .         . V       .
16.500      1.4105      6.19  .       Q .         .         . V       .
16.517      1.4186      5.87  .      Q  .         .         .  V      .
16.533      1.4263      5.58  .      Q  .         .         .  V      .
16.550      1.4336      5.30  .      Q  .         .         .  V      .
16.567      1.4405      5.03  .     Q   .         .         .  V      .
16.583      1.4471      4.77  .     Q   .         .         .  V      .
16.600      1.4533      4.53  .     Q   .         .         .  V      .
16.617      1.4592      4.30  .    Q    .         .         .  V      .
16.633      1.4649      4.13  .    Q    .         .         .   V     .
16.650      1.4704      3.97  .    Q    .         .         .   V     .
16.667      1.4756      3.83  .    Q    .         .         .   V     .
16.683      1.4807      3.70  .   Q     .         .         .   V     .
16.700      1.4857      3.57  .   Q     .         .         .   V     .
16.717      1.4904      3.46  .   Q     .         .         .   V     .
16.733      1.4950      3.35  .   Q     .         .         .   V     .
16.750      1.4995      3.24  .   Q     .         .         .   V     .
16.767      1.5038      3.14  .   Q     .         .         .    V    .
16.783      1.5080      3.05  .   Q     .         .         .    V    .
16.800      1.5121      2.96  .  Q      .         .         .    V    .
16.817      1.5161      2.87  .  Q      .         .         .    V    .
16.833      1.5199      2.79  .  Q      .         .         .    V    .
16.850      1.5236      2.71  .  Q      .         .         .    V    .
16.867      1.5273      2.63  .  Q      .         .         .    V    .
16.883      1.5308      2.55  .  Q      .         .         .    V    .
16.900      1.5342      2.48  .  Q      .         .         .    V    .
16.917      1.5375      2.41  .  Q      .         .         .    V    .
16.933      1.5407      2.35  .  Q      .         .         .    V    .
16.950      1.5439      2.28  .  Q      .         .         .    V    .
16.967      1.5469      2.22  . Q       .         .         .     V   .
16.983      1.5499      2.16  . Q       .         .         .     V   .
17.000      1.5528      2.10  . Q       .         .         .     V   .
17.017      1.5556      2.04  . Q       .         .         .     V   .
17.033      1.5584      1.99  . Q       .         .         .     V   .
17.050      1.5610      1.95  . Q       .         .         .     V   .
17.067      1.5637      1.92  . Q       .         .         .     V   .
17.083      1.5663      1.88  . Q       .         .         .     V   .
17.100      1.5688      1.85  . Q       .         .         .     V   .
17.117      1.5713      1.83  . Q       .         .         .     V   .
17.133      1.5739      1.84  . Q       .         .         .     V   .
17.150      1.5765      1.88  . Q       .         .         .     V   .
17.167      1.5790      1.88  . Q       .         .         .     V   .
17.183      1.5816      1.87  . Q       .         .         .     V   .
17.200      1.5842      1.85  . Q       .         .         .     V   .
17.217      1.5867      1.83  . Q       .         .         .     V   .
17.233      1.5892      1.81  . Q       .         .         .     V   .
17.250      1.5916      1.79  . Q       .         .         .      V  .
17.267      1.5941      1.76  . Q       .         .         .      V  .
17.283      1.5965      1.74  . Q       .         .         .      V  .
17.300      1.5988      1.72  . Q       .         .         .      V  .
17.317      1.6012      1.69  . Q       .         .         .      V  .
17.333      1.6035      1.67  . Q       .         .         .      V  .
17.350      1.6057      1.64  . Q       .         .         .      V  .
17.367      1.6080      1.62  . Q       .         .         .      V  .
17.383      1.6102      1.59  . Q       .         .         .      V  .
17.400      1.6123      1.57  . Q       .         .         .      V  .
17.417      1.6144      1.55  . Q       .         .         .      V  .
17.433      1.6165      1.52  . Q       .         .         .      V  .
17.450      1.6186      1.50  .Q        .         .         .      V  .
17.467      1.6206      1.47  .Q        .         .         .      V  .
17.483      1.6226      1.45  .Q        .         .         .      V  .
17.500      1.6246      1.43  .Q        .         .         .      V  .
17.517      1.6265      1.40  .Q        .         .         .      V  .
17.533      1.6284      1.38  .Q        .         .         .      V  .
17.550      1.6303      1.35  .Q        .         .         .      V  .
17.567      1.6321      1.33  .Q        .         .         .      V  .
17.583      1.6339      1.31  .Q        .         .         .       V .
17.600      1.6357      1.29  .Q        .         .         .       V .
17.617      1.6374      1.26  .Q        .         .         .       V .
17.633      1.6391      1.24  .Q        .         .         .       V .
17.650      1.6408      1.22  .Q        .         .         .       V .
17.667      1.6425      1.19  .Q        .         .         .       V .
17.683      1.6441      1.17  .Q        .         .         .       V .
17.700      1.6457      1.15  .Q        .         .         .       V .
17.717      1.6472      1.13  .Q        .         .         .       V .
17.733      1.6487      1.11  .Q        .         .         .       V .
17.750      1.6502      1.09  .Q        .         .         .       V .
17.767      1.6517      1.07  .Q        .         .         .       V .
17.783      1.6531      1.05  .Q        .         .         .       V .
17.800      1.6546      1.03  .Q        .         .         .       V .
17.817      1.6559      1.01  .Q        .         .         .       V .
17.833      1.6573      0.99  .Q        .         .         .       V .
17.850      1.6586      0.97  .Q        .         .         .       V .
17.867      1.6599      0.95  .Q        .         .         .       V .
17.883      1.6612      0.93  .Q        .         .         .       V .
17.900      1.6625      0.91  .Q        .         .         .       V .
17.917      1.6637      0.90  .Q        .         .         .       V .
17.933      1.6649      0.88  .Q        .         .         .       V .
17.950      1.6661      0.86  .Q        .         .         .       V .
17.967      1.6673      0.84  .Q        .         .         .       V .
17.983      1.6684      0.83  .Q        .         .         .       V .
18.000      1.6695      0.81  .Q        .         .         .       V .
=====================================================================

  END OF FLOODSCx ROUTING ANALYSIS
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             F L O O D    R O U T I N G    A N A L Y S I S
          USING COUNTY HYDROLOGY MANUAL OF SAN BERNARDINO(1986)
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                           Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* SPRING TRAILS               JUNE, 2011                J - 13565-C       *
* 100-YR AMC III - TO SUPPORT BULKING FACTOR CALCULATIONS                 *
* BASIN 300 - MEYERS CANYON (WEST) OFFSITE WATERSHSEDS                    *
 ************************************************************************

  FILE NAME: ST300PS.DAT
  TIME/DATE OF STUDY: 12:27 06/08/2011


****************************************************************************
  FLOW PROCESS FROM NODE    310.11 TO NODE    310.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
============================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERSHED AREA =      14.700 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.148 HOURS
         FOOTHILL S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.420
         LOW LOSS FRACTION = 0.990
         *HYDROGRAPH MODEL #7 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.32
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  1.04
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.60
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  3.25
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  5.00
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) = 14.00

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
           5-MINUTE FACTOR = 0.999
          30-MINUTE FACTOR = 0.999
           1-HOUR FACTOR = 0.999
           3-HOUR FACTOR = 1.000
           6-HOUR FACTOR = 1.000
          24-HOUR FACTOR = 1.000

         UNIT HYDROGRAPH TIME UNIT =   1.000 MINUTES
         UNIT INTERVAL PERCENTAGE OF LAG-TIME =  11.261


         RUNOFF HYDROGRAPH LISTING LIMITS:
         MODEL TIME(HOURS) FOR BEGINNING OF RESULTS =  14.00
         MODEL TIME(HOURS) FOR END OF RESULTS =  18.00


============================================================================
                       UNIT HYDROGRAPH DETERMINATION

----------------------------------------------------------------------------
     INTERVAL          "S" GRAPH          UNIT HYDROGRAPH
      NUMBER          MEAN VALUES          ORDINATES(CFS)
```

1	0.732	6.507
2	2.334	14.241
3	4.494	19.203
4	7.418	25.989
5	10.613	28.395
6	15.029	39.257
7	20.797	51.271
8	29.271	75.322
9	43.933	130.330
10	54.628	95.071
11	60.781	54.693
12	65.261	39.824
13	68.914	32.470
14	72.146	28.727
15	75.065	25.947
16	77.586	22.412
17	79.602	17.915
18	81.696	18.613
19	83.514	16.158
20	85.125	14.324
21	86.649	13.547
22	87.983	11.858
23	89.138	10.264
24	90.236	9.764
25	91.264	9.132
26	92.230	8.587
27	93.068	7.454
28	93.886	7.269
29	94.538	5.792
30	95.146	5.410
31	95.754	5.400
32	96.217	4.119
33	96.580	3.227
34	96.944	3.231
35	97.307	3.227
36	97.670	3.230
37	97.980	2.755
38	98.064	0.743
39	98.122	0.516
40	98.180	0.520
41	98.238	0.518
42	98.296	0.515
43	98.355	0.518
44	98.413	0.521
45	98.472	0.518
46	98.530	0.515
47	98.588	0.521
48	98.646	0.512
49	98.704	0.518
50	98.763	0.521
51	98.821	0.515
52	98.879	0.518
53	98.937	0.518
54	98.995	0.518
55	99.054	0.518
56	99.112	0.518
57	99.170	0.518
58	99.228	0.518
59	99.287	0.518
60	99.345	0.518
61	99.403	0.518
62	99.462	0.518
63	99.520	0.518
64	99.578	0.518
65	99.636	0.518
66	99.695	0.518
67	99.753	0.518
68	99.811	0.518
69	99.869	0.518
70	99.928	0.518

71	99.986	0.518
72	100.000	0.124

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 12.3480
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 4.7989

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

==========

HYDROGRAPH IN ONE-MINUTE UNIT INTERVALS(CFS)
(Notes: Time indicated is at END of Each Unit Intervals.
Peak 5-minute rainfall intensity is modeled as
a constant value for entire 5-minute period.)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	10.0	20.0	30.0	40.0
14.000	1.5155	3.39	. Q	. V	.	.	.
14.017	1.5202	3.42	. Q	. V	.	.	.
14.033	1.5250	3.45	. Q	. V	.	.	.
14.050	1.5298	3.49	. Q	. V	.	.	.
14.067	1.5346	3.53	. Q	. V	.	.	.
14.083	1.5395	3.57	. Q	. V	.	.	.
14.100	1.5445	3.61	. Q	. V	.	.	.
14.117	1.5496	3.67	. Q	. V	.	.	.
14.133	1.5547	3.73	. Q	. V	.	.	.
14.150	1.5600	3.82	. Q	. V	.	.	.
14.167	1.5653	3.89	. Q	. V	.	.	.
14.183	1.5707	3.94	. Q	. V	.	.	.
14.200	1.5762	3.99	. Q	. V	.	.	.
14.217	1.5818	4.03	. Q	. V	.	.	.
14.233	1.5874	4.08	. Q	. V	.	.	.
14.250	1.5931	4.12	. Q	. V	.	.	.
14.267	1.5988	4.16	. Q	. V	.	.	.
14.283	1.6046	4.20	. Q	. V	.	.	.
14.300	1.6104	4.24	. Q	. V	.	.	.
14.317	1.6163	4.28	. Q	. V	.	.	.
14.333	1.6223	4.32	. Q	. V	.	.	.
14.350	1.6283	4.36	. Q	. V	.	.	.
14.367	1.6344	4.40	. Q	. V	.	.	.
14.383	1.6405	4.44	. Q	. V	.	.	.
14.400	1.6466	4.48	. Q	. V	.	.	.
14.417	1.6529	4.52	. Q	. V	.	.	.
14.433	1.6592	4.56	. Q	. V	.	.	.
14.450	1.6655	4.60	. Q	. V	.	.	.
14.467	1.6719	4.64	. Q	. V	.	.	.
14.483	1.6783	4.68	. Q	. V	.	.	.
14.500	1.6848	4.72	. Q	. V	.	.	.
14.517	1.6914	4.76	. Q	. V	.	.	.
14.533	1.6980	4.80	. Q	. V	.	.	.
14.550	1.7047	4.84	. Q	. V	.	.	.
14.567	1.7114	4.88	. Q	. V	.	.	.
14.583	1.7182	4.92	. Q	. V	.	.	.
14.600	1.7250	4.97	. Q	. V	.	.	.
14.617	1.7319	5.01	. Q	. V	.	.	.
14.633	1.7389	5.05	. Q	. V	.	.	.
14.650	1.7459	5.10	. Q	. V	.	.	.
14.667	1.7530	5.14	. Q	. V	.	.	.
14.683	1.7601	5.18	. Q	. V	.	.	.
14.700	1.7673	5.23	. Q	. V	.	.	.
14.717	1.7746	5.28	. Q	. V	.	.	.
14.733	1.7819	5.32	. Q	. V	.	.	.
14.750	1.7893	5.37	. Q	. V	.	.	.
14.767	1.7968	5.42	. Q	. V	.	.	.
14.783	1.8043	5.47	. Q	. V	.	.	.
14.800	1.8119	5.51	. Q	. V	.	.	.
14.817	1.8195	5.57	. Q	. V	.	.	.
14.833	1.8273	5.62	. Q	. V	.	.	.
14.850	1.8351	5.67	. Q	. V	.	.	.
14.867	1.8430	5.72	. Q	. V	.	.	.
14.883	1.8509	5.78	. Q	. V	.	.	.
14.900	1.8590	5.83	. Q	. V	.	.	.
14.917	1.8671	5.89	. Q	. V	.	.	.
14.933	1.8752	5.94	. Q	. V	.	.	.

14.950	1.8835	6.00	. Q . V . . .
14.967	1.8919	6.06	. Q . V . . .
14.983	1.9003	6.12	. Q . V . . .
15.000	1.9088	6.18	. Q . V . . .
15.017	1.9174	6.24	. Q . V . . .
15.033	1.9261	6.31	. Q . V . . .
15.050	1.9349	6.37	. Q . V . . .
15.067	1.9437	6.44	. Q . V . . .
15.083	1.9527	6.50	. Q . V . . .
15.100	1.9617	6.57	. Q . V . . .
15.117	1.9709	6.64	. Q . V . . .
15.133	1.9801	6.71	. Q . V . . .
15.150	1.9895	6.79	. Q . V . . .
15.167	1.9989	6.86	. Q . V . . .
15.183	2.0085	6.94	. Q . V . . .
15.200	2.0181	7.02	. Q . V . . .
15.217	2.0279	7.10	. Q . V . . .
15.233	2.0378	7.18	. Q . V . . .
15.250	2.0478	7.26	. Q . V . . .
15.267	2.0579	7.35	. Q . V . . .
15.283	2.0682	7.44	. Q . V . . .
15.300	2.0785	7.53	. Q . V . . .
15.317	2.0890	7.62	. Q . V . . .
15.333	2.0997	7.71	. Q . V . . .
15.350	2.1104	7.81	. Q . V . . .
15.367	2.1213	7.90	. Q . V . . .
15.383	2.1323	7.99	. Q . V . . .
15.400	2.1434	8.08	. Q . V . . .
15.417	2.1547	8.17	. Q . V . . .
15.433	2.1660	8.26	. Q . V . . .
15.450	2.1775	8.34	. Q . V . . .
15.467	2.1891	8.41	. Q . V . . .
15.483	2.2008	8.46	. Q . V . . .
15.500	2.2125	8.53	. Q . V . . .
15.517	2.2244	8.63	. Q . V . . .
15.533	2.2364	8.74	. Q . V . . .
15.550	2.2486	8.86	. Q . V . . .
15.567	2.2610	9.00	. Q . V . . .
15.583	2.2736	9.14	. Q. V . . .
15.600	2.2864	9.29	. Q. V. . .
15.617	2.2994	9.45	. Q. V. . .
15.633	2.3127	9.61	. Q. V. . .
15.650	2.3261	9.79	. Q. V. . .
15.667	2.3399	9.97	. Q. V. . .
15.683	2.3539	10.18	. Q V. . .
15.700	2.3682	10.40	. Q V. . .
15.717	2.3829	10.64	. Q V. . .
15.733	2.3979	10.90	. Q V. . .
15.750	2.4133	11.19	. .Q V . .
15.767	2.4291	11.49	. .Q V . .
15.783	2.4454	11.83	. .Q V . .
15.800	2.4623	12.22	. . Q V . .
15.817	2.4797	12.69	. . Q V . .
15.833	2.4978	13.14	. . Q V . .
15.850	2.5165	13.57	. . Q V . .
15.867	2.5358	14.00	. . Q .V . .
15.883	2.5557	14.46	. . Q .V . .
15.900	2.5763	14.95	. . Q .V . .
15.917	2.5977	15.49	. . Q .V . .
15.933	2.6198	16.08	. . Q .V . .
15.950	2.6429	16.75	. . Q . V . .
15.967	2.6672	17.63	. . Q . V . .
15.983	2.6930	18.76	. . Q . V . .
16.000	2.7206	20.06	. . Q V . .
16.017	2.7504	21.58	. . .QV . .
16.033	2.7823	23.21	. . . Q . .
16.050	2.8168	25.00	. . . V Q . .
16.067	2.8538	26.85	. . . V Q . .
16.083	2.8939	29.10	. . . V Q.
16.100	2.9381	32.13	. . . V . Q .
16.117	2.9849	33.96	. . . V . Q .

16.133	3.0323	34.41	. . . V . Q .
16.150	3.0792	34.05	. . . V . Q .
16.167	3.1243	32.73	. . . V . Q .
16.183	3.1651	29.67	. . . V Q. .
16.200	3.2023	27.00	. . . Q . .
16.217	3.2369	25.12	. . . QV . .
16.233	3.2694	23.58	. . . Q V . .
16.250	3.3001	22.31	. . . Q V . .
16.267	3.3292	21.14	. . .Q V . .
16.283	3.3568	20.04	. . Q V . .
16.300	3.3830	19.02	. . Q. V . .
16.317	3.4079	18.04	. . Q . V . .
16.333	3.4314	17.09	. . Q . V . .
16.350	3.4538	16.28	. . Q . V . .
16.367	3.4753	15.56	. . Q . V . .
16.383	3.4958	14.88	. . Q . V. .
16.400	3.5154	14.24	. . Q . V. .
16.417	3.5342	13.68	. . Q . V. .
16.433	3.5523	13.12	. . Q . V. .
16.450	3.5697	12.61	. . Q . V. .
16.467	3.5864	12.15	. . Q . V. .
16.483	3.6026	11.73	. .Q . V .
16.500	3.6181	11.30	. .Q . V .
16.517	3.6332	10.90	. Q . V .
16.533	3.6476	10.52	. Q . V .
16.550	3.6616	10.15	. Q . V .
16.567	3.6751	9.81	. Q. . V .
16.583	3.6882	9.45	. Q. . V .
16.600	3.7007	9.12	. Q. . V .
16.617	3.7128	8.79	. Q . . V .
16.633	3.7245	8.48	. Q . . .V .
16.650	3.7358	8.19	. Q . . .V .
16.667	3.7468	7.96	. Q . . .V .
16.683	3.7574	7.76	. Q . . .V .
16.700	3.7679	7.58	. Q . . .V .
16.717	3.7781	7.40	. Q . . .V .
16.733	3.7881	7.24	. Q . . .V .
16.750	3.7978	7.09	. Q . . .V .
16.767	3.8074	6.94	. Q . . .V .
16.783	3.8167	6.80	. Q . . .V .
16.800	3.8259	6.67	. Q . . .V .
16.817	3.8349	6.54	. Q . . .V .
16.833	3.8438	6.42	. Q . . . V .
16.850	3.8524	6.30	. Q . . . V .
16.867	3.8610	6.19	. Q . . . V .
16.883	3.8693	6.08	. Q . . . V .
16.900	3.8776	5.97	. Q . . . V .
16.917	3.8856	5.87	. Q . . . V .
16.933	3.8936	5.77	. Q . . . V .
16.950	3.9014	5.67	. Q . . . V .
16.967	3.9091	5.57	. Q . . . V .
16.983	3.9166	5.48	. Q . . . V .
17.000	3.9240	5.39	. Q . . . V .
17.017	3.9313	5.29	. Q . . . V .
17.033	3.9385	5.20	. Q . . . V .
17.050	3.9455	5.11	. Q . . . V .
17.067	3.9524	5.01	. Q . . . V .
17.083	3.9592	4.91	. Q . . . V .
17.100	3.9658	4.81	. Q . . . V .
17.117	3.9723	4.71	. Q . . . V .
17.133	3.9786	4.59	. Q . . . V .
17.150	3.9848	4.45	. Q . . . V .
17.167	3.9907	4.31	. Q . . . V .
17.183	3.9965	4.20	. Q . . . V .
17.200	4.0021	4.09	. Q . . . V .
17.217	4.0076	3.99	. Q . . . V .
17.233	4.0130	3.90	. Q . . . V .
17.250	4.0183	3.82	. Q . . . V .
17.267	4.0234	3.75	. Q . . . V .
17.283	4.0285	3.67	. Q . . . V .
17.300	4.0335	3.60	. Q . . . V .

