

PRELIMINARY DRAINAGE STUDY

FOR:

TENTATIVE PARCEL MAP 19756

City of Chino

PREPARED FOR:

RICHLAND COMMUNITIES

4100 Newport Place, Suite 800

Newport Beach, CA 92660

PREPARED BY:

PROACTIVE

ENGINEERING CONSULTANTS

200 South Main Street, Suite 300 • Corona, CA 92882

PH: 951-280-3300 FAX: 951-280-0279

Job Number 06.025.300

October 7, 2018

REVISED (MARCH 21, 2019)

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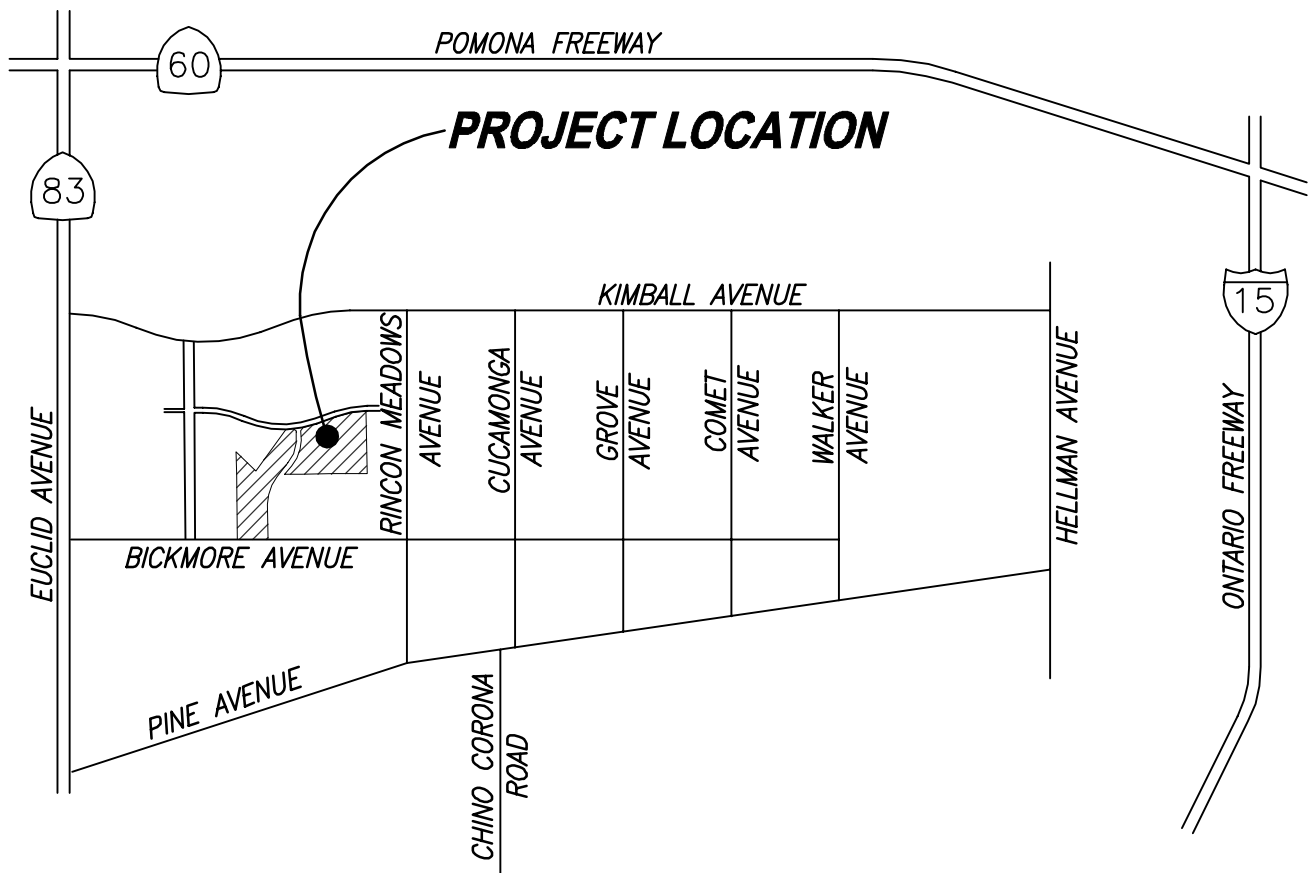
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VICINITY MAP

N.T.S.

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1 INTRODUCTION

1.1 Project Description

Tentative Parcel Map 19756 is located in the City of Chino and is approximately 72.4 acres. Tentative Parcel Map 19756 is currently grassy open space, but is proposed to be a new industrial development. The Chino Airport is located immediately north of Tentative Parcel Map 19756, across Kimball Avenue. Tentative Parcel Map 19756 is included in The Preserve Specific Plan and was likely used for dairy farming in the past. The site is bounded by Kimball Avenue on the north, a commercial development on the west, Bickmore Avenue on the south and a residential development on the east. (see Vicinity Map).

The existing site slopes gently in a north to south direction at approximately 0.9-1.2%. Tentative Parcel Map 19756 primarily drains into the existing Mayhew Access Road Channel located just south of the Mayhew-Bickmore intersection.

In the interim condition, Tentative Parcel Map 19756 will drain to a network of three detention basins. These three detention basins will drain to a proposed Line H located along Mayhew Avenue.

Tentative Parcel Map 19756 will be divided into four major drainage areas: Area A, Area B, Area C and Area CC. Area A will drain to proposed detention basin (D.B. #A), Area B will drain to proposed detention basin (D.B. #B) and Area C will drain to proposed detention basin (D.B. #CC). D.B. #A, D.B. #B and D.B. #CC will be used for flood control purposes before discharging into the proposed storm drain line in Mayhew Avenue. D.B. #A and D.B. #B will also be used for water quality purposes and sizing calculations for these are included in the Preliminary WQMP Report for Tentative Parcel Map 19756. See Interim Hydrology Map in Appendix A.