```
 17.317      4.0383      3.53  .  Q      .         .         .  V      .
 17.333      4.0431      3.47  .  Q      .         .         .  V      .
 17.350      4.0478      3.41  .  Q      .         .         .  V      .
 17.367      4.0524      3.34  .  Q      .         .         .  V      .
 17.383      4.0569      3.29  .  Q      .         .         .  V      .
 17.400      4.0614      3.23  .  Q      .         .         .  V      .
 17.417      4.0657      3.17  .  Q      .         .         .  V      .
 17.433      4.0700      3.12  .  Q      .         .         .  V      .
 17.450      4.0743      3.07  .  Q      .         .         .  V      .
 17.467      4.0784      3.01  .  Q      .         .         .  V      .
 17.483      4.0825      2.96  . Q       .         .         .   V     .
 17.500      4.0865      2.92  . Q       .         .         .   V     .
 17.517      4.0905      2.87  . Q       .         .         .   V     .
 17.533      4.0943      2.82  . Q       .         .         .   V     .
 17.550      4.0982      2.77  . Q       .         .         .   V     .
 17.567      4.1019      2.73  . Q       .         .         .   V     .
 17.583      4.1056      2.69  . Q       .         .         .   V     .
 17.600      4.1093      2.64  . Q       .         .         .   V     .
 17.617      4.1128      2.60  . Q       .         .         .   V     .
 17.633      4.1164      2.56  . Q       .         .         .   V     .
 17.650      4.1198      2.52  . Q       .         .         .   V     .
 17.667      4.1233      2.48  . Q       .         .         .   V     .
 17.683      4.1266      2.44  . Q       .         .         .   V     .
 17.700      4.1299      2.40  . Q       .         .         .   V     .
 17.717      4.1332      2.37  . Q       .         .         .   V     .
 17.733      4.1364      2.33  . Q       .         .         .   V     .
 17.750      4.1396      2.29  . Q       .         .         .   V     .
 17.767      4.1427      2.26  . Q       .         .         .   V     .
 17.783      4.1457      2.22  . Q       .         .         .   V     .
 17.800      4.1487      2.19  . Q       .         .         .   V     .
 17.817      4.1517      2.15  . Q       .         .         .   V     .
 17.833      4.1546      2.12  . Q       .         .         .   V     .
 17.850      4.1575      2.09  . Q       .         .         .   V     .
 17.867      4.1603      2.05  . Q       .         .         .   V     .
 17.883      4.1631      2.02  . Q       .         .         .   V     .
 17.900      4.1659      1.99  .Q        .         .         .   V     .
 17.917      4.1686      1.96  .Q        .         .         .   V     .
 17.933      4.1712      1.93  .Q        .         .         .   V     .
 17.950      4.1738      1.90  .Q        .         .         .   V     .
 17.967      4.1764      1.87  .Q        .         .         .   V     .
 17.983      4.1789      1.84  .Q        .         .         .   V     .
 18.000      4.1814      1.81  .Q        .         .         .   V     .


****************************************************************************
  FLOW PROCESS FROM NODE    321.11 TO NODE    323.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
============================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #2)

         WATERSHED AREA =      96.200 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.100 HOURS
         FOOTHILL S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.370
         LOW LOSS FRACTION = 0.990
         *HYDROGRAPH MODEL #7 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.32
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  1.04
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.60
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  3.25
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  5.00
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) = 14.00

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
           5-MINUTE FACTOR = 0.996
          30-MINUTE FACTOR = 0.996
           1-HOUR FACTOR = 0.996
           3-HOUR FACTOR = 0.999
           6-HOUR FACTOR = 1.000
          24-HOUR FACTOR = 1.000

         UNIT HYDROGRAPH TIME UNIT =   1.000 MINUTES
         UNIT INTERVAL PERCENTAGE OF LAG-TIME =  16.667


         RUNOFF HYDROGRAPH LISTING LIMITS:
         MODEL TIME(HOURS) FOR BEGINNING OF RESULTS =  14.00
         MODEL TIME(HOURS) FOR END OF RESULTS =  18.00


============================================================================
                      UNIT HYDROGRAPH DETERMINATION

----------------------------------------------------------------------------
    INTERVAL          "S" GRAPH          UNIT HYDROGRAPH
     NUMBER          MEAN VALUES          ORDINATES(CFS)
----------------------------------------------------------------------------
        1                 1.088                 63.285
        2                 3.867                161.668
        3                 8.030                242.188
        4                13.512                318.846
        5                22.070                497.820
        6                38.303                944.301
        7                55.310                989.307
        8                63.640                484.592
        9                69.177                322.099
       10                73.775                267.449
       11                77.638                224.721
       12                80.673                176.565
       13                83.521                165.649
       14                85.876                137.020
       15                87.919                118.819
       16                89.627                 99.380
       17                91.182                 90.419
       18                92.568                 80.623
       19                93.783                 70.705
       20                94.757                 56.635
       21                95.655                 52.252
       22                96.333                 39.456
       23                96.871                 31.269
       24                97.409                 31.283
       25                97.910                 29.169
       26                98.078                  9.742
       27                98.164                  5.017
       28                98.250                  5.017
       29                98.336                  5.017
       30                98.423                  5.017
       31                98.509                  5.017
       32                98.595                  5.017
       33                98.681                  5.004
       34                98.767                  5.017
       35                98.854                  5.031
       36                98.940                  5.004
       37                99.026                  5.017
       38                99.112                  5.004
       39                99.198                  5.004
       40                99.284                  5.004
       41                99.370                  5.004
       42                99.456                  5.004
       43                99.542                  5.004
       44                99.628                  5.004
       45                99.714                  5.004
       46                99.800                  5.004
       47                99.886                  5.004
       48                99.972                  5.004
       49               100.000                  1.619
```

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--------------------------------------------------------------------------
    TOTAL SOIL-LOSS VOLUME(ACRE-FEET) =      71.1868
    TOTAL STORM RUNOFF VOLUME(ACRE-FEET) =      41.0018
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                        2 4 - H O U R   S T O R M
                     R U N O F F   H Y D R O G R A P H

==========================================================================
                HYDROGRAPH IN  ONE-MINUTE UNIT INTERVALS(CFS)
        (Notes: Time indicated is at END of Each Unit Intervals.
                 Peak 5-minute rainfall intensity is modeled as
                 a constant value for entire 5-minute period.)
--------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.       75.0     150.0     225.0     300.0
--------------------------------------------------------------------------
  14.000     15.5854     27.69  .  Q      .    V    .         .         .
  14.017     15.6239     27.91  .  Q      .    V    .         .         .
  14.033     15.6627     28.18  .  Q      .    V    .         .         .
  14.050     15.7019     28.49  .  Q      .    V    .         .         .
  14.067     15.7416     28.83  .  Q      .    V    .         .         .
  14.083     15.7820     29.26  .  Q      .    V    .         .         .
  14.100     15.8232     29.91  .  Q      .    V    .         .         .
  14.117     15.8653     30.58  .   Q     .    V    .         .         .
  14.133     15.9080     31.01  .   Q     .    V    .         .         .
  14.150     15.9512     31.37  .   Q     .    V    .         .         .
  14.167     15.9949     31.70  .   Q     .    V    .         .         .
  14.183     16.0390     32.01  .   Q     .    V    .         .         .
  14.200     16.0834     32.30  .   Q     .    V    .         .         .
  14.217     16.1283     32.59  .   Q     .    V    .         .         .
  14.233     16.1736     32.87  .   Q     .    V    .         .         .
  14.250     16.2192     33.14  .   Q     .    V    .         .         .
  14.267     16.2653     33.40  .   Q     .    V    .         .         .
  14.283     16.3116     33.66  .   Q     .    V    .         .         .
  14.300     16.3584     33.92  .   Q     .    V    .         .         .
  14.317     16.4054     34.18  .   Q     .     V   .         .         .
  14.333     16.4529     34.44  .   Q     .     V   .         .         .
  14.350     16.5007     34.69  .   Q     .     V   .         .         .
  14.367     16.5488     34.94  .   Q     .     V   .         .         .
  14.383     16.5973     35.19  .   Q     .     V   .         .         .
  14.400     16.6461     35.45  .   Q     .     V   .         .         .
  14.417     16.6953     35.70  .   Q     .     V   .         .         .
  14.433     16.7448     35.95  .   Q     .     V   .         .         .
  14.450     16.7947     36.20  .   Q     .     V   .         .         .
  14.467     16.8449     36.46  .   Q     .     V   .         .         .
  14.483     16.8954     36.72  .   Q     .     V   .         .         .
  14.500     16.9464     36.98  .   Q     .     V   .         .         .
  14.517     16.9977     37.24  .   Q     .     V   .         .         .
  14.533     17.0493     37.51  .    Q    .     V   .         .         .
  14.550     17.1014     37.78  .    Q    .     V   .         .         .
  14.567     17.1538     38.06  .    Q    .     V   .         .         .
  14.583     17.2066     38.34  .    Q    .     V   .         .         .
  14.600     17.2598     38.62  .    Q    .     V   .         .         .
  14.617     17.3134     38.91  .    Q    .     V   .         .         .
  14.633     17.3674     39.20  .    Q    .     V   .         .         .
  14.650     17.4218     39.50  .    Q    .     V   .         .         .
  14.667     17.4766     39.80  .    Q    .      V  .         .         .
  14.683     17.5318     40.10  .    Q    .      V  .         .         .
  14.700     17.5875     40.41  .    Q    .      V  .         .         .
  14.717     17.6436     40.73  .    Q    .      V  .         .         .
  14.733     17.7001     41.05  .    Q    .      V  .         .         .
  14.750     17.7571     41.38  .    Q    .      V  .         .         .
  14.767     17.8146     41.70  .    Q    .      V  .         .         .
  14.783     17.8725     42.04  .    Q    .      V  .         .         .
  14.800     17.9309     42.38  .    Q    .      V  .         .         .
  14.817     17.9897     42.73  .    Q    .      V  .         .         .
  14.833     18.0491     43.08  .    Q    .      V  .         .         .
  14.850     18.1089     43.44  .    Q    .      V  .         .         .
  14.867     18.1692     43.80  .    Q    .      V  .         .         .
  14.883     18.2301     44.17  .    Q    .      V  .         .         .
  14.900     18.2914     44.55  .    Q    .      V  .         .         .
  14.917     18.3533     44.93  .    Q    .      V  .         .         .
  14.933     18.4157     45.32  .     Q   .      V  .         .         .
```

14.950	18.4787	45.72	. Q . V . . .
14.967	18.5423	46.13	. Q . V . . .
14.983	18.6064	46.54	. Q . V . . .
15.000	18.6711	46.96	. Q . V . . .
15.017	18.7363	47.39	. Q . V . . .
15.033	18.8022	47.83	. Q . V . . .
15.050	18.8687	48.28	. Q . V . . .
15.067	18.9359	48.74	. Q . V . . .
15.083	19.0036	49.21	. Q . V . . .
15.100	19.0721	49.68	. Q . V . . .
15.117	19.1412	50.17	. Q . V . . .
15.133	19.2110	50.67	. Q . V . . .
15.150	19.2815	51.18	. Q . V . . .
15.167	19.3527	51.70	. Q . V . . .
15.183	19.4247	52.24	. Q . V . . .
15.200	19.4974	52.79	. Q . V. . .
15.217	19.5709	53.35	. Q . V. . .
15.233	19.6451	53.92	. Q . V. . .
15.250	19.7202	54.52	. Q . V. . .
15.267	19.7961	55.12	. Q . V. . .
15.283	19.8729	55.74	. Q . V. . .
15.300	19.9506	56.38	. Q . V. . .
15.317	20.0291	57.04	. Q . V. . .
15.333	20.1086	57.71	. Q . V. . .
15.350	20.1890	58.36	. Q . V. . .
15.367	20.2702	58.96	. Q . V. . .
15.383	20.3522	59.52	. Q . V. . .
15.400	20.4349	60.05	. Q . V. . .
15.417	20.5183	60.49	. Q . V . .
15.433	20.6018	60.63	. Q . V . .
15.450	20.6855	60.77	. Q . V . .
15.467	20.7699	61.30	. Q . V . .
15.483	20.8553	61.99	. Q . V . .
15.500	20.9417	62.74	. Q . V . .
15.517	21.0293	63.57	. Q . V . .
15.533	21.1181	64.47	. Q . V . .
15.550	21.2082	65.42	. Q . V . .
15.567	21.2997	66.43	. Q . V . .
15.583	21.3927	67.51	. Q. V . .
15.600	21.4872	68.64	. Q. V . .
15.617	21.5834	69.84	. Q. .V . .
15.633	21.6814	71.10	. Q. .V . .
15.650	21.7811	72.45	. Q. .V . .
15.667	21.8829	73.86	. Q. .V . .
15.683	21.9868	75.45	. Q .V . .
15.700	22.0932	77.23	. Q .V . .
15.717	22.2023	79.22	. Q .V . .
15.733	22.3144	81.40	. Q .V . .
15.750	22.4300	83.91	. .Q .V . .
15.767	22.5500	87.10	. .Q .V . .
15.783	22.6746	90.49	. . Q . V . .
15.800	22.8032	93.36	. . Q . V . .
15.817	22.9357	96.21	. . Q . V . .
15.833	23.0723	99.16	. . Q . V . .
15.850	23.2132	102.31	. . Q . V . .
15.867	23.3587	105.63	. . Q . V . .
15.883	23.5092	109.27	. . Q . V . .
15.900	23.6652	113.21	. . Q . V . .
15.917	23.8272	117.62	. . Q . V . .
15.933	23.9960	122.53	. . Q . V . .
15.950	24.1726	128.22	. . Q . V . .
15.967	24.3601	136.13	. . Q . V . .
15.983	24.5625	146.97	. . Q. V . .
16.000	24.7832	160.19	. . .Q V . .
16.017	25.0252	175.73	. . . QV . .
16.033	25.2947	195.61	. . . V Q . .
16.050	25.6018	222.96	. . . V Q. .
16.067	25.9404	245.85	. . . V . Q .
16.083	26.2894	253.35	. . . V . Q .
16.100	26.6389	253.76	. . . V . Q .
16.117	26.9792	247.02	. . . V . Q .

16.133	27.2905	226.06	. . . V Q .
16.150	27.5653	199.50	. . . Q . .
16.167	27.8172	182.86	. . . Q V . .
16.183	28.0514	170.02	. . . Q V . .
16.200	28.2701	158.75	. . .Q V . .
16.217	28.4747	148.60	. . Q. V . .
16.233	28.6673	139.83	. . Q . V . .
16.250	28.8483	131.37	. . Q . V . .
16.267	29.0179	123.16	. . Q . V . .
16.283	29.1769	115.38	. . Q . V . .
16.300	29.3268	108.89	. . Q . V . .
16.317	29.4685	102.85	. . Q . V . .
16.333	29.6024	97.20	. . Q . V . .
16.350	29.7293	92.15	. . Q . V. .
16.367	29.8501	87.71	. .Q . V. .
16.383	29.9648	83.26	. .Q . V. .
16.400	30.0741	79.34	. Q . V. .
16.417	30.1788	76.03	. Q . V. .
16.433	30.2798	73.29	. Q. . V. .
16.450	30.3773	70.83	. Q. . V. .
16.467	30.4719	68.67	. Q. . V. .
16.483	30.5639	66.75	. Q . . V. .
16.500	30.6534	64.99	. Q . . V. .
16.517	30.7407	63.36	. Q . . V. .
16.533	30.8258	61.83	. Q . . V .
16.550	30.9090	60.41	. Q . . V .
16.567	30.9904	59.06	. Q . . V .
16.583	31.0700	57.78	. Q . . V .
16.600	31.1479	56.58	. Q . . V .
16.617	31.2243	55.44	. Q . . V .
16.633	31.2991	54.35	. Q . . V .
16.650	31.3726	53.30	. Q . . V .
16.667	31.4446	52.28	. Q . . V .
16.683	31.5152	51.30	. Q . . V .
16.700	31.5846	50.34	. Q . . V .
16.717	31.6526	49.40	. Q . . V .
16.733	31.7194	48.49	. Q . . V .
16.750	31.7850	47.59	. Q . . .V .
16.767	31.8492	46.63	. Q . . .V .
16.783	31.9121	45.65	. Q . . .V .
16.800	31.9736	44.69	. Q . . .V .
16.817	32.0339	43.77	. Q . . .V .
16.833	32.0929	42.86	. Q . . .V .
16.850	32.1509	42.06	. Q . . .V .
16.867	32.2078	41.33	. Q . . .V .
16.883	32.2638	40.65	. Q . . .V .
16.900	32.3189	39.99	. Q . . .V .
16.917	32.3731	39.36	. Q . . .V .
16.933	32.4265	38.75	. Q . . .V .
16.950	32.4790	38.17	. Q . . .V .
16.967	32.5308	37.60	. Q . . .V .
16.983	32.5819	37.05	. Q . . .V .
17.000	32.6322	36.53	. Q . . .V .
17.017	32.6818	35.99	. Q . . .V .
17.033	32.7305	35.42	. Q . . .V .
17.050	32.7785	34.82	. Q . . .V .
17.067	32.8256	34.20	. Q . . . V .
17.083	32.8717	33.50	. Q . . . V .
17.100	32.9167	32.60	. Q . . . V .
17.117	32.9603	31.70	. Q . . . V .
17.133	33.0031	31.04	. Q . . . V .
17.150	33.0450	30.46	. Q . . . V .
17.167	33.0862	29.92	. Q . . . V .
17.183	33.1267	29.41	. Q . . . V .
17.200	33.1666	28.93	. Q . . . V .
17.217	33.2058	28.47	. Q . . . V .
17.233	33.2444	28.02	. Q . . . V .
17.250	33.2824	27.60	. Q . . . V .
17.267	33.3199	27.19	. Q . . . V .
17.283	33.3568	26.79	. Q . . . V .
17.300	33.3931	26.40	. Q . . . V .

```
 17.317     33.4290     26.03  .  Q      .         .         . V       .
 17.333     33.4643     25.67  .  Q      .         .         . V       .
 17.350     33.4992     25.31  .  Q      .         .         . V       .
 17.367     33.5336     24.97  .  Q      .         .         . V       .
 17.383     33.5675     24.64  .  Q      .         .         . V       .
 17.400     33.6010     24.32  .  Q      .         .         . V       .
 17.417     33.6341     24.00  .  Q      .         .         . V       .
 17.433     33.6667     23.70  .  Q      .         .         . V       .
 17.450     33.6990     23.40  .  Q      .         .         . V       .
 17.467     33.7308     23.11  .  Q      .         .         . V       .
 17.483     33.7623     22.83  .  Q      .         .         . V       .
 17.500     33.7933     22.55  .  Q      .         .         . V       .
 17.517     33.8240     22.27  . Q       .         .         . V       .
 17.533     33.8543     22.00  . Q       .         .         .  V      .
 17.550     33.8842     21.74  . Q       .         .         .  V      .
 17.567     33.9138     21.47  . Q       .         .         .  V      .
 17.583     33.9430     21.22  . Q       .         .         .  V      .
 17.600     33.9719     20.96  . Q       .         .         .  V      .
 17.617     34.0005     20.71  . Q       .         .         .  V      .
 17.633     34.0286     20.47  . Q       .         .         .  V      .
 17.650     34.0565     20.23  . Q       .         .         .  V      .
 17.667     34.0840     19.99  . Q       .         .         .  V      .
 17.683     34.1113     19.76  . Q       .         .         .  V      .
 17.700     34.1381     19.52  . Q       .         .         .  V      .
 17.717     34.1647     19.30  . Q       .         .         .  V      .
 17.733     34.1910     19.07  . Q       .         .         .  V      .
 17.750     34.2170     18.85  . Q       .         .         .  V      .
 17.767     34.2426     18.63  . Q       .         .         .  V      .
 17.783     34.2680     18.42  . Q       .         .         .  V      .
 17.800     34.2931     18.21  . Q       .         .         .  V      .
 17.817     34.3179     18.00  . Q       .         .         .  V      .
 17.833     34.3424     17.80  . Q       .         .         .  V      .
 17.850     34.3666     17.60  . Q       .         .         .  V      .
 17.867     34.3906     17.40  . Q       .         .         .  V      .
 17.883     34.4143     17.20  . Q       .         .         .  V      .
 17.900     34.4377     17.01  . Q       .         .         .  V      .
 17.917     34.4609     16.82  . Q       .         .         .  V      .
 17.933     34.4838     16.63  . Q       .         .         .  V      .
 17.950     34.5064     16.45  . Q       .         .         .  V      .
 17.967     34.5288     16.26  . Q       .         .         .  V      .
 17.983     34.5510     16.08  . Q       .         .         .  V      .
 18.000     34.5729     15.90  . Q       .         .         .  V      .


****************************************************************************
  FLOW PROCESS FROM NODE    321.11 TO NODE    325.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
============================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #3)

         WATERSHED AREA =     116.500 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.100 HOURS
         FOOTHILL S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.400
         LOW LOSS FRACTION = 0.990
         *HYDROGRAPH MODEL #7 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.32
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  1.04
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.60
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  3.25
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  5.00
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) = 14.00

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
           5-MINUTE FACTOR = 0.995
          30-MINUTE FACTOR = 0.995
           1-HOUR FACTOR = 0.995
           3-HOUR FACTOR = 0.999
           6-HOUR FACTOR = 1.000
          24-HOUR FACTOR = 1.000

         UNIT HYDROGRAPH TIME UNIT =   1.000 MINUTES
         UNIT INTERVAL PERCENTAGE OF LAG-TIME =  16.667


         RUNOFF HYDROGRAPH LISTING LIMITS:
         MODEL TIME(HOURS) FOR BEGINNING OF RESULTS =  14.00
         MODEL TIME(HOURS) FOR END OF RESULTS =  18.00
```