1.2 Project Objectives

The objectives of this study include the following:

1. Prepare a hydrologic analysis of the existing and interim conditions based on land uses, drainage patterns, ground slopes, and soil types to generate the 100-year flood storm events. The hydrology computations are based on the San Bernardino County Hydrology Manual. The 2-year, 10-year and 25-year flood storm events will be studied at final tract map (FM) preparation.
2. Determine storm flow rates and volumes through the project site and identify final sizes of the drainage conveyance facilities within Tentative Parcel Map 19756 and Mayhew Avenue.
3. Prepare a hydraulic analysis of the proposed detention basins.
4. Prepare a Drainage Study to reflect the hydrologic and hydraulic impact of the project site.
5. Street Capacities for Kimball, Mayhew and Bickmore will be analyzed during FM preparation. Catch basin(s) size and location(s) will be analyzed during FM process.

This study is intended to gain approval for the TTM. The interim condition hydrology will be used to size storm drain facilities within Tentative Parcel Map 19756.

1.3 Existing Facilities

The existing site is undeveloped and runoff from the site drains toward the existing Mayhew Access Road Channel located south of the Mayhew-Bickmore intersection.

Offsite runoff from the airport and Kimball Avenue is currently routed to three existing detention basins (North Basin West, North Basin East and Airport South Basin). Currently the South Basin is 90% completed and has a berm opening of 100' that allows the basin to sheet flow to the property south of the basin. Based on the Airport Hydrology Report dated May 2009, prepared by Associated Engineers Inc., the South Airport Basin yields 690.2 cfs. A copy of this report has been provided in Appendix X

1.4 Interim Facilities

D.B. #A, D.B. #B and D.B. #CC will be designed to detain on-site flow and slowly dewater within 24 hours. D.B. #A, D.B. #B and D.B. #CC will serve as interim facilities. On-site local storm runoff will enter the storm drain collection system through a network of curb and grate inlets. Drainage is conveyed from these inlets through a system of storm drain pipes and first flush discharges would be delivered to the on-site detention basins. Runoff from the detention basins will then be discharged to Line H in Mayhew Avenue and onto the Mayhew Access Road Channel located south of the Mayhew-Bickmore intersection. The Mayhew Access Road Channel will be built as part of the Access Road Improvement plans approved on July 29, 2015. See Interim Hydrology Map in Appendix A for location of these facilities.

As part of the overall drainage system for this area, Tract 19756 will be designed to work together with two adjacent tracts (Tract 20008 – Basin D and Tract 18858 – Basin E). The drainage facilities are analyzed under separate reports for these two tracts. Portion of the drainage analysis are used in this report which included three proposed detention basins – D.B. #1, D.B. #2 and D.B. #3. See Figure A for a flow chart of various drainage areas and detention basin systems.

1.5 Ultimate Facilities

Once the ultimate storm drain in Mayhew Avenue is built to Prado Dam, the proposed interim basins (D.B. #A, D.B. #B and D.B. #CC) will be removed. See Interim Hydrology Map in Appendix A for location of these facilities.

In the ultimate condition runoff from the airport and Kimball Avenue will continue to discharge to the existing North Basin West, North Basin East and South Basin. With the enclosure of the three basins by the construction of the industrial development and Mayhew Avenue, an outlet pipe, Line H, will be built to dewater the three basins through the South Basin. The proposed storm drain line H will be built to convey airport runoff to Prado Dam. Line H will extend from the South Basin into the natural watercourse south of Pine Avenue east of Euclid Avenue.

Once the ultimate storm drain is built downstream from Tentative Parcel Map 19756 (Line H, 96" RCP in Mayhew Ave. and 102" RCP in Pine Ave from Storm Drain Master Plan), excess runoff from Tentative Parcel Map 19756 will be detained off-site. Line H downstream of Bickmore Avenue will be built by others. Runoff from Tentative Parcel Map 19756 will be conveyed by a storm drain system located within the site. This storm drain system will directly convey runoff from the site to the proposed Line H in Mayhew Avenue. This storm drain line will connect to Line H in Mayhew Avenue. Detention Basins (D.B. #A, D.B. #B, D.B. #CC) will be removed.

In the ultimate condition runoff from the airport and Kimball Avenue will continue to discharge to the existing North Basin West, North Basin East and South Basin. With the enclosure of the three basins by the construction of the future industrial development and Mayhew Avenue, an outlet pipe, Line H, will be built to dewater the three basins through the South Basin. A future storm drain line will be built along Kimball Avenue to convey airport runoff to the future Line H. Line H will extend from the South Basin into the natural watercourse south of Pine Avenue east of Euclid Avenue.

1.6 Flood Assessment

The Federal Emergency Management Agent (FEMA) publishes Flood, Insurance Rate Maps (FIRMs) that identify areas where there is flooding potential. The FIRM that applies to Tentative Parcel Map 19756 is San Bernardino County Panel 9335 (Map Number 06071C9335H) dated August 28, 2008. The entire project site is within Flood Hazard Zone “D” – an area where flood hazards are undetermined, but possible. See FIRM in Appendix B.

2 HYDROLOGY

2.1 Methodology

The tributary drainage area boundaries were delineated utilizing digital topography provided by recent aerial topography. Detailed hydrologic parameters used in this analysis can be found in the San Bernardino County Hydrology Manual.

2.1.1 General Guidelines

The following assumptions/guidelines were applied in the use of the Rational and Unit Hydrograph Methods:

- Hydrology studies were prepared using methodology outlined by the San Bernardino County Hydrology Manual. Existing, interim and ultimate conditions were analyzed using the Rational Method (see Existing and Interim Hydrology maps in Appendix A). The Rational Method is commonly used for determining peak discharge for areas less than 640 acres. The existing and interim condition was analyzed using the Unit Hydrograph method and flood routing calculations in order to determine peak flow and volume.
- Both of these methods include the effects of infiltration caused by land use and soil surface characteristics. The Hydrologic Soils Group Map for the Southwest-C Area from the San Bernardino County Hydrology Manual, Figure C-15 (see Appendix B), indicates that the project study area consists of soil types B. Hydrologic soil ratings are based on a scale of A through D, where D is the least pervious, providing the greatest runoff. The type of vegetation, percent ground cover, and percentage of impervious surfaces also affect the infiltration rate.
- The land use type of undeveloped (fair cover) was utilized for the existing condition, and commercial for most of the on-site in the proposed condition.
- Per criteria from the San Bernardino County Hydrology Manual, an Antecedent Moisture Condition (AMC) III was used for the 100-year analysis that reflects the

degree of ground saturation from previous rainfall events. The AMC value can range from I to III, with condition III being the most severe, allowing for greater runoff and low infiltration.

- For the Unit Hydrograph analysis of the interim conditions, a storm duration of 24-hours was utilized. In addition, the time of concentration (T_c) and curve numbers calculated by the Rational Method were utilized in the Unit Hydrograph analysis.

2.2 Rational Method

The Rational Method is an empirical computational procedure for developing peak discharge for storms of a specified recurrence interval in watersheds less than 640 acres. The formula is:

$$Q = CIA$$

Where:

- Q = Peak discharge, in cubic feet per second.
- C = Runoff coefficient representing the ratio of runoff depth to rainfall depth.
- I = The time-averaged rainfall intensity for a storm duration equal to the time of concentration, in inches/hour (in./hr.).
- A = Drainage area, in acres

2.2.1 Rational Method Guidelines

The following assumptions/guidelines were applied in the use of the Rational Method:

- The basic assumption for the Rational Method is that the precipitation rate is constant and uniform over the entire watershed for the time duration such that runoff could travel from the most remote point in the watershed to the concentration point; after which time the rate of runoff does not increase. This is the time defined as the "time of concentration (T_c)". The method is based on the assumption that the peak flow rate is directly proportional to drainage area, rainfall intensity, and a runoff coefficient "C," which is related to land use and soil type.
- Initial subareas were drawn to be less than 10 acres in size and less than 1,000 feet in length per the San Bernardino County Hydrology Manual guidelines for this procedure.
- The hydrology calculations assumed 100 percent interception of the surface runoff at the local area drain inlets. A future hydraulics analysis of the proposed storm drain system will estimate the total intercepted flow at each area drain inlet.

2.2.2 Rational Method Calculation Software

The hydrologic calculations were performed using software developed by "CIVILDESIGN" Engineering Software for the San Bernardino County Hydrology Manual. The 100-year storm event design discharge at intermediate points were computed by generating a hydrologic "link-node" model that divides the area into drainage sub-areas, each tributary to a concentration point or hydrologic "node" point determined by the existing and proposed terrain shown on the hydrology maps.

2.3 Unit Hydrograph Method

The Unit Hydrograph, a computational procedure for developing peak discharge and volume for storms of a specified recurrence interval, was used to analyze the interim condition. This procedure calculates effective rainfall, which is the portion of the total rainfall that appears as surface runoff, at a specific concentration point. Because no two drainage basins have the same physical characteristics, the appropriate adjustments must be accounted for. Precipitation data for the project location was taken from NOAA Atlas 14. Rainfall Data is provided in Appendix B.

2.3.1 Unit Hydrograph Guidelines

The following assumptions/guidelines were applied in the use of the Unit Hydrograph Method:

- Lag times used for the development of the unit hydrographs were generated based on the equation of $\text{lag} = 0.8 T_c$ as recommended in the San Bernardino County Hydrology Manual.
- All undeveloped areas were assumed to be completely pervious.
- The time-runoff relationship for a particular watershed is controlled by the S-graph or summation hydrograph. In the San Bernardino County Hydrology Manual, there are five S-graphs to choose from: Valley (Developed), Valley (Undeveloped), Foothill, Mountain and Desert.

2.3.2 Unit Hydrograph Calculation Software

The Unit Hydrograph Method outlined in the San Bernardino County Hydrology Manual was used to develop runoff hydrographs using "CIVILDESIGN" Engineering Software.

2.4 HYDROGRAPH ROUTING METHOD

2.4.1 Detention Basin Routing Guidelines

The following assumptions/guidelines were applied in the use of the Detention Basin Routing:

- The Modified Pul's (Storage Indication) Method is used for the detention basin routing studies. The basin routing relationships are based upon the following formula:

$$I - O = \Delta S / \Delta t$$

Where:

I = basin inflow rate (cfs)

O = basin outflow rate (cfs)

ΔS = change in basin storage during the time step (cubic feet)

Δt = time step (sec)

- The basin inflow rates are based on the Unit Hydrograph files (See Appendix D).

- Depth-Storage-Discharge Curve is based on Basin Volume and Outlet Worksheets in Appendix B.
- The procedure is repeated for each time step until the basin inflow hydrograph has been completely analyzed and basin outflow becomes negligible.

2.4.2 Hydrograph Routing Calculation Software

The Detention Basin Routing (Modified Pul's) Method outlined above were performed using the "CIVILDESIGN" Engineering Software. The computer files the 100-year, 24-hour calculations are included in Appendix E.

3 HYDRAULICS

3.1 Methodology

The interim condition storm water peak runoff must be equal to or less than 80% of the undeveloped conditions storm water peak runoff. To address this requirement, the proposed outlet structure within all three detention basins (D.B. #A, D.B. #B and D.B. #CC) will contain a combination of a riser pipe and outlet structure, in order to control the peak outflow rates. The design calculations of the riser pipe and inlet structure are included in this report.

There are three offsite detention basins (D.B. #1, D.B. #2, and D.B. #3) proposed on the adjacent tracts (Tract 20008 and 18858). The design calculations of the riser pipe and inlet structure are copied and included in this report.