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	1.088	76.639
2	3.867	195.783
3	8.030	293.294
4	13.512	386.128
5	22.070	602.870
6	38.303	1143.566
7	55.310	1198.069
8	63.640	586.850
9	69.177	390.067
10	73.775	323.885
11	77.638	272.142
12	80.673	213.823
13	83.521	200.604
14	85.876	165.934
15	87.919	143.892
16	89.627	120.351
17	91.182	109.500
18	92.568	97.636
19	93.783	85.625
20	94.757	68.586
21	95.655	63.278
22	96.333	47.782
23	96.871	37.868
24	97.409	37.884
25	97.910	35.325
26	98.078	11.797
27	98.164	6.076
28	98.250	6.075
29	98.336	6.076
30	98.423	6.076
31	98.509	6.076
32	98.595	6.076
33	98.681	6.060
34	98.767	6.076
35	98.854	6.092
36	98.940	6.059
37	99.026	6.076
38	99.112	6.059
39	99.198	6.059
40	99.284	6.059
41	99.370	6.059
42	99.456	6.059
43	99.542	6.059
44	99.628	6.059
45	99.714	6.059
46	99.800	6.059
47	99.886	6.059
48	99.972	6.059
49	100.000	1.961

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-----------------------------------------------------------------------------
    TOTAL SOIL-LOSS VOLUME(ACRE-FEET) =      93.2010
    TOTAL STORM RUNOFF VOLUME(ACRE-FEET) =      42.6620
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==============================================================================

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

==============================================================================
                HYDROGRAPH IN  ONE-MINUTE UNIT INTERVALS(CFS)
        (Notes: Time indicated is at END of Each Unit Intervals.
                 Peak 5-minute rainfall intensity is modeled as
                 a constant value for entire 5-minute period.)
-----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.      100.0     200.0     300.0     400.0
-----------------------------------------------------------------------------
  14.000     14.8374     30.02  .  Q      .  V      .         .         .
  14.017     14.8791     30.28  .  Q      .  V      .         .         .
  14.033     14.9213     30.61  .  Q      .  V      .         .         .
  14.050     14.9640     30.98  .  Q      .   V     .         .         .
  14.067     15.0072     31.41  .  Q      .   V     .         .         .
  14.083     15.0512     31.94  .  Q      .   V     .         .         .
  14.100     15.0963     32.73  .  Q      .   V     .         .         .
  14.117     15.1425     33.56  .  Q      .   V     .         .         .
  14.133     15.1895     34.08  .  Q      .   V     .         .         .
  14.150     15.2370     34.52  .  Q      .   V     .         .         .
  14.167     15.2851     34.92  .  Q      .   V     .         .         .
  14.183     15.3337     35.30  .  Q      .   V     .         .         .
  14.200     15.3828     35.66  .  Q      .   V     .         .         .
  14.217     15.4324     36.01  .  Q      .   V     .         .         .
  14.233     15.4825     36.35  .  Q      .   V     .         .         .
  14.250     15.5330     36.68  .  Q      .   V     .         .         .
  14.267     15.5840     37.00  .  Q      .   V     .         .         .
  14.283     15.6354     37.32  .  Q      .   V     .         .         .
  14.300     15.6872     37.63  .  Q      .   V     .         .         .
  14.317     15.7395     37.94  .  Q      .   V     .         .         .
  14.333     15.7922     38.25  .  Q      .   V     .         .         .
  14.350     15.8453     38.56  .  Q      .   V     .         .         .
  14.367     15.8988     38.87  .  Q      .   V     .         .         .
  14.383     15.9528     39.17  .  Q      .   V     .         .         .
  14.400     16.0071     39.48  .  Q      .    V    .         .         .
  14.417     16.0620     39.79  .  Q      .    V    .         .         .
  14.433     16.1172     40.09  .   Q     .    V    .         .         .
  14.450     16.1728     40.39  .   Q     .    V    .         .         .
  14.467     16.2289     40.70  .   Q     .    V    .         .         .
  14.483     16.2854     41.01  .   Q     .    V    .         .         .
  14.500     16.3423     41.33  .   Q     .    V    .         .         .
  14.517     16.3996     41.65  .   Q     .    V    .         .         .
  14.533     16.4575     41.97  .   Q     .    V    .         .         .
  14.550     16.5157     42.30  .   Q     .    V    .         .         .
  14.567     16.5744     42.63  .   Q     .    V    .         .         .
  14.583     16.6336     42.97  .   Q     .    V    .         .         .
  14.600     16.6933     43.31  .   Q     .    V    .         .         .
  14.617     16.7534     43.66  .   Q     .    V    .         .         .
  14.633     16.8141     44.02  .   Q     .    V    .         .         .
  14.650     16.8752     44.38  .   Q     .    V    .         .         .
  14.667     16.9368     44.74  .   Q     .    V    .         .         .
  14.683     16.9990     45.11  .   Q     .    V    .         .         .
  14.700     17.0616     45.48  .   Q     .    V    .         .         .
  14.717     17.1248     45.87  .   Q     .     V   .         .         .
  14.733     17.1885     46.25  .   Q     .     V   .         .         .
  14.750     17.2528     46.65  .   Q     .     V   .         .         .
  14.767     17.3176     47.05  .   Q     .     V   .         .         .
  14.783     17.3829     47.46  .   Q     .     V   .         .         .
  14.800     17.4489     47.87  .   Q     .     V   .         .         .
  14.817     17.5154     48.29  .   Q     .     V   .         .         .
  14.833     17.5825     48.71  .   Q     .     V   .         .         .
  14.850     17.6502     49.14  .   Q     .     V   .         .         .
  14.867     17.7185     49.58  .   Q     .     V   .         .         .
  14.883     17.7874     50.03  .    Q    .     V   .         .         .
  14.900     17.8569     50.48  .    Q    .     V   .         .         .
  14.917     17.9271     50.95  .    Q    .     V   .         .         .
  14.933     17.9979     51.42  .    Q    .     V   .         .         .
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14.950	18.0694	51.91	. Q . V . . .
14.967	18.1416	52.39	. Q . V . . .
14.983	18.2144	52.90	. Q . V . . .
15.000	18.2880	53.40	. Q . V . . .
15.017	18.3623	53.93	. Q . V . . .
15.033	18.4373	54.46	. Q . V . . .
15.050	18.5130	55.00	. Q . V . . .
15.067	18.5896	55.55	. Q . V . . .
15.083	18.6669	56.12	. Q . V . . .
15.100	18.7450	56.70	. Q . V . . .
15.117	18.8239	57.29	. Q . V . . .
15.133	18.9036	57.89	. Q . V . . .
15.150	18.9842	58.51	. Q . V . . .
15.167	19.0657	59.14	. Q . V . . .
15.183	19.1480	59.79	. Q . V . . .
15.200	19.2313	60.45	. Q . V . . .
15.217	19.3155	61.13	. Q . V . . .
15.233	19.4006	61.82	. Q . V . . .
15.250	19.4868	62.54	. Q . V . . .
15.267	19.5739	63.27	. Q . V . . .
15.283	19.6621	64.02	. Q . V . . .
15.300	19.7514	64.79	. Q . V . . .
15.317	19.8417	65.59	. Q . V . . .
15.333	19.9332	66.40	. Q . V . . .
15.350	20.0257	67.19	. Q . V . . .
15.367	20.1192	67.90	. Q . V . . .
15.383	20.2137	68.58	. Q . V . . .
15.400	20.3090	69.22	. Q . V. . .
15.417	20.4051	69.73	. Q . V. . .
15.433	20.5013	69.87	. Q . V. . .
15.450	20.5978	70.03	. Q . V. . .
15.467	20.6951	70.66	. Q . V. . .
15.483	20.7936	71.48	. Q . V. . .
15.500	20.8933	72.39	. Q . V. . .
15.517	20.9944	73.39	. Q . V. . .
15.533	21.0969	74.46	. Q . V. . .
15.550	21.2011	75.61	. Q . V. . .
15.567	21.3069	76.83	. Q . V. . .
15.583	21.4145	78.13	. Q . V . .
15.600	21.5240	79.50	. Q . V . .
15.617	21.6355	80.96	. Q . V . .
15.633	21.7491	82.48	. Q . V . .
15.650	21.8650	84.10	. Q . V . .
15.667	21.9832	85.81	. Q . V . .
15.683	22.1040	87.73	. Q . V . .
15.700	22.2278	89.89	. Q . V . .
15.717	22.3550	92.30	. Q. V . .
15.733	22.4857	94.92	. Q. .V . .
15.750	22.6207	97.97	. Q. .V . .
15.767	22.7609	101.83	. Q .V . .
15.783	22.9068	105.92	. Q .V . .
15.800	23.0575	109.40	. Q .V . .
15.817	23.2129	112.85	. .Q .V . .
15.833	23.3733	116.42	. .Q .V . .
15.850	23.5389	120.22	. . Q . V . .
15.867	23.7100	124.24	. . Q . V . .
15.883	23.8872	128.64	. . Q . V . .
15.900	24.0710	133.41	. . Q . V . .
15.917	24.2621	138.75	. . Q . V . .
15.933	24.4614	144.70	. . Q . V . .
15.950	24.6702	151.58	. . Q . V . .
15.967	24.8921	161.15	. . Q . V . .
15.983	25.1322	174.27	. . Q . V . .
16.000	25.3942	190.26	. . Q. V . .
16.017	25.6822	209.06	. . Q V . .
16.033	26.0033	233.11	. . . QV . .
16.050	26.3700	266.20	. . . V Q . .
16.067	26.7748	293.90	. . . V Q. .
16.083	27.1921	302.98	. . . V Q .
16.100	27.6101	303.46	. . . V Q .
16.117	28.0169	295.31	. . . V Q. .

16.133	28.3887	269.96	. . . Q . .
16.150	28.7163	237.81	. . . Q V . .
16.167	29.0161	217.68	. . .Q V . .
16.183	29.2946	202.15	. . Q V . .
16.200	29.5542	188.51	. . Q . V . .
16.217	29.7969	176.23	. . Q . V . .
16.233	30.0251	165.62	. . Q . V . .
16.250	30.2391	155.39	. . Q . V . .
16.267	30.4395	145.46	. . Q . V . .
16.283	30.6268	136.04	. . Q . V . .
16.300	30.8034	128.19	. . Q . V . .
16.317	30.9699	120.88	. . Q . V. .
16.333	31.1270	114.05	. .Q . V. .
16.350	31.2757	107.93	. Q . V. .
16.367	31.4169	102.56	. Q . V. .
16.383	31.5508	97.18	. Q. . V. .
16.400	31.6781	92.45	. Q. . V. .
16.417	31.8000	88.46	. Q . . V. .
16.433	31.9173	85.16	. Q . . V. .
16.450	32.0305	82.21	. Q . . V .
16.467	32.1402	79.61	. Q . . V .
16.483	32.2466	77.29	. Q . . V .
16.500	32.3502	75.18	. Q . . V .
16.517	32.4510	73.21	. Q . . V .
16.533	32.5493	71.36	. Q . . V .
16.550	32.6453	69.65	. Q . . V .
16.567	32.7389	68.02	. Q . . V .
16.583	32.8305	66.47	. Q . . V .
16.600	32.9201	65.02	. Q . . V .
16.617	33.0077	63.65	. Q . . V .
16.633	33.0936	62.33	. Q . . .V .
16.650	33.1777	61.06	. Q . . .V .
16.667	33.2601	59.83	. Q . . .V .
16.683	33.3409	58.64	. Q . . .V .
16.700	33.4201	57.48	. Q . . .V .
16.717	33.4977	56.35	. Q . . .V .
16.733	33.5738	55.25	. Q . . .V .
16.750	33.6484	54.17	. Q . . .V .
16.767	33.7214	53.00	. Q . . .V .
16.783	33.7928	51.82	. Q . . .V .
16.800	33.8625	50.66	. Q . . .V .
16.817	33.9308	49.54	. Q . . .V .
16.833	33.9975	48.44	. Q . . .V .
16.850	34.0629	47.47	. Q . . .V .
16.867	34.1271	46.60	. Q . . .V .
16.883	34.1901	45.77	. Q . . . V .
16.900	34.2521	44.97	. Q . . . V .
16.917	34.3130	44.21	. Q . . . V .
16.933	34.3728	43.48	. Q . . . V .
16.950	34.4318	42.77	. Q . . . V .
16.967	34.4897	42.08	. Q . . . V .
16.983	34.5468	41.42	. Q . . . V .
17.000	34.6030	40.79	. Q . . . V .
17.017	34.6582	40.13	. Q . . . V .
17.033	34.7126	39.44	. Q . . . V .
17.050	34.7659	38.71	. Q . . . V .
17.067	34.8182	37.95	. Q . . . V .
17.083	34.8693	37.11	. Q . . . V .
17.100	34.9189	36.01	. Q . . . V .
17.117	34.9669	34.90	. Q . . . V .
17.133	35.0139	34.09	. Q . . . V .
17.150	35.0599	33.39	. Q . . . V .
17.167	35.1050	32.73	. Q . . . V .
17.183	35.1492	32.11	. Q . . . V .
17.200	35.1926	31.53	. Q . . . V .
17.217	35.2353	30.97	. Q . . . V .
17.233	35.2772	30.43	. Q . . . V .
17.250	35.3184	29.91	. Q . . . V .
17.267	35.3589	29.41	. Q . . . V .
17.283	35.3988	28.93	. Q . . . V .
17.300	35.4380	28.46	. Q . . . V .

```
 17.317     35.4765     28.00  . Q       .         .         .  V      .
 17.333     35.5145     27.57  . Q       .         .         .  V      .
 17.350     35.5519     27.14  . Q       .         .         .  V      .
 17.367     35.5887     26.73  . Q       .         .         .  V      .
 17.383     35.6250     26.33  . Q       .         .         .  V      .
 17.400     35.6607     25.93  . Q       .         .         .  V      .
 17.417     35.6959     25.55  . Q       .         .         .  V      .
 17.433     35.7305     25.18  . Q       .         .         .  V      .
 17.450     35.7647     24.82  . Q       .         .         .  V      .
 17.467     35.7984     24.47  . Q       .         .         .  V      .
 17.483     35.8317     24.13  . Q       .         .         .  V      .
 17.500     35.8644     23.79  . Q       .         .         .  V      .
 17.517     35.8968     23.46  . Q       .         .         .  V      .
 17.533     35.9286     23.13  . Q       .         .         .  V      .
 17.550     35.9600     22.81  . Q       .         .         .  V      .
 17.567     35.9910     22.49  . Q       .         .         .  V      .
 17.583     36.0215     22.18  . Q       .         .         .  V      .
 17.600     36.0517     21.87  . Q       .         .         .  V      .
 17.617     36.0814     21.57  . Q       .         .         .  V      .
 17.633     36.1107     21.27  . Q       .         .         .  V      .
 17.650     36.1396     20.98  . Q       .         .         .  V      .
 17.667     36.1681     20.69  . Q       .         .         .  V      .
 17.683     36.1962     20.41  . Q       .         .         .  V      .
 17.700     36.2239     20.13  . Q       .         .         .  V      .
 17.717     36.2512     19.85  .Q        .         .         .  V      .
 17.733     36.2782     19.58  .Q        .         .         .   V     .
 17.750     36.3048     19.31  .Q        .         .         .   V     .
 17.767     36.3311     19.05  .Q        .         .         .   V     .
 17.783     36.3569     18.79  .Q        .         .         .   V     .
 17.800     36.3825     18.53  .Q        .         .         .   V     .
 17.817     36.4076     18.28  .Q        .         .         .   V     .
 17.833     36.4325     18.03  .Q        .         .         .   V     .
 17.850     36.4570     17.79  .Q        .         .         .   V     .
 17.867     36.4812     17.55  .Q        .         .         .   V     .
 17.883     36.5050     17.32  .Q        .         .         .   V     .
 17.900     36.5285     17.08  .Q        .         .         .   V     .
 17.917     36.5518     16.85  .Q        .         .         .   V     .
 17.933     36.5747     16.62  .Q        .         .         .   V     .
 17.950     36.5972     16.40  .Q        .         .         .   V     .
 17.967     36.6195     16.18  .Q        .         .         .   V     .
 17.983     36.6415     15.96  .Q        .         .         .   V     .
 18.000     36.6632     15.74  .Q        .         .         .   V     .
============================================================================

 END OF FLOODSCx ROUTING ANALYSIS
```