3.2 Detention Basin

The proposed Detention Basins (D.B. #A, D.B. #B and D.B. #CC) and offsite detention basins (D.B. #1, D.B. #2, and D.B. #3) will be used to detain and slowly release the design volume of storm runoff, the proposed detention basin is designed to release the design stormwater runoff volume of 100-yr storms over a 24-hour drawdown period. The drawdown time refers to the minimum amount of time that the design volume must retain in order to settle down the pollutants of concern and the maximum time allowed for the basin to dewater in consideration of vector concerns. The volume worksheet for Detention Basins can be found in this report.

3.3 Emergency Overflow Hydraulics

Emergency overflows will be provided for all four detention basins. Emergency overflows from detention basin (D.B. #A) will overflow the proposed sidewalk and onto Mayhew Avenue.

Emergency overflows from detention basin (D.B. #B) will be routed through the proposed parking lot area and onto Mayhew Avenue.

Emergency overflows from detention basin (D.B. #CC) will surface flow over the proposed sidewalk and onto Mayhew Avenue.

3.4 Mayhew Storm Drain – Line H Study

A preliminary storm drain study for the proposed Mayhew storm drain has been separately prepared by Proactive Engineering Consultants. This study analyzes and identifies the storm drain alignment, sizing, hydraulic calculations for the Line H Mayhew Storm Drain. A copy of this report is provided for reference in Appendix F. Final storm drain alignment, sizing calculations will be provided during final engineering.

4 WATER QUALITY

4.1 Water Quality

All on-site water released from the project site will be required to have water quality treatment. The off-site runoff from the South Airport Basin will bypass the on-site water quality drainage system and outlet into the proposed storm drain in Mayhew Avenue. The water quality calculations for the on-site drainage can be found in the Preliminary Water Quality Management Plan (WQMP) for Tract 19756. For this project, two basins (D.B. #A, and D.B. #B) also serve as water quality facilities.

The Model Water Quality Management Plan Guidance and Water Quality Management Plan Template, both dated September 19, 2013, were used to calculate the Best Management Practice (BMP) design volume. The calculations for the underground CMP Basins, Detention Basin and Target Capture Volume can be found in the previously mentioned WQMP.

4.2 Debris Potential

Since this project site is located in a basically flat valley area, the potential for debris is not a significant concern. However, the interim basins (D.B. #A, D.B. #B and D.B. #CC) will be designed to minimize the potential for silt and debris from entering the storm drain system.

5 SUMMARY

The 100-year peak flow rates were calculated for the project site in existing and interim conditions. The existing condition is analyzed to determine the peak flow rates of the undeveloped condition and used to compare against the interim conditions. The interim condition reflects the project site being developed. The interim condition will remain until the ultimate storm drain in Mayhew Avenue is constructed to Prado Dam. The interim condition is analyzed to determine the maximum peak flow in the development of Tentative Parcel Map 19756 which helps size the on-site and storm drain system.

5.1 Hydrology – Rational Method Summary

The Rational Method was used to determine the peak flow rates in the existing and interim conditions. In the existing condition, Tentative Parcel Map 19756 is undeveloped. In the developed condition, Tentative Parcel Map 19756 is an industrial development. Table 1 summarized the calculated flow rates for the existing and interim conditions. The Rational Method calculations are included in Appendix C.

5.2 Hydrology – Unit Hydrograph Summary

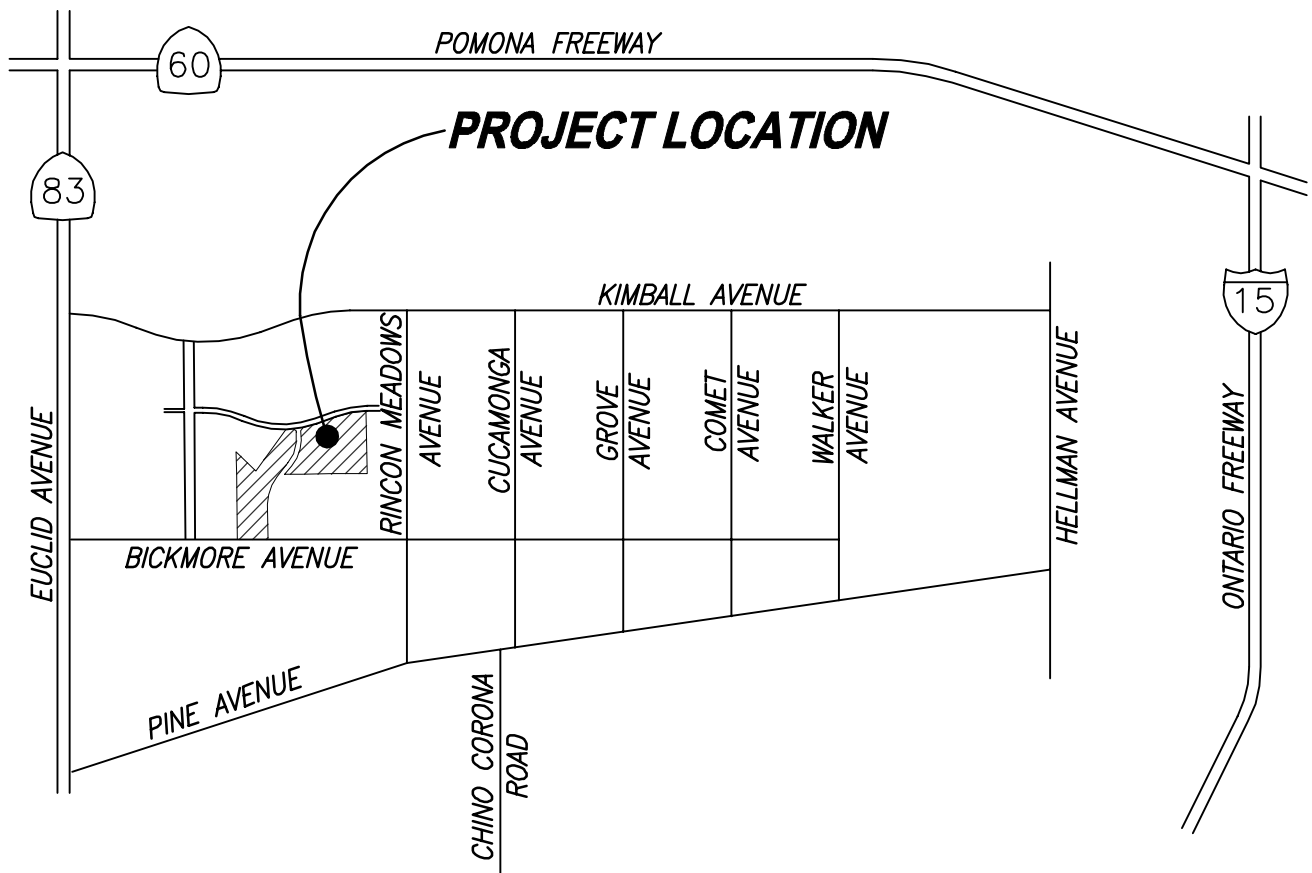
The Unit Hydrograph was used to determine the flow rates and volumes in the interim condition. Tentative Parcel Map 19756 is an industrial development under the interim condition. The unit hydrograph calculations are included in Appendix D. Table 2 summarized the calculated flow rates and volumes.

5.3 Hydrograph Routing Summary

Hydrograph Routing was used to determine maximum peak flow rates and volumes in the interim condition. Hydrograph routing was used to demonstrate the basins will completely dewater within a 24-hour period without exceeding 80% of the existing peak flows. The rational method calculations for a 100-yr storm in the existing condition yields a flow rate of 237.36 cubic feet per second (cfs). The unit hydrograph calculations for a 24-hour storm in the existing condition yields 262.43 cfs while the flood routing calculations for a 24-hour storm in the on-site interim condition yields a flow rate of 135.77 cfs. The Flood Routing calculations are included in Appendix E.

5.4 Outlet to Downstream Properties

The goal for this project is to release no more than 80% of the undeveloped flow from Tentative Parcel Map 19756. The results indicate that 149.47 cfs ($262.43 \times 0.8 = 149.47$ cfs) is the control peak flow for this project until the ultimate storm drain, Line H, south of Bickmore along Mayhew Avenue Avenue is built. Flood routing calculations yield a peak flow of 135.77 cfs for the developed conditions, which is less than the 149.47 cfs control peak flow. All the detention basin volume and riser calculations are included in Appendix B.



VICINITY MAP

N.T.S.

TABLE 1: HYDROLOGY SUMMARY - RATIONAL METHOD (100 YEAR STROM)

		AREA (acre)	PEAK FLOW (cfs)	TOTAL FLOW (cfs)
Existing Condition				
	Basin A and D	40.15	83.10	
	Basin B and E	33.39	60.86	
	Basin C	64.05	93.40	
				237.36
Interim Condition				
	Basin A	37.48	117.97	
	Basin B	32.16	110.39	
	Basin C	5.94	19.45	
	Basin CX	5.77	19.69	
	Basin CC	16.74	65.58	
	Basin D	20.59	55.54	
	Basin E - B1 to B19	13.04	38.69	
	Basin E - B20 to B38	8.78	34.35	
				461.66
Increase in Flow Rates				224.30

See Appendix C for support calculations

**TABLE 2A: HYDROLOGY SUMMARY - UNIT HYDROGRAPH
(100 YR STORM)**

	STORM (hour)	PEAK FLOW Q100 (cfs)	FLOOD VOLUME (ac-ft)
Existing Condition (Basin A & D)	24	67.10	16.34
Existing Condition (Basin B & E)	24	46.66	13.65
Existing Condition (Basin C)	24	148.67	25.43

See Appendix D for support calculations

**TABLE 2B: HYDROLOGY SUMMARY - UNIT HYDROGRAPH
(100 YR STORM)**

	STORM (hour)	PEAK FLOW Q100 (cfs)	FLOOD VOLUME (ac-ft)
Proposed Condition (Basin A)	24	122.38	18.32
Proposed Condition (Basin B)	24	69.54	9.50
Proposed Condition (Basin C)	24	61.50	8.65
Proposed Condition (Basin CC)	24	39.24	5.98
Proposed Condition (Basin D)	24	60.55	9.08
Proposed Condition (Basin E - B1 tp B19)	24	36.95	4.60
Proposed Condition (Basin E - B20 to B38)	24	32.71	4.09