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****************************************************************************

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                          Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* SPRING TRAILS               JUNE, 2011                J - 13565-C       *
* 10-YR AMC II - TO SUPPORT BULKING FACTOR CALCULATIONS                   *
* BASIN 300 - MEYERS CANYON (WEST) OFFSITE WATERSHSEDS                    *
 ***************************************************************************

  FILE NAME: ST310PS.DAT
  TIME/DATE OF STUDY: 12:29 06/08/2011


                          ** INPUT SUMMARY **


****************************************************************************
  FLOW PROCESS FROM NODE    310.11 TO NODE    310.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #1<<<<<
============================================================================
  WATERSHED AREA =      14.700 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.148 HOURS
  FOOTHILL S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.750; LOW LOSS FRACTION = 0.990
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.24; 30-MINUTE =  0.72;  1-HOUR =  1.12
    3-HOUR =  2.15;    6-HOUR =  3.40; 24-HOUR =  8.50
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.999; 30-MINUTE = 0.999;  1-HOUR = 0.999
    3-HOUR = 1.000;    6-HOUR = 1.000; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE    321.11 TO NODE    323.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERSHED AREA =      96.200 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.100 HOURS
  FOOTHILL S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.690; LOW LOSS FRACTION = 0.990
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.24; 30-MINUTE =  0.72;  1-HOUR =  1.12
    3-HOUR =  2.15;    6-HOUR =  3.40; 24-HOUR =  8.50
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.996; 30-MINUTE = 0.996;  1-HOUR = 0.996
    3-HOUR = 0.999;    6-HOUR = 1.000; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE    321.11 TO NODE    325.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #3<<<<<
============================================================================
  WATERSHED AREA =     116.500 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.100 HOURS
  FOOTHILL S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.720; LOW LOSS FRACTION = 0.990
```

```
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.24; 30-MINUTE =  0.72;  1-HOUR =  1.12
    3-HOUR =  2.15;    6-HOUR =  3.40; 24-HOUR =  8.50
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.995; 30-MINUTE = 0.995;  1-HOUR = 0.995
    3-HOUR = 0.999;    6-HOUR = 1.000; 24-HOUR = 1.000
==============================================================================
```

```
+-----------------------------------------------------------------------------------------------------------------------+
|                                    * AES FLOODSCx PROGRAM RESULTS SUMMARY *                                           |
|INPUT FILENAME: [ST310PS.DAT    ]                                                                   Page:   1 of    |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|UPSTREAM  DOWNSTREAM|                               | UPSTREAM   DOWNSTREAM| TIME(2) TO | MAX. STORAGE|           |
| NODE #     NODE #  | HYDROLOGIC/HYDRAULIC PROCESS  |PEAK (CFS)  PEAK (CFS)| PEAK (HR)  | MODELED (AF)| FOOTNOTES |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|   310.11     310.00| Subarea (UH) Added to Stream #1|       0.0        18.3|     16.133 |             |           |
|   321.11     323.00| Subarea (UH) Added to Stream #2|       0.0       144.4|     16.100 |             |           |
|   321.11     325.00| Subarea (UH) Added to Stream #3|       0.0       171.2|     16.100 |             |           |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|Notes: 1 = BASIN MODEL VOLUME EXCEEDED; 2 = TIME IS AT END OF 1-MINUTE UNIT INTERVAL                                  |
|       3 = RUNOFF ESTIMATES DO NOT EXTEND PAST 2 DAYS AFTER THE PEAK DAY OF THE DESIGN STORM                          |
+-----------------------------------------------------------------------------------------------------------------------+

  END OF FLOODSCx ROUTING ANALYSIS
```

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

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                          Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* SPRING TRAILS               JUNE, 2011                 J - 13565-C       *
* 100-YR AMC III - TO SUPPORT BULKING FACTOR CALCULATIONS                  *
* BASIN 300 - MEYERS CANYON (WEST) OFFSITE WATERSHSEDS                     *
 ***************************************************************************

  FILE NAME: ST300PS.DAT
  TIME/DATE OF STUDY: 12:17 06/08/2011


                          ** INPUT SUMMARY **


****************************************************************************
  FLOW PROCESS FROM NODE    310.11 TO NODE    310.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #1<<<<<
============================================================================
  WATERSHED AREA =      14.700 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.148 HOURS
  FOOTHILL S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.420; LOW LOSS FRACTION = 0.990
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.32; 30-MINUTE =  1.04;  1-HOUR =  1.60
    3-HOUR =  3.25;    6-HOUR =  5.00; 24-HOUR = 14.00
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.999; 30-MINUTE = 0.999;  1-HOUR = 0.999
    3-HOUR = 1.000;    6-HOUR = 1.000; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE    321.11 TO NODE    323.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
============================================================================
  WATERSHED AREA =      96.200 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.100 HOURS
  FOOTHILL S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.370; LOW LOSS FRACTION = 0.990
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.32; 30-MINUTE =  1.04;  1-HOUR =  1.60
    3-HOUR =  3.25;    6-HOUR =  5.00; 24-HOUR = 14.00
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.996; 30-MINUTE = 0.996;  1-HOUR = 0.996
    3-HOUR = 0.999;    6-HOUR = 1.000; 24-HOUR = 1.000


****************************************************************************
  FLOW PROCESS FROM NODE    321.11 TO NODE    325.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #3<<<<<
============================================================================
  WATERSHED AREA =     116.500 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.100 HOURS
  FOOTHILL S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.400; LOW LOSS FRACTION = 0.990
```

```
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.32; 30-MINUTE =  1.04;  1-HOUR =  1.60
    3-HOUR =  3.25;    6-HOUR =  5.00; 24-HOUR = 14.00
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.995; 30-MINUTE = 0.995;  1-HOUR = 0.995
    3-HOUR = 0.999;    6-HOUR = 1.000; 24-HOUR = 1.000
==============================================================================
```

```
+-----------------------------------------------------------------------------------------------------------------------+
|                                    * AES FLOODSCx PROGRAM RESULTS SUMMARY *                                           |
|INPUT FILENAME: [ST300PS.DAT    ]                                                                   Page:   1 of    |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|UPSTREAM  DOWNSTREAM|                               | UPSTREAM   DOWNSTREAM| TIME(2) TO | MAX. STORAGE|           |
| NODE #     NODE #  | HYDROLOGIC/HYDRAULIC PROCESS  |PEAK (CFS)  PEAK (CFS)| PEAK (HR)  | MODELED (AF)| FOOTNOTES |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|   310.11     310.00| Subarea (UH) Added to Stream #1|       0.0        34.4|     16.133 |             |           |
|   321.11     323.00| Subarea (UH) Added to Stream #2|       0.0       253.8|     16.100 |             |           |
|   321.11     325.00| Subarea (UH) Added to Stream #3|       0.0       303.5|     16.100 |             |           |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|Notes: 1 = BASIN MODEL VOLUME EXCEEDED; 2 = TIME IS AT END OF 1-MINUTE UNIT INTERVAL                                  |
|       3 = RUNOFF ESTIMATES DO NOT EXTEND PAST 2 DAYS AFTER THE PEAK DAY OF THE DESIGN STORM                          |
+-----------------------------------------------------------------------------------------------------------------------+

  END OF FLOODSCx ROUTING ANALYSIS
```

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

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                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* SPRING TRAILS               JUNE, 2011                J - 13565-C       *
* 10-YR AMC II - TO SUPPORT BULKING FACTOR CALCULATIONS                   *
* BASIN 300 - MEYERS CANYON (WEST) OFFSITE WATERSHSEDS                    *
 ************************************************************************

  FILE NAME: ST310PS.DAT
  TIME/DATE OF STUDY: 12:30 06/08/2011


****************************************************************************
  FLOW PROCESS FROM NODE    310.11 TO NODE    310.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
============================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERSHED AREA =      14.700 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.148 HOURS
         FOOTHILL S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.750
         LOW LOSS FRACTION = 0.990
         *HYDROGRAPH MODEL #7 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.24
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.72
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.12
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  2.15
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  3.40
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  8.50

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
           5-MINUTE FACTOR = 0.999
          30-MINUTE FACTOR = 0.999
           1-HOUR FACTOR = 0.999
           3-HOUR FACTOR = 1.000
           6-HOUR FACTOR = 1.000
          24-HOUR FACTOR = 1.000

         UNIT HYDROGRAPH TIME UNIT =   1.000 MINUTES
         UNIT INTERVAL PERCENTAGE OF LAG-TIME =  11.261


         RUNOFF HYDROGRAPH LISTING LIMITS:
         MODEL TIME(HOURS) FOR BEGINNING OF RESULTS =  14.00
         MODEL TIME(HOURS) FOR END OF RESULTS =  18.00


============================================================================
                       UNIT HYDROGRAPH DETERMINATION

----------------------------------------------------------------------------
     INTERVAL          "S" GRAPH          UNIT HYDROGRAPH
      NUMBER          MEAN VALUES          ORDINATES(CFS)
```

1	0.732	6.507
2	2.334	14.241
3	4.494	19.203
4	7.418	25.989
5	10.613	28.395
6	15.029	39.257
7	20.797	51.271
8	29.271	75.322
9	43.933	130.330
10	54.628	95.071
11	60.781	54.693
12	65.261	39.824
13	68.914	32.470
14	72.146	28.727
15	75.065	25.947
16	77.586	22.412
17	79.602	17.915
18	81.696	18.613
19	83.514	16.158
20	85.125	14.324
21	86.649	13.547
22	87.983	11.858
23	89.138	10.264
24	90.236	9.764
25	91.264	9.132
26	92.230	8.587
27	93.068	7.454
28	93.886	7.269
29	94.538	5.792
30	95.146	5.410
31	95.754	5.400
32	96.217	4.119
33	96.580	3.227
34	96.944	3.231
35	97.307	3.227
36	97.670	3.230
37	97.980	2.755
38	98.064	0.743
39	98.122	0.516
40	98.180	0.520
41	98.238	0.518
42	98.296	0.515
43	98.355	0.518
44	98.413	0.521
45	98.472	0.518
46	98.530	0.515
47	98.588	0.521
48	98.646	0.512
49	98.704	0.518
50	98.763	0.521
51	98.821	0.515
52	98.879	0.518
53	98.937	0.518
54	98.995	0.518
55	99.054	0.518
56	99.112	0.518
57	99.170	0.518
58	99.228	0.518
59	99.287	0.518
60	99.345	0.518
61	99.403	0.518
62	99.462	0.518
63	99.520	0.518
64	99.578	0.518
65	99.636	0.518
66	99.695	0.518
67	99.753	0.518
68	99.811	0.518
69	99.869	0.518
70	99.928	0.518

71	99.986	0.518
72	100.000	0.124

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 9.8652
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 0.5466

==========

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

==========

HYDROGRAPH IN ONE-MINUTE UNIT INTERVALS(CFS)
(Notes: Time indicated is at END of Each Unit Intervals.
Peak 5-minute rainfall intensity is modeled as
a constant value for entire 5-minute period.)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	5.0	10.0	15.0	20.0
14.000	0.0507	0.07	Q V	.	.	.	.
14.017	0.0508	0.07	Q V	.	.	.	.
14.033	0.0509	0.07	Q V	.	.	.	.
14.050	0.0510	0.07	Q V	.	.	.	.
14.067	0.0511	0.07	Q V	.	.	.	.
14.083	0.0512	0.07	Q V	.	.	.	.
14.100	0.0512	0.07	Q V	.	.	.	.
14.117	0.0513	0.07	Q V	.	.	.	.
14.133	0.0514	0.07	Q V	.	.	.	.
14.150	0.0515	0.07	Q V	.	.	.	.
14.167	0.0516	0.07	Q V	.	.	.	.
14.183	0.0517	0.07	Q V	.	.	.	.
14.200	0.0518	0.07	Q V	.	.	.	.
14.217	0.0519	0.07	Q V	.	.	.	.
14.233	0.0520	0.07	Q V	.	.	.	.
14.250	0.0521	0.07	Q V	.	.	.	.
14.267	0.0522	0.07	Q V	.	.	.	.
14.283	0.0522	0.07	Q V	.	.	.	.
14.300	0.0523	0.07	Q V	.	.	.	.
14.317	0.0524	0.07	Q V	.	.	.	.
14.333	0.0525	0.07	Q V	.	.	.	.
14.350	0.0526	0.07	Q V	.	.	.	.
14.367	0.0527	0.07	Q V	.	.	.	.
14.383	0.0528	0.07	Q V	.	.	.	.
14.400	0.0529	0.07	Q V	.	.	.	.
14.417	0.0530	0.07	Q V	.	.	.	.
14.433	0.0531	0.07	Q V	.	.	.	.
14.450	0.0532	0.07	Q V	.	.	.	.
14.467	0.0532	0.07	Q V	.	.	.	.
14.483	0.0533	0.07	Q V	.	.	.	.
14.500	0.0534	0.07	Q V	.	.	.	.
14.517	0.0535	0.07	Q V	.	.	.	.
14.533	0.0536	0.07	Q V	.	.	.	.
14.550	0.0537	0.07	Q V	.	.	.	.
14.567	0.0538	0.07	Q V	.	.	.	.
14.583	0.0539	0.07	Q V	.	.	.	.
14.600	0.0540	0.07	Q V	.	.	.	.
14.617	0.0541	0.07	Q V	.	.	.	.
14.633	0.0542	0.07	Q V	.	.	.	.
14.650	0.0543	0.07	Q V	.	.	.	.
14.667	0.0544	0.07	Q V	.	.	.	.
14.683	0.0545	0.07	Q V	.	.	.	.
14.700	0.0546	0.07	Q V	.	.	.	.
14.717	0.0547	0.07	Q V	.	.	.	.
14.733	0.0548	0.07	Q V	.	.	.	.
14.750	0.0549	0.07	Q V	.	.	.	.
14.767	0.0550	0.07	Q V	.	.	.	.
14.783	0.0551	0.07	Q V	.	.	.	.
14.800	0.0552	0.07	Q V	.	.	.	.
14.817	0.0553	0.07	Q V	.	.	.	.
14.833	0.0554	0.07	Q V	.	.	.	.
14.850	0.0555	0.07	Q V	.	.	.	.
14.867	0.0556	0.07	Q V	.	.	.	.
14.883	0.0557	0.07	Q V	.	.	.	.
14.900	0.0558	0.08	Q V	.	.	.	.
14.917	0.0559	0.08	Q V	.	.	.	.
14.933	0.0560	0.08	Q V	.	.	.	.

14.950	0.0561	0.08	Q V . . . .
14.967	0.0562	0.08	Q V . . . .
14.983	0.0563	0.08	Q V . . . .
15.000	0.0564	0.08	Q V . . . .
15.017	0.0565	0.08	Q V . . . .
15.033	0.0566	0.08	Q V . . . .
15.050	0.0567	0.08	Q V . . . .
15.067	0.0569	0.08	Q V . . . .
15.083	0.0570	0.08	Q V . . . .
15.100	0.0571	0.08	Q V . . . .
15.117	0.0572	0.08	Q V . . . .
15.133	0.0573	0.08	Q V . . . .
15.150	0.0574	0.08	Q V . . . .
15.167	0.0575	0.08	Q V . . . .
15.183	0.0576	0.08	Q V . . . .
15.200	0.0578	0.08	Q V . . . .
15.217	0.0579	0.08	Q V . . . .
15.233	0.0580	0.08	Q V . . . .
15.250	0.0581	0.09	Q V . . . .
15.267	0.0582	0.09	Q V . . . .
15.283	0.0583	0.09	Q V . . . .
15.300	0.0585	0.09	Q V . . . .
15.317	0.0586	0.09	Q V . . . .
15.333	0.0587	0.09	Q V . . . .
15.350	0.0588	0.09	Q V . . . .
15.367	0.0590	0.09	Q V . . . .
15.383	0.0591	0.09	Q V . . . .
15.400	0.0592	0.09	Q V . . . .
15.417	0.0593	0.09	Q V . . . .
15.433	0.0595	0.09	Q V . . . .
15.450	0.0596	0.10	Q V . . . .
15.467	0.0597	0.10	Q V . . . .
15.483	0.0599	0.10	Q V . . . .
15.500	0.0600	0.11	Q V . . . .
15.517	0.0602	0.12	Q V . . . .
15.533	0.0604	0.14	Q V . . . .
15.550	0.0606	0.16	Q V . . . .
15.567	0.0609	0.19	Q V . . . .
15.583	0.0612	0.23	Q V . . . .
15.600	0.0616	0.29	Q V . . . .
15.617	0.0621	0.37	Q V . . . .
15.633	0.0627	0.45	Q V . . . .
15.650	0.0635	0.55	.Q V . . . .
15.667	0.0644	0.66	.Q V . . . .
15.683	0.0654	0.77	.Q V . . . .
15.700	0.0667	0.88	.Q V . . . .
15.717	0.0680	1.01	. Q V . . . .
15.733	0.0696	1.14	. Q V . . . .
15.750	0.0714	1.28	. Q V . . . .
15.767	0.0733	1.42	. Q V . . . .
15.783	0.0755	1.57	. Q V . . . .
15.800	0.0779	1.72	. Q V . . . .
15.817	0.0804	1.86	. Q V . . . .
15.833	0.0832	2.03	. Q V . . . .
15.850	0.0863	2.25	. Q V . . . .
15.867	0.0898	2.50	. Q V . . . .
15.883	0.0936	2.78	. QV . . . .
15.900	0.0979	3.09	. QV . . . .
15.917	0.1026	3.45	. QV . . . .
15.933	0.1079	3.85	. Q . . . .
15.950	0.1139	4.31	. Q . . . .
15.967	0.1207	4.96	. VQ. . . .
15.983	0.1287	5.82	. V.Q . . .
16.000	0.1381	6.81	. V Q . . .
16.017	0.1491	7.99	. V Q . . .
16.033	0.1619	9.27	. .V Q . . .
16.050	0.1766	10.68	. . V .Q . .
16.067	0.1933	12.15	. . V . Q . .
16.083	0.2125	13.96	. . V . Q . .
16.100	0.2352	16.46	. . V . . Q .
16.117	0.2600	17.97	. . V. . Q .

16.133	0.2852	18.33	. . V . Q .
16.150	0.3100	18.01	. . . V . Q .
16.167	0.3333	16.91	. . . V . Q .
16.183	0.3531	14.38	. . . V Q . .
16.200	0.3700	12.22	. . . Q V . .
16.217	0.3848	10.75	. . .Q V . .
16.233	0.3979	9.57	. . Q. V. .
16.250	0.4098	8.63	. . Q . V. .
16.267	0.4205	7.78	. . Q . V .
16.283	0.4302	7.01	. . Q . .V .
16.300	0.4389	6.34	. . Q . . V .
16.317	0.4469	5.81	. .Q . . V .
16.333	0.4542	5.25	. Q . . V .
16.350	0.4607	4.73	. Q. . V .
16.367	0.4666	4.27	. Q . . . V .
16.383	0.4718	3.83	. Q . . . V .
16.400	0.4766	3.43	. Q . . . V .
16.417	0.4808	3.08	. Q . . . V .
16.433	0.4846	2.76	. Q . . . V .
16.450	0.4880	2.47	. Q . . . V .
16.467	0.4911	2.23	. Q . . . V .
16.483	0.4938	2.00	. Q . . . V .
16.500	0.4963	1.78	. Q . . . V .
16.517	0.4985	1.59	. Q . . . V .
16.533	0.5004	1.43	. Q . . . V .
16.550	0.5022	1.27	. Q . . . V .
16.567	0.5038	1.14	. Q . . . V .
16.583	0.5051	0.99	.Q . . . V .
16.600	0.5063	0.86	.Q . . . V .
16.617	0.5073	0.73	.Q . . . V .
16.633	0.5082	0.61	.Q . . . V .
16.650	0.5088	0.50	.Q . . . V .
16.667	0.5095	0.45	Q . . . V .
16.683	0.5100	0.41	Q . . . V .
16.700	0.5105	0.38	Q . . . V .
16.717	0.5110	0.35	Q . . . V .
16.733	0.5115	0.33	Q . . . V .
16.750	0.5119	0.31	Q . . . V .
16.767	0.5123	0.30	Q . . . V .
16.783	0.5127	0.29	Q . . . V .
16.800	0.5131	0.28	Q . . . V .
16.817	0.5135	0.27	Q . . . V .
16.833	0.5139	0.27	Q . . . V .
16.850	0.5142	0.26	Q . . . V .
16.867	0.5146	0.26	Q . . . V .
16.883	0.5149	0.25	Q . . . V .
16.900	0.5153	0.25	Q . . . V .
16.917	0.5156	0.25	Q . . . V .
16.933	0.5160	0.25	Q . . . V .
16.950	0.5163	0.24	Q . . . V .
16.967	0.5166	0.24	Q . . . V .
16.983	0.5170	0.24	Q . . . V .
17.000	0.5173	0.24	Q . . . V .
17.017	0.5176	0.23	Q . . . V .
17.033	0.5179	0.23	Q . . . V .
17.050	0.5182	0.22	Q . . . V .
17.067	0.5185	0.22	Q . . . V .
17.083	0.5188	0.21	Q . . . V .
17.100	0.5191	0.21	Q . . . V .
17.117	0.5194	0.20	Q . . . V .
17.133	0.5197	0.19	Q . . . V .
17.150	0.5199	0.18	Q . . . V .
17.167	0.5201	0.16	Q . . . V .
17.183	0.5203	0.14	Q . . . V .
17.200	0.5205	0.12	Q . . . V .
17.217	0.5206	0.11	Q . . . V .
17.233	0.5208	0.10	Q . . . V .
17.250	0.5209	0.09	Q . . . V .
17.267	0.5210	0.08	Q . . . V .
17.283	0.5211	0.08	Q . . . V .
17.300	0.5212	0.08	Q . . . V .