See Appendix D for support calculations

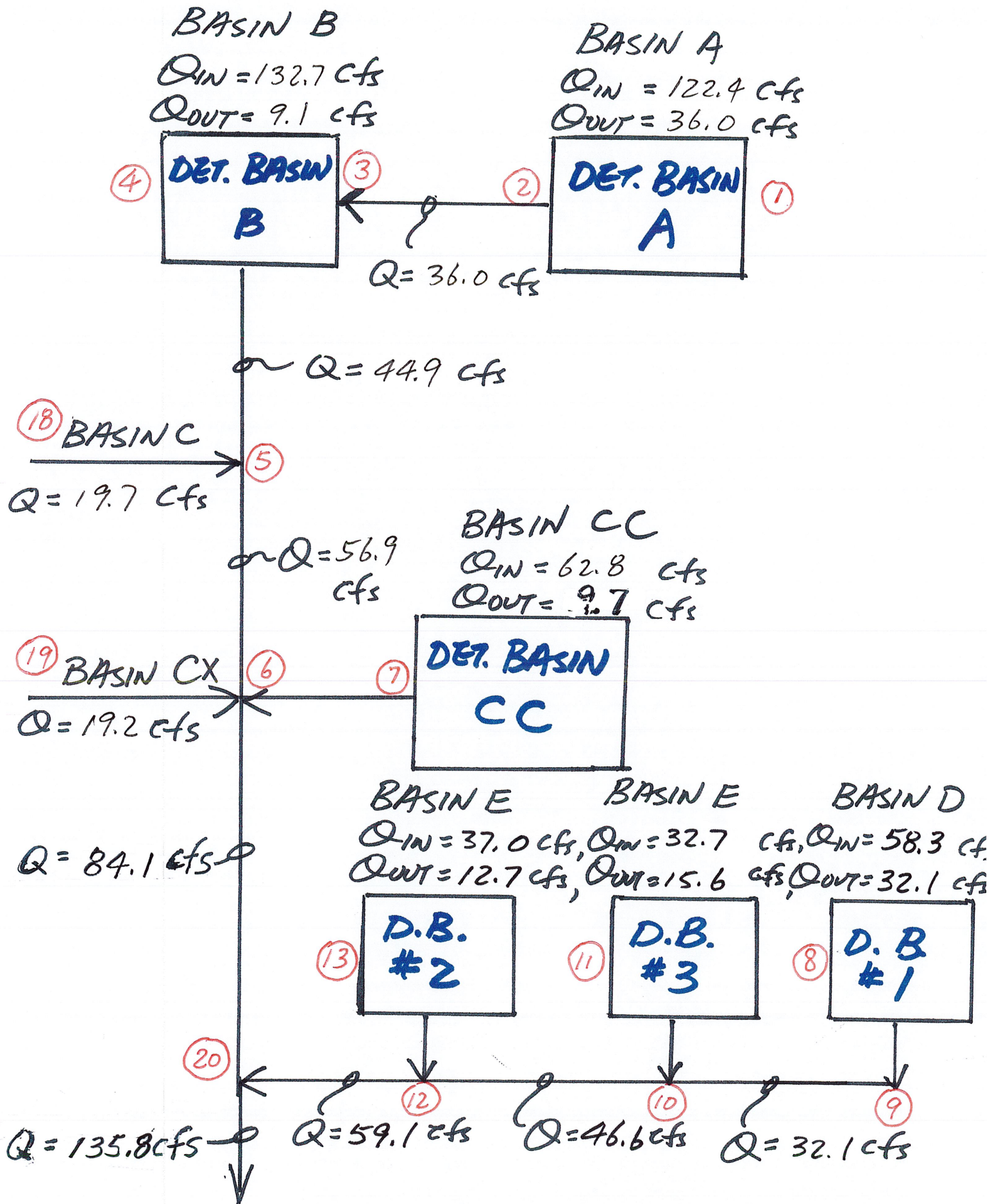
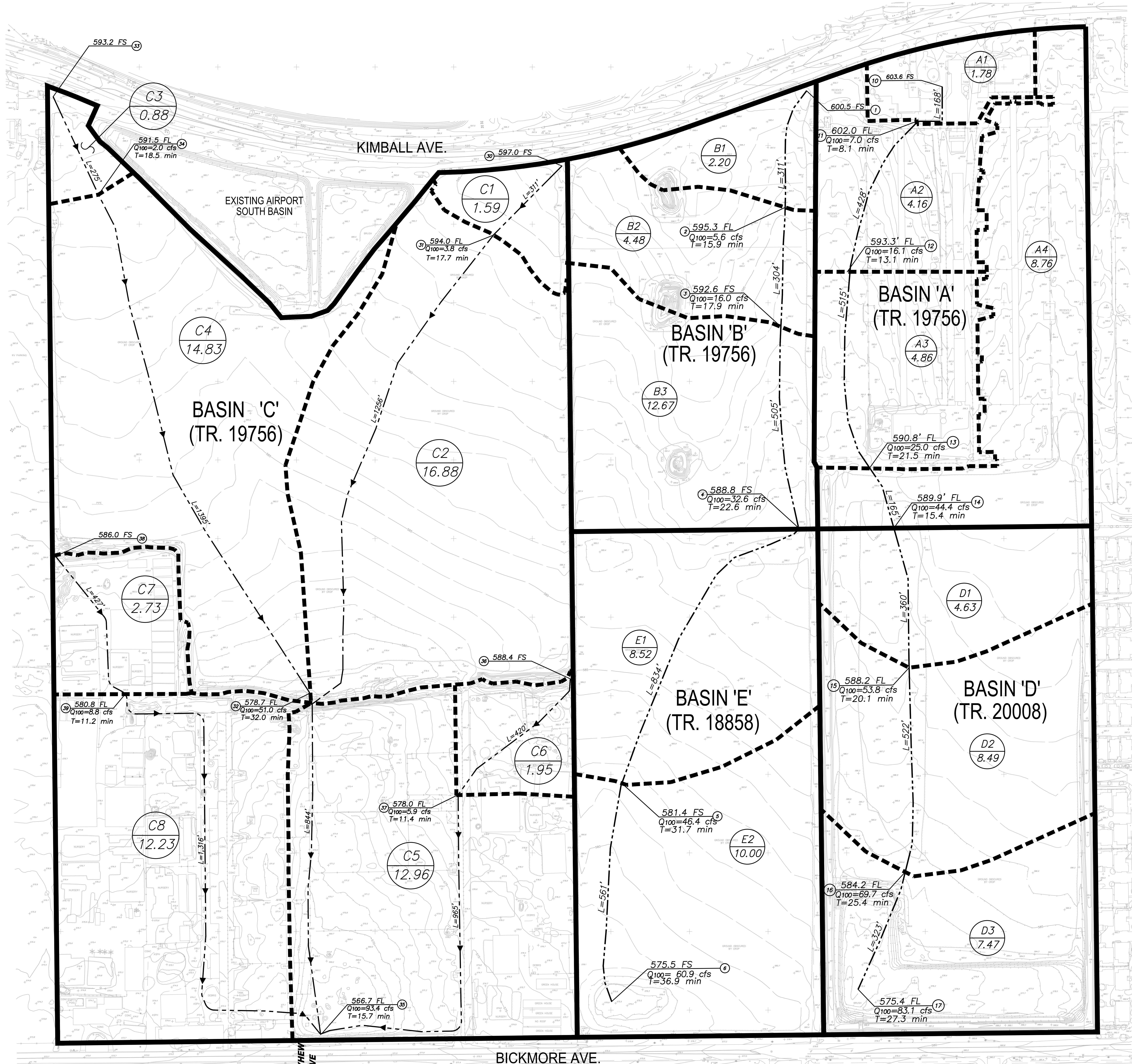