```
 17.317      0.5213      0.08  Q         .         .         .       V .
 17.333      0.5214      0.07  Q         .         .         .       V .
 17.350      0.5215      0.07  Q         .         .         .       V .
 17.367      0.5216      0.07  Q         .         .         .       V .
 17.383      0.5217      0.07  Q         .         .         .       V .
 17.400      0.5218      0.07  Q         .         .         .       V .
 17.417      0.5219      0.07  Q         .         .         .       V .
 17.433      0.5220      0.07  Q         .         .         .       V .
 17.450      0.5221      0.07  Q         .         .         .       V .
 17.467      0.5222      0.07  Q         .         .         .       V .
 17.483      0.5223      0.06  Q         .         .         .       V .
 17.500      0.5224      0.06  Q         .         .         .       V .
 17.517      0.5224      0.06  Q         .         .         .       V .
 17.533      0.5225      0.06  Q         .         .         .       V .
 17.550      0.5226      0.06  Q         .         .         .       V .
 17.567      0.5227      0.06  Q         .         .         .       V .
 17.583      0.5228      0.06  Q         .         .         .       V .
 17.600      0.5229      0.06  Q         .         .         .       V .
 17.617      0.5230      0.06  Q         .         .         .       V .
 17.633      0.5231      0.06  Q         .         .         .       V .
 17.650      0.5231      0.06  Q         .         .         .       V .
 17.667      0.5232      0.06  Q         .         .         .       V .
 17.683      0.5233      0.06  Q         .         .         .       V .
 17.700      0.5234      0.06  Q         .         .         .       V .
 17.717      0.5235      0.06  Q         .         .         .       V .
 17.733      0.5236      0.06  Q         .         .         .       V .
 17.750      0.5236      0.06  Q         .         .         .       V .
 17.767      0.5237      0.06  Q         .         .         .       V .
 17.783      0.5238      0.06  Q         .         .         .       V .
 17.800      0.5239      0.06  Q         .         .         .       V .
 17.817      0.5240      0.06  Q         .         .         .       V .
 17.833      0.5241      0.06  Q         .         .         .       V .
 17.850      0.5241      0.06  Q         .         .         .       V .
 17.867      0.5242      0.06  Q         .         .         .       V .
 17.883      0.5243      0.06  Q         .         .         .       V .
 17.900      0.5244      0.06  Q         .         .         .       V .
 17.917      0.5245      0.06  Q         .         .         .       V .
 17.933      0.5245      0.06  Q         .         .         .       V .
 17.950      0.5246      0.06  Q         .         .         .       V .
 17.967      0.5247      0.06  Q         .         .         .       V .
 17.983      0.5248      0.06  Q         .         .         .       V .
 18.000      0.5249      0.06  Q         .         .         .       V .


****************************************************************************
  FLOW PROCESS FROM NODE    321.11 TO NODE    323.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
============================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #2)

         WATERSHED AREA =      96.200 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.100 HOURS
         FOOTHILL S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.690
         LOW LOSS FRACTION = 0.990
         *HYDROGRAPH MODEL #7 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.24
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.72
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.12
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  2.15
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  3.40
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  8.50

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
           5-MINUTE FACTOR = 0.996
          30-MINUTE FACTOR = 0.996
           1-HOUR FACTOR = 0.996
           3-HOUR FACTOR = 0.999
           6-HOUR FACTOR = 1.000
          24-HOUR FACTOR = 1.000

         UNIT HYDROGRAPH TIME UNIT =   1.000 MINUTES
         UNIT INTERVAL PERCENTAGE OF LAG-TIME =  16.667


         RUNOFF HYDROGRAPH LISTING LIMITS:
         MODEL TIME(HOURS) FOR BEGINNING OF RESULTS =  14.00
         MODEL TIME(HOURS) FOR END OF RESULTS =  18.00


============================================================================
                      UNIT HYDROGRAPH DETERMINATION

----------------------------------------------------------------------------
    INTERVAL          "S" GRAPH          UNIT HYDROGRAPH
     NUMBER          MEAN VALUES          ORDINATES(CFS)
----------------------------------------------------------------------------
        1                 1.088                 63.285
        2                 3.867                161.668
        3                 8.030                242.188
        4                13.512                318.846
        5                22.070                497.820
        6                38.303                944.301
        7                55.310                989.307
        8                63.640                484.592
        9                69.177                322.099
       10                73.775                267.449
       11                77.638                224.721
       12                80.673                176.565
       13                83.521                165.649
       14                85.876                137.020
       15                87.919                118.819
       16                89.627                 99.380
       17                91.182                 90.419
       18                92.568                 80.623
       19                93.783                 70.705
       20                94.757                 56.635
       21                95.655                 52.252
       22                96.333                 39.456
       23                96.871                 31.269
       24                97.409                 31.283
       25                97.910                 29.169
       26                98.078                  9.742
       27                98.164                  5.017
       28                98.250                  5.017
       29                98.336                  5.017
       30                98.423                  5.017
       31                98.509                  5.017
       32                98.595                  5.017
       33                98.681                  5.004
       34                98.767                  5.017
       35                98.854                  5.031
       36                98.940                  5.004
       37                99.026                  5.017
       38                99.112                  5.004
       39                99.198                  5.004
       40                99.284                  5.004
       41                99.370                  5.004
       42                99.456                  5.004
       43                99.542                  5.004
       44                99.628                  5.004
       45                99.714                  5.004
       46                99.800                  5.004
       47                99.886                  5.004
       48                99.972                  5.004
       49               100.000                  1.619
```

```
---------------------------------------------------------------------------
    TOTAL SOIL-LOSS VOLUME(ACRE-FEET) =      64.1280
    TOTAL STORM RUNOFF VOLUME(ACRE-FEET) =       3.9980
---------------------------------------------------------------------------
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===========================================================================

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

===========================================================================
              HYDROGRAPH IN  ONE-MINUTE UNIT INTERVALS(CFS)
       (Notes: Time indicated is at END of Each Unit Intervals.
               Peak 5-minute rainfall intensity is modeled as
               a constant value for entire 5-minute period.)
---------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.       50.0     100.0     150.0     200.0
---------------------------------------------------------------------------
  14.000      0.3340      0.45  Q  V      .         .         .         .
  14.017      0.3346      0.45  Q  V      .         .         .         .
  14.033      0.3353      0.45  Q  V      .         .         .         .
  14.050      0.3359      0.45  Q  V      .         .         .         .
  14.067      0.3365      0.45  Q  V      .         .         .         .
  14.083      0.3371      0.44  Q  V      .         .         .         .
  14.100      0.3377      0.44  Q  V      .         .         .         .
  14.117      0.3383      0.43  Q  V      .         .         .         .
  14.133      0.3389      0.43  Q  V      .         .         .         .
  14.150      0.3395      0.43  Q  V      .         .         .         .
  14.167      0.3401      0.43  Q  V      .         .         .         .
  14.183      0.3407      0.43  Q  V      .         .         .         .
  14.200      0.3413      0.43  Q  V      .         .         .         .
  14.217      0.3419      0.43  Q  V      .         .         .         .
  14.233      0.3424      0.43  Q  V      .         .         .         .
  14.250      0.3430      0.43  Q  V      .         .         .         .
  14.267      0.3436      0.43  Q  V      .         .         .         .
  14.283      0.3442      0.43  Q  V      .         .         .         .
  14.300      0.3448      0.43  Q  V      .         .         .         .
  14.317      0.3454      0.43  Q  V      .         .         .         .
  14.333      0.3460      0.43  Q  V      .         .         .         .
  14.350      0.3466      0.43  Q  V      .         .         .         .
  14.367      0.3472      0.44  Q  V      .         .         .         .
  14.383      0.3478      0.44  Q  V      .         .         .         .
  14.400      0.3484      0.44  Q  V      .         .         .         .
  14.417      0.3490      0.44  Q  V      .         .         .         .
  14.433      0.3496      0.44  Q  V      .         .         .         .
  14.450      0.3502      0.44  Q  V      .         .         .         .
  14.467      0.3509      0.45  Q  V      .         .         .         .
  14.483      0.3515      0.45  Q  V      .         .         .         .
  14.500      0.3521      0.45  Q  V      .         .         .         .
  14.517      0.3527      0.45  Q  V      .         .         .         .
  14.533      0.3533      0.45  Q  V      .         .         .         .
  14.550      0.3540      0.45  Q  V      .         .         .         .
  14.567      0.3546      0.46  Q  V      .         .         .         .
  14.583      0.3552      0.46  Q  V      .         .         .         .
  14.600      0.3559      0.46  Q  V      .         .         .         .
  14.617      0.3565      0.46  Q  V      .         .         .         .
  14.633      0.3571      0.46  Q  V      .         .         .         .
  14.650      0.3578      0.47  Q  V      .         .         .         .
  14.667      0.3584      0.47  Q  V      .         .         .         .
  14.683      0.3591      0.47  Q  V      .         .         .         .
  14.700      0.3597      0.47  Q  V      .         .         .         .
  14.717      0.3604      0.48  Q  V      .         .         .         .
  14.733      0.3610      0.48  Q  V      .         .         .         .
  14.750      0.3617      0.48  Q  V      .         .         .         .
  14.767      0.3624      0.48  Q  V      .         .         .         .
  14.783      0.3630      0.48  Q  V      .         .         .         .
  14.800      0.3637      0.49  Q  V      .         .         .         .
  14.817      0.3644      0.49  Q  V      .         .         .         .
  14.833      0.3650      0.49  Q  V      .         .         .         .
  14.850      0.3657      0.49  Q  V      .         .         .         .
  14.867      0.3664      0.50  Q  V      .         .         .         .
  14.883      0.3671      0.50  Q  V      .         .         .         .
  14.900      0.3678      0.50  Q  V      .         .         .         .
  14.917      0.3685      0.50  Q  V      .         .         .         .
  14.933      0.3692      0.51  Q  V      .         .         .         .
```

14.950	0.3699	0.51	Q V . . . .
14.967	0.3706	0.51	Q V . . . .
14.983	0.3713	0.52	Q V . . . .
15.000	0.3720	0.52	Q V . . . .
15.017	0.3727	0.52	Q V . . . .
15.033	0.3735	0.53	Q V . . . .
15.050	0.3742	0.53	Q V . . . .
15.067	0.3749	0.53	Q V . . . .
15.083	0.3757	0.54	Q V . . . .
15.100	0.3764	0.54	Q V . . . .
15.117	0.3772	0.54	Q V . . . .
15.133	0.3779	0.55	Q V . . . .
15.150	0.3787	0.55	Q V . . . .
15.167	0.3794	0.55	Q V . . . .
15.183	0.3802	0.56	Q V . . . .
15.200	0.3810	0.56	Q V . . . .
15.217	0.3817	0.57	Q V . . . .
15.233	0.3825	0.57	Q V . . . .
15.250	0.3833	0.57	Q V . . . .
15.267	0.3841	0.58	Q V . . . .
15.283	0.3849	0.58	Q V . . . .
15.300	0.3857	0.59	Q V . . . .
15.317	0.3865	0.59	Q V . . . .
15.333	0.3874	0.60	Q V . . . .
15.350	0.3882	0.62	Q V . . . .
15.367	0.3891	0.67	Q V . . . .
15.383	0.3902	0.77	Q V . . . .
15.400	0.3914	0.91	Q V . . . .
15.417	0.3930	1.13	Q V . . . .
15.433	0.3951	1.53	Q V . . . .
15.450	0.3979	2.03	Q V . . . .
15.467	0.4014	2.53	Q V . . . .
15.483	0.4056	3.06	Q V . . . .
15.500	0.4106	3.62	Q V . . . .
15.517	0.4164	4.22	Q V . . . .
15.533	0.4231	4.86	Q V . . . .
15.550	0.4307	5.53	.Q V . . . .
15.567	0.4393	6.24	.Q V . . . .
15.583	0.4490	7.00	.Q V . . . .
15.600	0.4597	7.79	.Q V . . . .
15.617	0.4716	8.63	.Q V . . . .
15.633	0.4847	9.51	.Q V . . . .
15.650	0.4991	10.44	. Q V . . . .
15.667	0.5148	11.42	. Q V . . . .
15.683	0.5319	12.43	. Q V . . . .
15.700	0.5504	13.42	. Q V . . . .
15.717	0.5703	14.45	. Q V . . . .
15.733	0.5916	15.49	. Q V . . . .
15.750	0.6144	16.52	. Q V . . . .
15.767	0.6383	17.37	. Q V . . . .
15.783	0.6635	18.31	. Q V . . . .
15.800	0.6906	19.65	. Q V . . . .
15.817	0.7198	21.22	. Q V . . . .
15.833	0.7515	22.96	. Q V . . . .
15.850	0.7858	24.92	. Q V . . . .
15.867	0.8231	27.09	. Q V . . . .
15.883	0.8638	29.52	. Q V . . . .
15.900	0.9082	32.23	. Q V. . . . .
15.917	0.9568	35.33	. Q V. . . . .
15.933	1.0104	38.86	. Q V . . . .
15.950	1.0696	43.01	. Q V . . . .
15.967	1.1371	49.01	. Q.V . . . .
15.983	1.2163	57.46	. .QV . . . .
16.000	1.3098	67.93	. . Q . . . .
16.017	1.4205	80.35	. . V Q . . . .
16.033	1.5534	96.47	. . V Q. . . .
16.050	1.7173	119.01	. . V . Q . .
16.067	1.9074	138.01	. . V. Q . .
16.083	2.1060	144.15	. . .V Q . .
16.100	2.3049	144.44	. . . V Q . .
16.117	2.4961	138.83	. . . V Q . .

16.133	2.6634	121.43	. . . Q V . .
16.150	2.8005	99.55	. . Q. V . .
16.167	2.9192	86.20	. . Q . V. .
16.183	3.0242	76.16	. . Q . V .
16.200	3.1172	67.57	. . Q . .V .
16.217	3.1999	60.03	. . Q . . V .
16.233	3.2740	53.77	. . Q . . V .
16.250	3.3402	48.04	. . Q. . . V .
16.267	3.3997	43.24	. . Q . . . V .
16.283	3.4533	38.87	. . Q . . . V .
16.300	3.5011	34.77	. . Q . . . V .
16.317	3.5435	30.75	. . Q . . . V .
16.333	3.5806	26.95	. . Q . . . V .
16.350	3.6130	23.50	. . Q . . . V .
16.367	3.6411	20.40	. . Q . . . V .
16.383	3.6648	17.21	. . Q . . . V .
16.400	3.6846	14.38	. Q . . . V .
16.417	3.7010	11.91	. Q . . . V .
16.433	3.7142	9.60	.Q . . . V .
16.450	3.7247	7.62	.Q . . . V .
16.467	3.7336	6.44	.Q . . . V .
16.483	3.7413	5.61	.Q . . . V .
16.500	3.7482	4.96	Q . . . V .
16.517	3.7543	4.43	Q . . . V .
16.533	3.7598	4.00	Q . . . V .
16.550	3.7648	3.64	Q . . . V .
16.567	3.7694	3.35	Q . . . V .
16.583	3.7737	3.11	Q . . . V .
16.600	3.7777	2.89	Q . . . V .
16.617	3.7814	2.71	Q . . . V .
16.633	3.7849	2.56	Q . . . V .
16.650	3.7883	2.42	Q . . . V .
16.667	3.7915	2.31	Q . . . V .
16.683	3.7945	2.21	Q . . . V .
16.700	3.7974	2.12	Q . . . V .
16.717	3.8002	2.03	Q . . . V .
16.733	3.8029	1.94	Q . . . V .
16.750	3.8054	1.84	Q . . . V .
16.767	3.8077	1.68	Q . . . V .
16.783	3.8098	1.50	Q . . . V .
16.800	3.8116	1.31	Q . . . V .
16.817	3.8131	1.13	Q . . . V .
16.833	3.8144	0.94	Q . . . V .
16.850	3.8156	0.83	Q . . . V .
16.867	3.8166	0.76	Q . . . V .
16.883	3.8176	0.71	Q . . . V .
16.900	3.8185	0.66	Q . . . V .
16.917	3.8194	0.63	Q . . . V .
16.933	3.8202	0.60	Q . . . V .
16.950	3.8210	0.57	Q . . . V .
16.967	3.8217	0.55	Q . . . V .
16.983	3.8225	0.53	Q . . . V .
17.000	3.8232	0.51	Q . . . V .
17.017	3.8238	0.49	Q . . . V .
17.033	3.8245	0.48	Q . . . V .
17.050	3.8251	0.46	Q . . . V .
17.067	3.8258	0.46	Q . . . V .
17.083	3.8264	0.45	Q . . . V .
17.100	3.8270	0.45	Q . . . V .
17.117	3.8276	0.45	Q . . . V .
17.133	3.8282	0.45	Q . . . V .
17.150	3.8288	0.45	Q . . . V .
17.167	3.8295	0.45	Q . . . V .
17.183	3.8301	0.45	Q . . . V .
17.200	3.8307	0.44	Q . . . V .
17.217	3.8313	0.44	Q . . . V .
17.233	3.8319	0.44	Q . . . V .
17.250	3.8325	0.44	Q . . . V .
17.267	3.8331	0.44	Q . . . V .
17.283	3.8337	0.44	Q . . . V .
17.300	3.8343	0.44	Q . . . V .