FIG. 1 D - 100 YR STORM

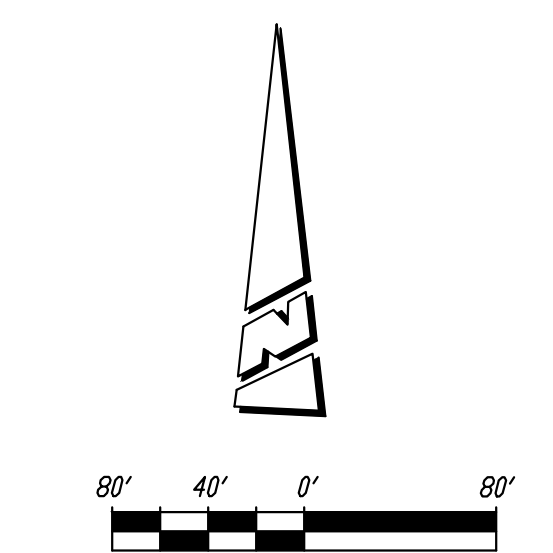
APPENDIX A

EXISTING CONDITIONS
EXHIBIT A

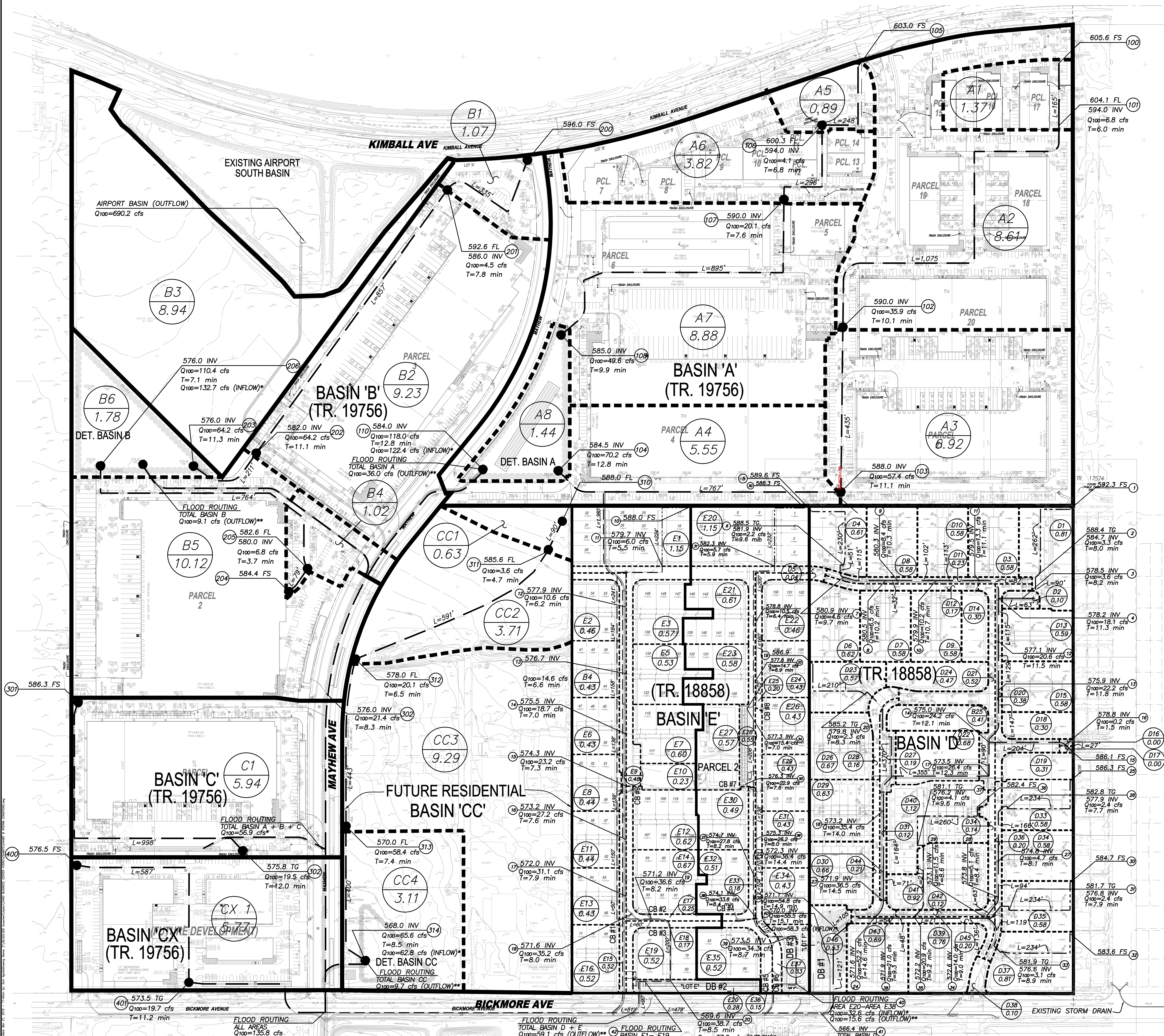


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- LEGEND**
- MAJOR DRAINAGE AREA BOUNDARY
 - SUB-DRAINAGE AREA BOUNDARY
 - SURFACE FLOW PATH WITH LENGTH
 - DRAINAGE AREA DESIGNATION
 - AREA IN ACRES
 - NODE NUMBER
 - 335.40 FS
 - 327.50 FL
 - Q100=1.6 cfs
 - T=9.8 min
 - BASIN 'A'
 - FINISHED SURFACE ELEVATION
 - FLOWLINE ELEVATION
 - FLOW RATE OF 100 YEAR STORM (cfs)
 - TIME IN CONCENTRATION, Tc (min)
 - DRAINAGE BASIN AREA