```
 17.317      3.8349      0.43  Q         .         .         .       V .
 17.333      3.8355      0.43  Q         .         .         .       V .
 17.350      3.8361      0.43  Q         .         .         .       V .
 17.367      3.8367      0.43  Q         .         .         .       V .
 17.383      3.8373      0.43  Q         .         .         .       V .
 17.400      3.8379      0.43  Q         .         .         .       V .
 17.417      3.8385      0.42  Q         .         .         .       V .
 17.433      3.8390      0.42  Q         .         .         .       V .
 17.450      3.8396      0.42  Q         .         .         .       V .
 17.467      3.8402      0.42  Q         .         .         .       V .
 17.483      3.8408      0.42  Q         .         .         .       V .
 17.500      3.8413      0.42  Q         .         .         .       V .
 17.517      3.8419      0.41  Q         .         .         .       V .
 17.533      3.8425      0.41  Q         .         .         .       V .
 17.550      3.8430      0.41  Q         .         .         .       V .
 17.567      3.8436      0.41  Q         .         .         .       V .
 17.583      3.8442      0.41  Q         .         .         .       V .
 17.600      3.8447      0.41  Q         .         .         .       V .
 17.617      3.8453      0.40  Q         .         .         .       V .
 17.633      3.8458      0.40  Q         .         .         .       V .
 17.650      3.8464      0.40  Q         .         .         .       V .
 17.667      3.8469      0.40  Q         .         .         .       V .
 17.683      3.8475      0.40  Q         .         .         .       V .
 17.700      3.8480      0.40  Q         .         .         .       V .
 17.717      3.8486      0.39  Q         .         .         .       V .
 17.733      3.8491      0.39  Q         .         .         .       V .
 17.750      3.8497      0.39  Q         .         .         .       V .
 17.767      3.8502      0.39  Q         .         .         .       V .
 17.783      3.8507      0.39  Q         .         .         .       V .
 17.800      3.8513      0.39  Q         .         .         .       V .
 17.817      3.8518      0.39  Q         .         .         .       V .
 17.833      3.8523      0.39  Q         .         .         .       V .
 17.850      3.8529      0.38  Q         .         .         .       V .
 17.867      3.8534      0.38  Q         .         .         .       V .
 17.883      3.8539      0.38  Q         .         .         .       V .
 17.900      3.8544      0.38  Q         .         .         .       V .
 17.917      3.8550      0.38  Q         .         .         .       V .
 17.933      3.8555      0.38  Q         .         .         .       V .
 17.950      3.8560      0.38  Q         .         .         .       V .
 17.967      3.8565      0.38  Q         .         .         .       V .
 17.983      3.8570      0.37  Q         .         .         .       V .
 18.000      3.8575      0.37  Q         .         .         .       V .

****************************************************************************
  FLOW PROCESS FROM NODE    321.11 TO NODE    325.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
============================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #3)

         WATERSHED AREA =     116.500 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.100 HOURS
         FOOTHILL S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.720
         LOW LOSS FRACTION = 0.990
         *HYDROGRAPH MODEL #7 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.24
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.72
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.12
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  2.15
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  3.40
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  8.50

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
           5-MINUTE FACTOR = 0.995
          30-MINUTE FACTOR = 0.995
           1-HOUR FACTOR = 0.995
           3-HOUR FACTOR = 0.999
           6-HOUR FACTOR = 1.000
          24-HOUR FACTOR = 1.000

         UNIT HYDROGRAPH TIME UNIT =   1.000 MINUTES
         UNIT INTERVAL PERCENTAGE OF LAG-TIME =  16.667


         RUNOFF HYDROGRAPH LISTING LIMITS:
         MODEL TIME(HOURS) FOR BEGINNING OF RESULTS =  14.00
         MODEL TIME(HOURS) FOR END OF RESULTS =  18.00
```

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	1.088	76.639
2	3.867	195.783
3	8.030	293.294
4	13.512	386.128
5	22.070	602.870
6	38.303	1143.566
7	55.310	1198.069
8	63.640	586.850
9	69.177	390.067
10	73.775	323.885
11	77.638	272.142
12	80.673	213.823
13	83.521	200.604
14	85.876	165.934
15	87.919	143.892
16	89.627	120.351
17	91.182	109.500
18	92.568	97.636
19	93.783	85.625
20	94.757	68.586
21	95.655	63.278
22	96.333	47.782
23	96.871	37.868
24	97.409	37.884
25	97.910	35.325
26	98.078	11.797
27	98.164	6.076
28	98.250	6.075
29	98.336	6.076
30	98.423	6.076
31	98.509	6.076
32	98.595	6.076
33	98.681	6.060
34	98.767	6.076
35	98.854	6.092
36	98.940	6.059
37	99.026	6.076
38	99.112	6.059
39	99.198	6.059
40	99.284	6.059
41	99.370	6.059
42	99.456	6.059
43	99.542	6.059
44	99.628	6.059
45	99.714	6.059
46	99.800	6.059
47	99.886	6.059
48	99.972	6.059
49	100.000	1.961

```
----------------------------------------------------------------------------
    TOTAL SOIL-LOSS VOLUME(ACRE-FEET) =      77.9528
    TOTAL STORM RUNOFF VOLUME(ACRE-FEET) =       4.5460
----------------------------------------------------------------------------
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============================================================================

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

============================================================================
                HYDROGRAPH IN  ONE-MINUTE UNIT INTERVALS(CFS)
        (Notes: Time indicated is at END of Each Unit Intervals.
                 Peak 5-minute rainfall intensity is modeled as
                 a constant value for entire 5-minute period.)
----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.       50.0     100.0     150.0     200.0
----------------------------------------------------------------------------
  14.000      0.4045      0.54  Q  V      .         .         .         .
  14.017      0.4053      0.54  Q  V      .         .         .         .
  14.033      0.4060      0.54  Q  V      .         .         .         .
  14.050      0.4068      0.54  Q  V      .         .         .         .
  14.067      0.4075      0.54  Q  V      .         .         .         .
  14.083      0.4082      0.54  Q  V      .         .         .         .
  14.100      0.4090      0.53  Q  V      .         .         .         .
  14.117      0.4097      0.52  Q  V      .         .         .         .
  14.133      0.4104      0.52  Q  V      .         .         .         .
  14.150      0.4111      0.52  Q  V      .         .         .         .
  14.167      0.4119      0.52  Q  V      .         .         .         .
  14.183      0.4126      0.52  Q  V      .         .         .         .
  14.200      0.4133      0.52  Q  V      .         .         .         .
  14.217      0.4140      0.52  Q  V      .         .         .         .
  14.233      0.4147      0.52  Q  V      .         .         .         .
  14.250      0.4154      0.52  Q  V      .         .         .         .
  14.267      0.4161      0.52  Q  V      .         .         .         .
  14.283      0.4169      0.52  Q  V      .         .         .         .
  14.300      0.4176      0.52  Q  V      .         .         .         .
  14.317      0.4183      0.52  Q  V      .         .         .         .
  14.333      0.4190      0.53  Q  V      .         .         .         .
  14.350      0.4198      0.53  Q  V      .         .         .         .
  14.367      0.4205      0.53  Q  V      .         .         .         .
  14.383      0.4212      0.53  Q  V      .         .         .         .
  14.400      0.4219      0.53  Q  V      .         .         .         .
  14.417      0.4227      0.53  Q  V      .         .         .         .
  14.433      0.4234      0.54  Q  V      .         .         .         .
  14.450      0.4242      0.54  Q  V      .         .         .         .
  14.467      0.4249      0.54  Q  V      .         .         .         .
  14.483      0.4257      0.54  Q  V      .         .         .         .
  14.500      0.4264      0.54  Q  V      .         .         .         .
  14.517      0.4272      0.55  Q  V      .         .         .         .
  14.533      0.4279      0.55  Q  V      .         .         .         .
  14.550      0.4287      0.55  Q  V      .         .         .         .
  14.567      0.4294      0.55  Q  V      .         .         .         .
  14.583      0.4302      0.56  Q  V      .         .         .         .
  14.600      0.4310      0.56  Q  V      .         .         .         .
  14.617      0.4317      0.56  Q  V      .         .         .         .
  14.633      0.4325      0.56  Q  V      .         .         .         .
  14.650      0.4333      0.57  Q  V      .         .         .         .
  14.667      0.4341      0.57  Q  V      .         .         .         .
  14.683      0.4349      0.57  Q  V      .         .         .         .
  14.700      0.4357      0.57  Q  V      .         .         .         .
  14.717      0.4364      0.58  Q  V      .         .         .         .
  14.733      0.4372      0.58  Q  V      .         .         .         .
  14.750      0.4380      0.58  Q  V      .         .         .         .
  14.767      0.4388      0.58  Q  V      .         .         .         .
  14.783      0.4397      0.59  Q  V      .         .         .         .
  14.800      0.4405      0.59  Q  V      .         .         .         .
  14.817      0.4413      0.59  Q  V      .         .         .         .
  14.833      0.4421      0.60  Q  V      .         .         .         .
  14.850      0.4429      0.60  Q  V      .         .         .         .
  14.867      0.4438      0.60  Q  V      .         .         .         .
  14.883      0.4446      0.61  Q  V      .         .         .         .
  14.900      0.4454      0.61  Q  V      .         .         .         .
  14.917      0.4463      0.61  Q  V      .         .         .         .
  14.933      0.4471      0.61  Q  V      .         .         .         .
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14.950	0.4480	0.62	Q V
14.967	0.4488	0.62	Q V
14.983	0.4497	0.63	Q V
15.000	0.4506	0.63	Q V
15.017	0.4514	0.63	Q V
15.033	0.4523	0.64	Q V
15.050	0.4532	0.64	Q V
15.067	0.4541	0.64	Q V
15.083	0.4550	0.65	Q V
15.100	0.4559	0.65	Q V
15.117	0.4568	0.66	Q V
15.133	0.4577	0.66	Q V
15.150	0.4586	0.67	Q V
15.167	0.4595	0.67	Q V
15.183	0.4605	0.68	Q V
15.200	0.4614	0.68	Q V
15.217	0.4623	0.69	Q V
15.233	0.4633	0.69	Q V
15.250	0.4642	0.70	Q V
15.267	0.4652	0.70	Q V
15.283	0.4662	0.71	Q V
15.300	0.4672	0.71	Q V
15.317	0.4682	0.72	Q V
15.333	0.4691	0.72	Q V
15.350	0.4702	0.73	Q V
15.367	0.4712	0.74	Q V
15.383	0.4722	0.75	Q V
15.400	0.4732	0.76	Q V
15.417	0.4743	0.79	Q V
15.433	0.4755	0.86	Q V
15.450	0.4769	0.98	Q V
15.467	0.4785	1.15	Q V
15.483	0.4804	1.44	Q V
15.500	0.4830	1.89	Q V
15.517	0.4864	2.45	Q V
15.533	0.4907	3.08	Q V
15.550	0.4959	3.79	Q V
15.567	0.5021	4.55	Q V
15.583	0.5096	5.38	.Q V
15.600	0.5182	6.26	.Q V
15.617	0.5281	7.22	.Q V
15.633	0.5394	8.22	.Q V
15.650	0.5523	9.31	.Q V
15.667	0.5666	10.45	. Q V
15.683	0.5827	11.62	. Q V
15.700	0.6003	12.80	. Q V
15.717	0.6196	14.02	. Q V
15.733	0.6406	15.26	. Q V
15.750	0.6633	16.49	. Q V
15.767	0.6874	17.50	. Q V
15.783	0.7131	18.63	. Q V
15.800	0.7410	20.24	. Q V
15.817	0.7715	22.14	. Q V
15.833	0.8049	24.25	. Q V
15.850	0.8415	26.61	. Q V
15.867	0.8818	29.23	. Q V
15.883	0.9261	32.17	. Q V
15.900	0.9749	35.45	. QV
15.917	1.0289	39.20	. Q V.
15.933	1.0888	43.47	. QV.
15.950	1.1555	48.48	. QV
15.967	1.2323	55.73	. VQ
15.983	1.3232	65.96	. .V Q
16.000	1.4315	78.63	. . V Q
16.017	1.5605	93.64	. . V Q .
16.033	1.7163	113.15	. . V . Q
16.050	1.9097	140.42	. . V . Q .
16.067	2.1348	163.40	. . V . . Q
16.083	2.3701	170.83	. . V . Q
16.100	2.6059	171.17	. . . V . Q
16.117	2.8323	164.39	. . . V . Q

16.133	3.0297	143.33	. . . V Q .
16.150	3.1907	116.85	. . . Q V .
16.167	3.3294	100.70	. . Q V.
16.183	3.4513	88.55	. . Q . V
16.200	3.5590	78.16	. . Q . .V
16.217	3.6541	69.04	. . Q . . V
16.233	3.7388	61.46	. . Q . . V
16.250	3.8139	54.53	. Q . . V
16.267	3.8810	48.72	. Q. . . V
16.283	3.9408	43.44	. Q . . . V
16.300	3.9938	38.47	. Q . . . V
16.317	4.0401	33.61	. Q . . . V
16.333	4.0801	29.02	. Q . . . V
16.350	4.1144	24.90	. Q . . . V
16.367	4.1436	21.25	. Q . . . V
16.383	4.1678	17.55	. Q . . . V
16.400	4.1876	14.35	. Q . . . V
16.417	4.2037	11.72	. Q . . . V
16.433	4.2168	9.52	.Q . . . V
16.450	4.2274	7.67	.Q . . . V
16.467	4.2364	6.53	.Q . . . V
16.483	4.2443	5.72	.Q . . . V
16.500	4.2513	5.08	.Q . . . V
16.517	4.2576	4.58	Q . . . V
16.533	4.2633	4.17	Q . . . V
16.550	4.2686	3.83	Q . . . V
16.567	4.2735	3.56	Q . . . V
16.583	4.2781	3.34	Q . . . V
16.600	4.2824	3.14	Q . . . V
16.617	4.2865	2.98	Q . . . V
16.633	4.2904	2.84	Q . . . V
16.650	4.2942	2.72	Q . . . V
16.667	4.2978	2.61	Q . . . V
16.683	4.3012	2.52	Q . . . V
16.700	4.3046	2.43	Q . . . V
16.717	4.3078	2.34	Q . . . V
16.733	4.3109	2.25	Q . . . V
16.750	4.3139	2.15	Q . . . V
16.767	4.3166	1.97	Q . . . V
16.783	4.3190	1.75	Q . . . V .
16.800	4.3211	1.53	Q . . . V .
16.817	4.3229	1.30	Q . . . V .
16.833	4.3244	1.08	Q . . . V .
16.850	4.3257	0.95	Q . . . V .
16.867	4.3269	0.87	Q . . . V .
16.883	4.3280	0.81	Q . . . V .
16.900	4.3291	0.76	Q . . . V .
16.917	4.3300	0.72	Q . . . V .
16.933	4.3310	0.68	Q . . . V .
16.950	4.3319	0.66	Q . . . V .
16.967	4.3328	0.63	Q . . . V .
16.983	4.3336	0.61	Q . . . V .
17.000	4.3344	0.59	Q . . . V .
17.017	4.3352	0.57	Q . . . V .
17.033	4.3360	0.56	Q . . . V .
17.050	4.3367	0.55	Q . . . V .
17.067	4.3375	0.54	Q . . . V .
17.083	4.3382	0.54	Q . . . V .
17.100	4.3389	0.54	Q . . . V .
17.117	4.3397	0.54	Q . . . V .
17.133	4.3404	0.54	Q . . . V .
17.150	4.3412	0.54	Q . . . V .
17.167	4.3419	0.54	Q . . . V .
17.183	4.3427	0.54	Q . . . V .
17.200	4.3434	0.54	Q . . . V .
17.217	4.3441	0.54	Q . . . V .
17.233	4.3449	0.54	Q . . . V .
17.250	4.3456	0.53	Q . . . V .
17.267	4.3464	0.53	Q . . . V .
17.283	4.3471	0.53	Q . . . V .
17.300	4.3478	0.53	Q . . . V .

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 17.317      4.3485      0.53  Q          .          .          .       V .
 17.333      4.3493      0.52  Q          .          .          .       V .
 17.350      4.3500      0.52  Q          .          .          .       V .
 17.367      4.3507      0.52  Q          .          .          .       V .
 17.383      4.3514      0.52  Q          .          .          .       V .
 17.400      4.3521      0.52  Q          .          .          .       V .
 17.417      4.3528      0.51  Q          .          .          .       V .
 17.433      4.3535      0.51  Q          .          .          .       V .
 17.450      4.3542      0.51  Q          .          .          .       V .
 17.467      4.3549      0.51  Q          .          .          .       V .
 17.483      4.3556      0.50  Q          .          .          .       V .
 17.500      4.3563      0.50  Q          .          .          .       V .
 17.517      4.3570      0.50  Q          .          .          .       V .
 17.533      4.3577      0.50  Q          .          .          .       V .
 17.550      4.3584      0.50  Q          .          .          .       V .
 17.567      4.3591      0.49  Q          .          .          .       V .
 17.583      4.3597      0.49  Q          .          .          .       V .
 17.600      4.3604      0.49  Q          .          .          .       V .
 17.617      4.3611      0.49  Q          .          .          .       V .
 17.633      4.3618      0.49  Q          .          .          .       V .
 17.650      4.3624      0.49  Q          .          .          .       V .
 17.667      4.3631      0.48  Q          .          .          .       V .
 17.683      4.3638      0.48  Q          .          .          .       V .
 17.700      4.3644      0.48  Q          .          .          .       V .
 17.717      4.3651      0.48  Q          .          .          .       V .
 17.733      4.3657      0.48  Q          .          .          .       V .
 17.750      4.3664      0.47  Q          .          .          .       V .
 17.767      4.3670      0.47  Q          .          .          .       V .
 17.783      4.3677      0.47  Q          .          .          .       V .
 17.800      4.3683      0.47  Q          .          .          .       V .
 17.817      4.3690      0.47  Q          .          .          .       V .
 17.833      4.3696      0.47  Q          .          .          .       V .
 17.850      4.3703      0.47  Q          .          .          .       V .
 17.867      4.3709      0.46  Q          .          .          .       V .
 17.883      4.3715      0.46  Q          .          .          .       V .
 17.900      4.3722      0.46  Q          .          .          .       V .
 17.917      4.3728      0.46  Q          .          .          .       V .
 17.933      4.3734      0.46  Q          .          .          .       V .
 17.950      4.3741      0.46  Q          .          .          .       V .
 17.967      4.3747      0.45  Q          .          .          .       V .
 17.983      4.3753      0.45  Q          .          .          .       V .
 18.000      4.3759      0.45  Q          .          .          .       V .
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 END OF FLOODSCx ROUTING ANALYSIS
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             F L O O D    R O U T I N G    A N A L Y S I S
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                           Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* SPRING TRAILS            JUNE, 2011                J - 13565-C          *
* 100-YR AMC III - TO SUPPORT BULKING FACTOR CALCULATIONS                 *
* Basin 900 - Meyers Canyon (East)                                        *
 ************************************************************************

  FILE NAME: ST900PS.DAT
  TIME/DATE OF STUDY: 13:05 06/08/2011


****************************************************************************
  FLOW PROCESS FROM NODE    901.10 TO NODE    917.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
============================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERSHED AREA =     343.300 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.165 HOURS
         FOOTHILL S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.255
         LOW LOSS FRACTION = 0.990
         *HYDROGRAPH MODEL #7 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.32
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  1.04
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.60
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  3.25
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  5.00
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) = 14.00

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
           5-MINUTE FACTOR = 0.985
          30-MINUTE FACTOR = 0.985
           1-HOUR FACTOR = 0.985
           3-HOUR FACTOR = 0.998
           6-HOUR FACTOR = 0.999
          24-HOUR FACTOR = 0.999

         UNIT HYDROGRAPH TIME UNIT =   1.000 MINUTES
         UNIT INTERVAL PERCENTAGE OF LAG-TIME =  10.101


         RUNOFF HYDROGRAPH LISTING LIMITS:
         MODEL TIME(HOURS) FOR BEGINNING OF RESULTS =  14.00
         MODEL TIME(HOURS) FOR END OF RESULTS =  18.00


============================================================================
                       UNIT HYDROGRAPH DETERMINATION

----------------------------------------------------------------------------
     INTERVAL          "S" GRAPH          UNIT HYDROGRAPH
      NUMBER          MEAN VALUES          ORDINATES(CFS)
```

1	0.657	136.296
2	2.043	287.886
3	3.888	382.918
4	6.239	488.087
5	9.118	597.670
6	12.284	657.179
7	16.828	943.333
8	22.312	1138.269
9	30.582	1716.797
10	44.417	2872.138
11	54.059	2001.554
12	59.730	1177.159
13	64.222	932.504
14	67.522	685.007
15	70.634	645.992
16	73.295	552.494
17	75.889	538.488
18	78.004	439.044
19	79.794	371.620
20	81.676	390.525
21	83.343	346.111
22	84.766	295.486
23	86.201	297.754
24	87.439	257.112
25	88.548	230.098
26	89.557	209.628
27	90.516	199.011
28	91.434	190.622
29	92.286	176.813
30	93.036	155.600
31	93.779	154.376
32	94.388	126.398
33	94.934	113.354
34	95.480	113.353
35	95.993	106.449
36	96.341	72.292
37	96.667	67.675
38	96.993	67.635
39	97.319	67.675
40	97.645	67.594
41	97.948	62.898
42	98.048	20.711
43	98.100	10.879
44	98.152	10.836
45	98.204	10.838
46	98.257	10.879
47	98.309	10.836
48	98.361	10.838
49	98.413	10.838
50	98.466	10.838
51	98.517	10.757
52	98.570	10.919
53	98.623	10.917
54	98.674	10.759
55	98.727	10.917
56	98.779	10.757
57	98.831	10.919
58	98.883	10.757
59	98.936	10.998
60	98.988	10.759
61	99.040	10.757
62	99.092	10.757
63	99.143	10.757
64	99.195	10.757
65	99.247	10.757
66	99.299	10.757
67	99.351	10.757
68	99.403	10.757
69	99.454	10.757
70	99.506	10.757

71	99.558	10.757
72	99.610	10.757
73	99.662	10.757
74	99.713	10.757
75	99.765	10.757
76	99.817	10.757
77	99.869	10.757
78	99.921	10.757
79	99.973	10.757
80	100.000	5.692

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 175.0847
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 225.0392

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

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HYDROGRAPH IN ONE-MINUTE UNIT INTERVALS(CFS)
(Notes: Time indicated is at END of Each Unit Intervals.
Peak 5-minute rainfall intensity is modeled as
a constant value for entire 5-minute period.)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	225.0	450.0	675.0	900.0
14.000	100.2069	135.47	. Q	.	V .	.	.
14.017	100.3944	136.19	. Q	.	V .	.	.
14.033	100.5832	137.01	. Q	.	V .	.	.
14.050	100.7731	137.89	. Q	.	V .	.	.
14.067	100.9643	138.84	. Q	.	V .	.	.
14.083	101.1570	139.86	. Q	.	V .	.	.
14.100	101.3511	140.93	. Q	.	V .	.	.
14.117	101.5469	142.18	. Q	.	V .	.	.
14.133	101.7447	143.56	. Q	.	V .	.	.
14.150	101.9448	145.29	. Q	.	V .	.	.
14.167	102.1483	147.73	. Q	.	V .	.	.
14.183	102.3544	149.64	. Q	.	V .	.	.
14.200	102.5625	151.06	. Q	.	V .	.	.
14.217	102.7723	152.33	. Q	.	V .	.	.
14.233	102.9837	153.47	. Q	.	V .	.	.
14.250	103.1966	154.58	. Q	.	V .	.	.
14.267	103.4110	155.64	. Q	.	V .	.	.
14.283	103.6268	156.70	. Q	.	V .	.	.
14.300	103.8441	157.71	. Q	.	V .	.	.
14.317	104.0626	158.69	. Q	.	V .	.	.
14.333	104.2826	159.69	. Q	.	V .	.	.
14.350	104.5039	160.66	. Q	.	V .	.	.
14.367	104.7265	161.62	. Q	.	V .	.	.
14.383	104.9505	162.59	. Q	.	V .	.	.
14.400	105.1757	163.54	. Q	.	V .	.	.
14.417	105.4023	164.48	. Q	.	V .	.	.
14.433	105.6302	165.43	. Q	.	V .	.	.
14.450	105.8593	166.37	. Q	.	V .	.	.
14.467	106.0898	167.32	. Q	.	V .	.	.
14.483	106.3216	168.27	. Q	.	V .	.	.
14.500	106.5547	169.23	. Q	.	V .	.	.
14.517	106.7891	170.18	. Q	.	V .	.	.
14.533	107.0248	171.14	. Q	.	V.	.	.
14.550	107.2619	172.10	. Q	.	V.	.	.
14.567	107.5003	173.07	. Q	.	V.	.	.
14.583	107.7400	174.05	. Q	.	V.	.	.
14.600	107.9811	175.02	. Q	.	V.	.	.
14.617	108.2235	176.00	. Q	.	V.	.	.
14.633	108.4673	177.00	. Q	.	V.	.	.
14.650	108.7125	178.00	. Q	.	V.	.	.
14.667	108.9591	179.02	. Q	.	V.	.	.
14.683	109.2071	180.05	. Q	.	V.	.	.
14.700	109.4565	181.08	. Q	.	V.	.	.
14.717	109.7073	182.11	. Q	.	V.	.	.
14.733	109.9596	183.15	. Q	.	V.	.	.
14.750	110.2133	184.21	. Q	.	V.	.	.
14.767	110.4686	185.29	. Q	.	V.	.	.
14.783	110.7253	186.39	. Q	.	V.	.	.
14.800	110.9836	187.50	. Q	.	V.	.	.
14.817	111.2434	188.63	. Q	.	V.	.	.
14.833	111.5048	189.78	. Q	.	V.	.	.
14.850	111.7678	190.94	. Q	.	V.	.	.
14.867	112.0325	192.13	. Q	.	V.	.	.
14.883	112.2988	193.34	. Q	.	V.	.	.
14.900	112.5668	194.57	. Q	.	V	.	.
14.917	112.8365	195.81	. Q	.	V	.	.
14.933	113.1079	197.09	. Q	.	V	.	.

14.950	113.3812	198.37	. Q . V . .
14.967	113.6562	199.69	. Q . V . .
14.983	113.9332	201.03	. Q . V . .
15.000	114.2119	202.40	. Q . V . .
15.017	114.4926	203.78	. Q. V . .
15.033	114.7753	205.20	. Q. V . .
15.050	115.0599	206.64	. Q. V . .
15.067	115.3466	208.12	. Q. V . .
15.083	115.6353	209.62	. Q. V . .
15.100	115.9262	211.15	. Q. V . .
15.117	116.2191	212.71	. Q. V . .
15.133	116.5143	214.31	. Q. V . .
15.150	116.8118	215.94	. Q. V . .
15.167	117.1115	217.61	. Q. V . .
15.183	117.4136	219.30	. Q. V . .
15.200	117.7181	221.05	. Q. V . .
15.217	118.0250	222.82	. Q. V . .
15.233	118.3344	224.64	. Q. .V . .
15.250	118.6464	226.50	. Q .V . .
15.267	118.9610	228.41	. Q .V . .
15.283	119.2783	230.36	. Q .V . .
15.300	119.5984	232.37	. Q .V . .
15.317	119.9212	234.41	. Q .V . .
15.333	120.2470	236.52	. Q .V . .
15.350	120.5756	238.55	. Q .V . .
15.367	120.9069	240.50	. Q .V . .
15.383	121.2408	242.41	. Q .V . .
15.400	121.5773	244.31	. Q .V . .
15.417	121.9164	246.16	. Q .V . .
15.433	122.2580	248.05	. .Q .V . .
15.450	122.6020	249.73	. .Q .V . .
15.467	122.9482	251.34	. .Q .V . .
15.483	123.2960	252.48	. .Q .V . .
15.500	123.6440	252.66	. .Q .V . .
15.517	123.9935	253.76	. .Q . V . .
15.533	124.3458	255.76	. .Q . V . .
15.550	124.7013	258.08	. .Q . V . .
15.567	125.0605	260.78	. .Q . V . .
15.583	125.4236	263.63	. .Q . V . .
15.600	125.7910	266.73	. .Q . V . .
15.617	126.1628	269.97	. .Q . V . .
15.633	126.5395	273.48	. . Q . V . .
15.650	126.9214	277.21	. . Q . V . .
15.667	127.3086	281.13	. . Q . V . .
15.683	127.7017	285.43	. . Q . V . .
15.700	128.1015	290.22	. . Q . V . .
15.717	128.5083	295.32	. . Q . V . .
15.733	128.9227	300.88	. . Q . V . .
15.750	129.3454	306.83	. . Q . V . .
15.767	129.7768	313.22	. . Q . V . .
15.783	130.2179	320.26	. . Q . V . .
15.800	130.6696	327.95	. . Q . V . .
15.817	131.1335	336.74	. . Q . V . .
15.833	131.6120	347.45	. . Q . V . .
15.850	132.1045	357.54	. . Q . V . .
15.867	132.6104	367.26	. . Q . V . .
15.883	133.1301	377.32	. . Q . V . .
15.900	133.6644	387.93	. . Q . V . .
15.917	134.2146	399.42	. . Q . V . .
15.933	134.7822	412.07	. . Q . V . .
15.950	135.3692	426.15	. . Q . V . .
15.967	135.9819	444.83	. . Q. V . .
15.983	136.6265	468.01	. . Q V . .
16.000	137.3080	494.75	. . .Q V . .
16.017	138.0311	524.92	. . . QV . .
16.033	138.8009	558.90	. . . Q . .
16.050	139.6164	592.08	. . . V Q . .
16.067	140.4824	628.72	. . . V Q . .
16.083	141.4005	666.56	. . . V Q. .
16.100	142.3841	714.08	. . . V .Q .
16.117	143.4557	777.93	. . . V . Q .

16.133	144.5770	814.08	. . . V . Q .
16.150	145.7078	820.96	. . . V . Q .
16.167	146.8280	813.31	. . . V . Q .
16.183	147.9052	782.02	. . . V . Q .
16.200	148.8902	715.15	. . . V .Q .
16.217	149.7976	658.74	. . . V Q. .
16.233	150.6515	619.94	. . . VQ . .
16.250	151.4590	586.28	. . . Q . .
16.267	152.2287	558.76	. . . Q V . .
16.283	152.9642	534.00	. . . Q V . .
16.300	153.6685	511.31	. . . Q V . .
16.317	154.3410	488.23	. . .Q V . .
16.333	154.9840	466.82	. . Q V . .
16.350	155.6013	448.20	. . Q. V . .
16.367	156.1942	430.43	. . Q. V . .
16.383	156.7648	414.22	. . Q . V . .
16.400	157.3157	399.97	. . Q . V . .
16.417	157.8477	386.25	. . Q . V . .
16.433	158.3625	373.75	. . Q . V . .
16.450	158.8615	362.25	. . Q . V . .
16.467	159.3463	351.94	. . Q . V . .
16.483	159.8178	342.32	. . Q . V . .
16.500	160.2779	334.04	. . Q . V . .
16.517	160.7265	325.70	. . Q . V . .
16.533	161.1635	317.24	. . Q . V . .
16.550	161.5880	308.18	. . Q . V . .
16.567	162.0009	299.81	. . Q . V . .
16.583	162.4033	292.11	. . Q . V . .
16.600	162.7953	284.63	. . Q . V . .
16.617	163.1776	277.52	. . Q . V. .
16.633	163.5511	271.18	. . Q . V. .
16.650	163.9152	264.31	. .Q . V. .
16.667	164.2700	257.60	. .Q . V. .
16.683	164.6159	251.12	. .Q . V. .
16.700	164.9531	244.85	. Q . V. .
16.717	165.2822	238.92	. Q . V. .
16.733	165.6048	234.20	. Q . V. .
16.750	165.9217	230.08	. Q . V. .
16.767	166.2334	226.30	. Q . V. .
16.783	166.5403	222.77	. Q. . V. .
16.800	166.8425	219.44	. Q. . V. .
16.817	167.1404	216.28	. Q. . V. .
16.833	167.4342	213.26	. Q. . V. .
16.850	167.7240	210.38	. Q. . V. .
16.867	168.0100	207.65	. Q. . V. .
16.883	168.2924	205.04	. Q. . V. .
16.900	168.5714	202.53	. Q. . V. .
16.917	168.8470	200.11	. Q . . V .
16.933	169.1194	197.76	. Q . . V .
16.950	169.3887	195.47	. Q . . V .
16.967	169.6548	193.26	. Q . . V .
16.983	169.9181	191.11	. Q . . V .
17.000	170.1785	189.03	. Q . . V .
17.017	170.4359	186.91	. Q . . V .
17.033	170.6903	184.71	. Q . . V .
17.050	170.9417	182.50	. Q . . V .
17.067	171.1900	180.27	. Q . . V .
17.083	171.4352	178.02	. Q . . V .
17.100	171.6773	175.78	. Q . . V .
17.117	171.9162	173.39	. Q . . V .
17.133	172.1516	170.92	. Q . . V .
17.150	172.3832	168.13	. Q . . V .
17.167	172.6100	164.66	. Q . . V .
17.183	172.8328	161.73	. Q . . V .
17.200	173.0522	159.33	. Q . . V .
17.217	173.2686	157.10	. Q . . V .
17.233	173.4822	155.03	. Q . . V .
17.250	173.6929	152.99	. Q . . V .
17.267	173.9009	151.01	. Q . . V .
17.283	174.1060	148.93	. Q . . V .
17.300	174.3083	146.81	. Q . . V .

```
 17.317    174.5076    144.75  .     Q   .         .         .V        .
 17.333    174.7042    142.71  .     Q   .         .         .V        .
 17.350    174.8980    140.72  .     Q   .         .         .V        .
 17.367    175.0894    138.91  .     Q   .         .         .V        .
 17.383    175.2785    137.29  .     Q   .         .         .V        .
 17.400    175.4655    135.76  .     Q   .         .         .V        .
 17.417    175.6505    134.29  .    Q    .         .         .V        .
 17.433    175.8335    132.88  .    Q    .         .         .V        .
 17.450    176.0146    131.51  .    Q    .         .         .V        .
 17.467    176.1940    130.18  .    Q    .         .         .V        .
 17.483    176.3715    128.89  .    Q    .         .         .V        .
 17.500    176.5473    127.64  .    Q    .         .         .V        .
 17.517    176.7215    126.43  .    Q    .         .         .V        .
 17.533    176.8940    125.26  .    Q    .         .         .V        .
 17.550    177.0649    124.12  .    Q    .         .         .V        .
 17.567    177.2344    123.01  .    Q    .         .         .V        .
 17.583    177.4023    121.91  .    Q    .         .         .V        .
 17.600    177.5688    120.86  .    Q    .         .         .V        .
 17.617    177.7338    119.84  .    Q    .         .         .V        .
 17.633    177.8975    118.83  .    Q    .         .         .V        .
 17.650    178.0598    117.84  .    Q    .         .         .V        .
 17.667    178.2208    116.86  .    Q    .         .         .V        .
 17.683    178.3804    115.89  .    Q    .         .         .V        .
 17.700    178.5388    114.97  .    Q    .         .         .V        .
 17.717    178.6959    114.07  .    Q    .         .         .V        .
 17.733    178.8518    113.18  .    Q    .         .         .V        .
 17.750    179.0065    112.31  .   Q     .         .         .V        .
 17.767    179.1600    111.45  .   Q     .         .         .V        .
 17.783    179.3124    110.61  .   Q     .         .         .V        .
 17.800    179.4636    109.78  .   Q     .         .         .V        .
 17.817    179.6137    108.96  .   Q     .         .         .V        .
 17.833    179.7626    108.16  .   Q     .         .         .V        .
 17.850    179.9105    107.36  .   Q     .         .         .V        .
 17.867    180.0573    106.58  .   Q     .         .         . V       .
 17.883    180.2031    105.81  .   Q     .         .         . V       .
 17.900    180.3478    105.05  .   Q     .         .         . V       .
 17.917    180.4915    104.30  .   Q     .         .         . V       .
 17.933    180.6341    103.57  .   Q     .         .         . V       .
 17.950    180.7758    102.84  .   Q     .         .         . V       .
 17.967    180.9164    102.12  .   Q     .         .         . V       .
 17.983    181.0561    101.42  .   Q     .         .         . V       .
 18.000    181.1949    100.72  .   Q     .         .         . V       .
===============================================================================

 END OF FLOODSCx ROUTING ANALYSIS
```

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****************************************************************************

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          USING COUNTY HYDROLOGY MANUAL OF SAN BERNARDINO(1986)
         (c) Copyright 1989-2003 Advanced Engineering Software (aes)
             Ver. 8.0  Release Date: 01/01/2003  License ID 1261

                          Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* SPRING TRAILS              JUNE, 2011                  J - 13565-C       *
* 10-YR AMC II - TO SUPPORT BULKING FACTOR CALCULATIONS                    *
* Basin 900 - Meyers Canyon (East)                                         *
 ***************************************************************************

  FILE NAME: ST910PS.DAT
  TIME/DATE OF STUDY: 13:06 06/08/2011


                         ** INPUT SUMMARY **


****************************************************************************
  FLOW PROCESS FROM NODE    901.10 TO NODE    917.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #1<<<<<
============================================================================
  WATERSHED AREA =     343.300 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.165 HOURS
  FOOTHILL S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.540; LOW LOSS FRACTION = 0.990
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.24; 30-MINUTE =  0.72;  1-HOUR =  1.12
    3-HOUR =  2.15;    6-HOUR =  3.40; 24-HOUR =  8.50
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.985; 30-MINUTE = 0.985;  1-HOUR = 0.985
    3-HOUR = 0.998;    6-HOUR = 0.999; 24-HOUR = 0.999
============================================================================
```

```
+-----------------------------------------------------------------------------------------------------------------------+
|                                    * AES FLOODSCx PROGRAM RESULTS SUMMARY *                                           |
|INPUT FILENAME: [ST910PS.DAT    ]                                                                  Page:   1 of    |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|UPSTREAM  DOWNSTREAM|                               | UPSTREAM   DOWNSTREAM| TIME(2) TO | MAX. STORAGE|           |
| NODE #     NODE #  | HYDROLOGIC/HYDRAULIC PROCESS  |PEAK (CFS)  PEAK (CFS)| PEAK (HR)  | MODELED (AF)| FOOTNOTES |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|   901.10     917.00| Subarea (UH) Added to Stream #1|       0.0       469.6|     16.150 |             |           |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|Notes: 1 = BASIN MODEL VOLUME EXCEEDED; 2 = TIME IS AT END OF 1-MINUTE UNIT INTERVAL                                  |
|       3 = RUNOFF ESTIMATES DO NOT EXTEND PAST 2 DAYS AFTER THE PEAK DAY OF THE DESIGN STORM                           |
+-----------------------------------------------------------------------------------------------------------------------+

  END OF FLOODSCx ROUTING ANALYSIS
```

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

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                          Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* SPRING TRAILS              JUNE, 2011                  J - 13565-C       *
* 10-YR AMC II - TO SUPPORT BULKING FACTOR CALCULATIONS                    *
* Basin 900 - Meyers Canyon (East)                                         *
 ***************************************************************************

  FILE NAME: ST910PS.DAT
  TIME/DATE OF STUDY: 13:06 06/08/2011


                         ** INPUT SUMMARY **


****************************************************************************
  FLOW PROCESS FROM NODE    901.10 TO NODE    917.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #1<<<<<
============================================================================
  WATERSHED AREA =     343.300 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  *USER ENTERED "LAG" TIME =    0.165 HOURS
  FOOTHILL S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.540; LOW LOSS FRACTION = 0.990
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.24; 30-MINUTE =  0.72;  1-HOUR =  1.12
    3-HOUR =  2.15;    6-HOUR =  3.40; 24-HOUR =  8.50
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.985; 30-MINUTE = 0.985;  1-HOUR = 0.985
    3-HOUR = 0.998;    6-HOUR = 0.999; 24-HOUR = 0.999
============================================================================
```

```
+-----------------------------------------------------------------------------------------------------------------------+
|                                    * AES FLOODSCx PROGRAM RESULTS SUMMARY *                                           |
|INPUT FILENAME: [ST910PS.DAT    ]                                                                  Page:   1 of    |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|UPSTREAM  DOWNSTREAM|                               | UPSTREAM   DOWNSTREAM| TIME(2) TO | MAX. STORAGE|           |
| NODE #     NODE #  | HYDROLOGIC/HYDRAULIC PROCESS  |PEAK (CFS)  PEAK (CFS)| PEAK (HR)  | MODELED (AF)| FOOTNOTES |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|   901.10     917.00| Subarea (UH) Added to Stream #1|       0.0       469.6|     16.150 |             |           |
+--------------------+-------------------------------+----------------------+------------+-------------+-----------+
|Notes: 1 = BASIN MODEL VOLUME EXCEEDED; 2 = TIME IS AT END OF 1-MINUTE UNIT INTERVAL                                  |
|       3 = RUNOFF ESTIMATES DO NOT EXTEND PAST 2 DAYS AFTER THE PEAK DAY OF THE DESIGN STORM                           |
+-----------------------------------------------------------------------------------------------------------------------+

  END OF FLOODSCx ROUTING ANALYSIS
```

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

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          USING COUNTY HYDROLOGY MANUAL OF SAN BERNARDINO(1986)
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 ************************* DESCRIPTION OF STUDY *************************
* SPRING TRAILS              JUNE, 2011                 J - 13565-C       *
* 10-YR AMC II - TO SUPPORT BULKING FACTOR CALCULATIONS                   *
* Basin 900 - Meyers Canyon (East)                                        *
 ************************************************************************

  FILE NAME: ST910PS.DAT
  TIME/DATE OF STUDY: 13:06 06/08/2011


****************************************************************************
  FLOW PROCESS FROM NODE    901.10 TO NODE    917.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
============================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERSHED AREA =     343.300 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.165 HOURS
         FOOTHILL S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.540
         LOW LOSS FRACTION = 0.990
         *HYDROGRAPH MODEL #7 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.24
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.72
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.12
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  2.15
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  3.40
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  8.50

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
           5-MINUTE FACTOR = 0.985
          30-MINUTE FACTOR = 0.985
           1-HOUR FACTOR = 0.985
           3-HOUR FACTOR = 0.998
           6-HOUR FACTOR = 0.999
          24-HOUR FACTOR = 0.999

         UNIT HYDROGRAPH TIME UNIT =   1.000 MINUTES
         UNIT INTERVAL PERCENTAGE OF LAG-TIME =  10.101


         RUNOFF HYDROGRAPH LISTING LIMITS:
         MODEL TIME(HOURS) FOR BEGINNING OF RESULTS =  14.00
         MODEL TIME(HOURS) FOR END OF RESULTS =  18.00


============================================================================
                       UNIT HYDROGRAPH DETERMINATION

----------------------------------------------------------------------------
     INTERVAL          "S" GRAPH          UNIT HYDROGRAPH
      NUMBER          MEAN VALUES          ORDINATES(CFS)
```

1	0.657	136.296
2	2.043	287.886
3	3.888	382.918
4	6.239	488.087
5	9.118	597.670
6	12.284	657.179
7	16.828	943.333
8	22.312	1138.269
9	30.582	1716.797
10	44.417	2872.138
11	54.059	2001.554
12	59.730	1177.159
13	64.222	932.504
14	67.522	685.007
15	70.634	645.992
16	73.295	552.494
17	75.889	538.488
18	78.004	439.044
19	79.794	371.620
20	81.676	390.525
21	83.343	346.111
22	84.766	295.486
23	86.201	297.754
24	87.439	257.112
25	88.548	230.098
26	89.557	209.628
27	90.516	199.011
28	91.434	190.622
29	92.286	176.813
30	93.036	155.600
31	93.779	154.376
32	94.388	126.398
33	94.934	113.354
34	95.480	113.353
35	95.993	106.449
36	96.341	72.292
37	96.667	67.675
38	96.993	67.635
39	97.319	67.675
40	97.645	67.594
41	97.948	62.898
42	98.048	20.711
43	98.100	10.879
44	98.152	10.836
45	98.204	10.838
46	98.257	10.879
47	98.309	10.836
48	98.361	10.838
49	98.413	10.838
50	98.466	10.838
51	98.517	10.757
52	98.570	10.919
53	98.623	10.917
54	98.674	10.759
55	98.727	10.917
56	98.779	10.757
57	98.831	10.919
58	98.883	10.757
59	98.936	10.998
60	98.988	10.759
61	99.040	10.757
62	99.092	10.757
63	99.143	10.757
64	99.195	10.757
65	99.247	10.757
66	99.299	10.757
67	99.351	10.757
68	99.403	10.757
69	99.454	10.757
70	99.506	10.757

71	99.558	10.757
72	99.610	10.757
73	99.662	10.757
74	99.713	10.757
75	99.765	10.757
76	99.817	10.757
77	99.869	10.757
78	99.921	10.757
79	99.973	10.757
80	100.000	5.692

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 223.7620
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 19.2290

==========

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

==========

HYDROGRAPH IN ONE-MINUTE UNIT INTERVALS(CFS)
(Notes: Time indicated is at END of Each Unit Intervals.
Peak 5-minute rainfall intensity is modeled as
a constant value for entire 5-minute period.)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	125.0	250.0	375.0	500.0
14.000	1.1805	1.58	Q V	.	.	.	.
14.017	1.1827	1.58	Q V	.	.	.	.
14.033	1.1849	1.59	Q V	.	.	.	.
14.050	1.1870	1.59	Q V	.	.	.	.
14.067	1.1892	1.59	Q V	.	.	.	.
14.083	1.1914	1.59	Q V	.	.	.	.
14.100	1.1936	1.59	Q V	.	.	.	.
14.117	1.1958	1.59	Q V	.	.	.	.
14.133	1.1980	1.58	Q V	.	.	.	.
14.150	1.2001	1.58	Q V	.	.	.	.
14.167	1.2023	1.56	Q V	.	.	.	.
14.183	1.2044	1.55	Q V	.	.	.	.
14.200	1.2066	1.55	Q V	.	.	.	.
14.217	1.2087	1.55	Q V	.	.	.	.
14.233	1.2108	1.55	Q V	.	.	.	.
14.250	1.2129	1.55	Q V	.	.	.	.
14.267	1.2151	1.55	Q V	.	.	.	.
14.283	1.2172	1.55	Q V	.	.	.	.
14.300	1.2194	1.55	Q V	.	.	.	.
14.317	1.2215	1.55	Q V	.	.	.	.
14.333	1.2236	1.56	Q V	.	.	.	.
14.350	1.2258	1.56	Q V	.	.	.	.
14.367	1.2279	1.56	Q V	.	.	.	.
14.383	1.2301	1.57	Q V	.	.	.	.
14.400	1.2323	1.57	Q V	.	.	.	.
14.417	1.2344	1.57	Q V	.	.	.	.
14.433	1.2366	1.58	Q V	.	.	.	.
14.450	1.2388	1.58	Q V	.	.	.	.
14.467	1.2410	1.59	Q V	.	.	.	.
14.483	1.2432	1.59	Q V	.	.	.	.
14.500	1.2454	1.60	Q V	.	.	.	.
14.517	1.2476	1.60	Q V	.	.	.	.
14.533	1.2498	1.61	Q V	.	.	.	.
14.550	1.2520	1.61	Q V	.	.	.	.
14.567	1.2542	1.62	Q V	.	.	.	.
14.583	1.2565	1.62	Q V	.	.	.	.
14.600	1.2587	1.63	Q V	.	.	.	.
14.617	1.2610	1.64	Q V	.	.	.	.
14.633	1.2632	1.64	Q V	.	.	.	.
14.650	1.2655	1.65	Q V	.	.	.	.
14.667	1.2678	1.66	Q V	.	.	.	.
14.683	1.2701	1.66	Q V	.	.	.	.
14.700	1.2724	1.67	Q V	.	.	.	.
14.717	1.2747	1.68	Q V	.	.	.	.
14.733	1.2770	1.68	Q V	.	.	.	.
14.750	1.2793	1.69	Q V	.	.	.	.
14.767	1.2817	1.70	Q V	.	.	.	.
14.783	1.2840	1.71	Q V	.	.	.	.
14.800	1.2864	1.71	Q V	.	.	.	.
14.817	1.2888	1.72	Q V	.	.	.	.
14.833	1.2912	1.73	Q V	.	.	.	.
14.850	1.2935	1.74	Q V	.	.	.	.
14.867	1.2960	1.75	Q V	.	.	.	.
14.883	1.2984	1.76	Q V	.	.	.	.
14.900	1.3008	1.76	Q V	.	.	.	.
14.917	1.3033	1.78	Q V	.	.	.	.
14.933	1.3058	1.81	Q V	.	.	.	.

14.950	1.3083	1.87	Q V
14.967	1.3110	1.95	Q V
14.983	1.3139	2.06	Q V
15.000	1.3169	2.21	Q V
15.017	1.3202	2.42	Q V
15.033	1.3239	2.69	Q V
15.050	1.3282	3.07	Q V
15.067	1.3331	3.60	Q V
15.083	1.3390	4.24	Q V
15.100	1.3458	4.98	Q V
15.117	1.3538	5.76	Q V
15.133	1.3629	6.62	Q V
15.150	1.3733	7.52	Q V
15.167	1.3849	8.48	Q V
15.183	1.3980	9.48	Q V
15.200	1.4125	10.54	Q V
15.217	1.4286	11.64	Q V
15.233	1.4462	12.80	.Q V
15.250	1.4654	13.99	.Q V
15.267	1.4864	15.24	.Q V
15.283	1.5092	16.53	.Q V
15.300	1.5338	17.87	.Q V
15.317	1.5603	19.26	.Q V
15.333	1.5889	20.70	.Q V
15.350	1.6195	22.27	.Q V
15.367	1.6526	23.99	.Q V
15.383	1.6881	25.80	. QV
15.400	1.7263	27.75	. QV
15.417	1.7674	29.80	. QV
15.433	1.8114	31.95	. QV
15.450	1.8587	34.33	. QV
15.467	1.9095	36.89	. QV
15.483	1.9643	39.83	. QV
15.500	2.0243	43.54	. QV
15.517	2.0887	46.78	. QV
15.533	2.1571	49.62	. QV
15.550	2.2292	52.38	. Q
15.567	2.3051	55.10	. Q
15.583	2.3848	57.86	. Q
15.600	2.4684	60.68	. QV
15.617	2.5560	63.58	. Q
15.633	2.6476	66.54	. Q
15.650	2.7434	69.55	. Q
15.667	2.8436	72.73	. Q
15.683	2.9482	75.91	. Q
15.700	3.0572	79.14	. Q
15.717	3.1708	82.46	. Q
15.733	3.2891	85.90	. Q
15.750	3.4123	89.44	. Q
15.767	3.5406	93.17	. Q
15.783	3.6741	96.94	. Q
15.800	3.8131	100.90	. VQ
15.817	3.9575	104.80	. Q
15.833	4.1068	108.40	. Q
15.850	4.2623	112.88	. VQ.
15.867	4.4252	118.32	. Q.
15.883	4.5966	124.39	. Q.
15.900	4.7774	131.26	. VQ
15.917	4.9686	138.87	. VQ
15.933	5.1718	147.47	. VQ
15.950	5.3883	157.22	. .VQ
15.967	5.6237	170.90	. .V Q
15.983	5.8833	188.44	. . V Q
16.000	6.1710	208.86	. . V Q
16.017	6.4908	232.21	. . V Q .
16.033	6.8472	258.72	. . V Q
16.050	7.2391	284.52	. . V . Q
16.067	7.6707	313.31	. . V . Q
16.083	8.1435	343.30	. . V . Q .
16.100	8.6692	381.67	. . V . Q
16.117	9.2676	434.38	. . V. . Q

16.133	9.9069	464.17	. . V . Q .
16.150	10.5537	469.56	. . .V . Q .
16.167	11.1915	463.05	. . . V . Q .
16.183	11.7936	437.15	. . . V . Q
16.200	12.3199	382.10	. . . V Q
16.217	12.7836	336.65	. . . Q .
16.233	13.2057	306.45	. . . Q V .
16.250	13.5924	280.75	. . . Q V .
16.267	13.9510	260.31	. . Q V.
16.283	14.2851	242.59	. . Q. V.
16.300	14.5977	226.90	. . Q . V
16.317	14.8894	211.77	. . Q . V
16.333	15.1648	199.94	. . Q . .V
16.350	15.4249	188.86	. . Q . . V
16.367	15.6687	176.99	. . Q . . V
16.383	15.8972	165.87	. . Q . . V
16.400	16.1118	155.79	. . Q . . V
16.417	16.3127	145.87	. .Q . . V
16.433	16.5010	136.69	. Q . . V
16.450	16.6771	127.86	. Q . . V
16.467	16.8417	119.54	. Q. . . V
16.483	16.9944	110.83	. Q . . . V
16.500	17.1344	101.63	. Q . . . V
16.517	17.2630	93.40	. Q . . . V
16.533	17.3816	86.08	. Q . . . V
16.550	17.4898	78.53	. Q . . . V
16.567	17.5887	71.79	. Q . . . V
16.583	17.6790	65.61	. Q . . . V
16.600	17.7612	59.68	. Q . . . V
16.617	17.8357	54.09	. Q . . . V
16.633	17.9036	49.29	. Q . . . V
16.650	17.9644	44.13	. Q . . . V
16.667	18.0182	39.05	. Q . . . V
16.683	18.0654	34.28	. Q . . . V
16.700	18.1064	29.79	. Q . . . V
16.717	18.1418	25.68	. Q . . . V
16.733	18.1733	22.88	.Q . . . V
16.750	18.2019	20.77	.Q . . . V
16.767	18.2281	18.99	.Q . . . V
16.783	18.2522	17.47	.Q . . . V
16.800	18.2744	16.14	.Q . . . V .
16.817	18.2950	14.97	.Q . . . V .
16.833	18.3142	13.96	.Q . . . V .
16.850	18.3322	13.05	.Q . . . V .
16.867	18.3490	12.23	Q . . . V .
16.883	18.3649	11.50	Q . . . V .
16.900	18.3798	10.84	Q . . . V .
16.917	18.3939	10.24	Q . . . V .
16.933	18.4073	9.73	Q . . . V .
16.950	18.4201	9.27	Q . . . V .
16.967	18.4323	8.85	Q . . . V .
16.983	18.4439	8.46	Q . . . V .
17.000	18.4551	8.12	Q . . . V .
17.017	18.4659	7.80	Q . . . V .
17.033	18.4762	7.54	Q . . . V .
17.050	18.4863	7.31	Q . . . V .
17.067	18.4961	7.11	Q . . . V .
17.083	18.5056	6.92	Q . . . V .
17.100	18.5149	6.74	Q . . . V .
17.117	18.5240	6.58	Q . . . V .
17.133	18.5328	6.43	Q . . . V .
17.150	18.5415	6.28	Q . . . V .
17.167	18.5500	6.15	Q . . . V .
17.183	18.5582	6.01	Q . . . V .
17.200	18.5663	5.87	Q . . . V .
17.217	18.5742	5.72	Q . . . V .
17.233	18.5819	5.56	Q . . . V .
17.250	18.5893	5.39	Q . . . V .
17.267	18.5964	5.20	Q . . . V .
17.283	18.6032	4.89	Q . . . V .
17.300	18.6093	4.48	Q . . . V .

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 17.317     18.6149      4.06  Q         .         .         .       V .
 17.333     18.6199      3.64  Q         .         .         .       V .
 17.350     18.6244      3.23  Q         .         .         .       V .
 17.367     18.6284      2.92  Q         .         .         .       V .
 17.383     18.6322      2.74  Q         .         .         .       V .
 17.400     18.6358      2.60  Q         .         .         .       V .
 17.417     18.6392      2.48  Q         .         .         .       V .
 17.433     18.6425      2.38  Q         .         .         .       V .
 17.450     18.6456      2.29  Q         .         .         .       V .
 17.467     18.6487      2.21  Q         .         .         .       V .
 17.483     18.6516      2.14  Q         .         .         .       V .
 17.500     18.6545      2.07  Q         .         .         .       V .
 17.517     18.6572      2.00  Q         .         .         .       V .
 17.533     18.6599      1.94  Q         .         .         .       V .
 17.550     18.6625      1.88  Q         .         .         .       V .
 17.567     18.6650      1.83  Q         .         .         .       V .
 17.583     18.6674      1.78  Q         .         .         .       V .
 17.600     18.6698      1.73  Q         .         .         .       V .
 17.617     18.6722      1.69  Q         .         .         .       V .
 17.633     18.6744      1.65  Q         .         .         .       V .
 17.650     18.6767      1.62  Q         .         .         .       V .
 17.667     18.6788      1.58  Q         .         .         .       V .
 17.683     18.6810      1.56  Q         .         .         .       V .
 17.700     18.6831      1.53  Q         .         .         .       V .
 17.717     18.6852      1.51  Q         .         .         .       V .
 17.733     18.6872      1.49  Q         .         .         .       V .
 17.750     18.6893      1.47  Q         .         .         .       V .
 17.767     18.6913      1.46  Q         .         .         .       V .
 17.783     18.6933      1.44  Q         .         .         .       V .
 17.800     18.6952      1.43  Q         .         .         .       V .
 17.817     18.6972      1.42  Q         .         .         .       V .
 17.833     18.6991      1.41  Q         .         .         .       V .
 17.850     18.7011      1.40  Q         .         .         .       V .
 17.867     18.7030      1.39  Q         .         .         .       V .
 17.883     18.7049      1.39  Q         .         .         .       V .
 17.900     18.7068      1.38  Q         .         .         .       V .
 17.917     18.7087      1.38  Q         .         .         .       V .
 17.933     18.7106      1.37  Q         .         .         .       V .
 17.950     18.7125      1.37  Q         .         .         .       V .
 17.967     18.7144      1.37  Q         .         .         .       V .
 17.983     18.7163      1.36  Q         .         .         .       V .
 18.000     18.7181      1.36  Q         .         .         .       V .
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 END OF FLOODSCx ROUTING ANALYSIS
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