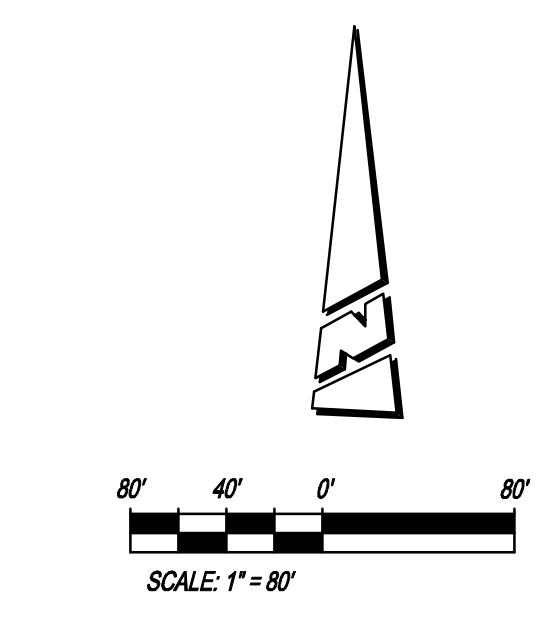
DEVELOPED CONDITIONS
EXHIBIT B



NOTES:
* FROM UNIT HYDROGRAPH CALCULATIONS
** FROM FLOOD ROUTING CALCULATIONS

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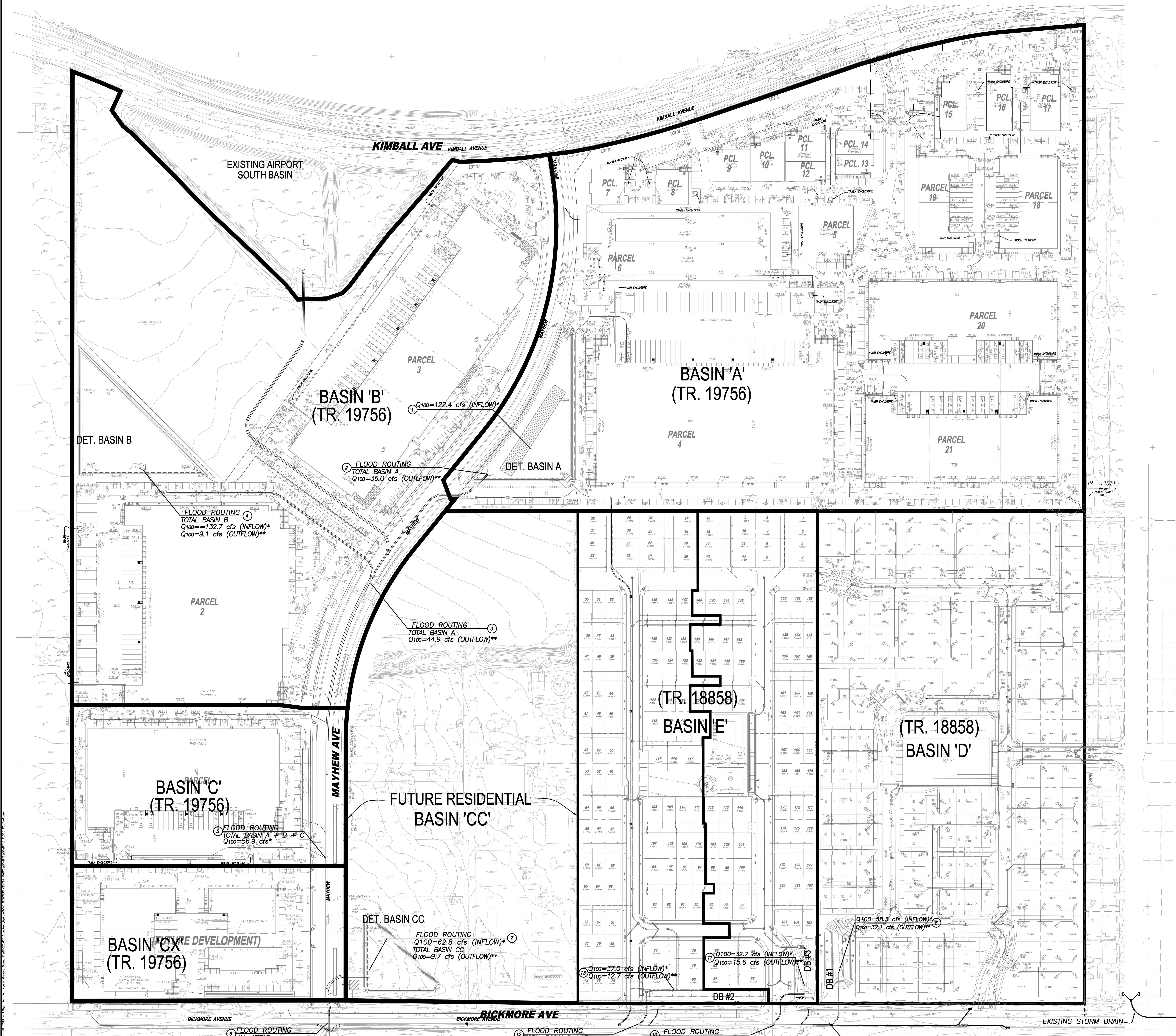
- LEGEND**
- MAJOR DRAINAGE AREA BOUNDARY
 - SUB-DRAINAGE AREA BOUNDARY
 - FLOW PATH WITH LENGTH
 - DRAINAGE AREA DESIGNATION
 - AREA IN ACRES
 - NODE NUMBER
 - FINISHED SURFACE ELEVATION
 - INVERT ELEVATION
 - FLOW RATE OF 100 YEAR STORM (cfs)
 - TIME IN CONCENTRATION, T_c (min)
 - CATCH BASIN NUMBER
 - DRAINAGE BASIN AREA



DEVELOPED HYDROLOGY MAP
INTERIM CONDITION
EXHIBIT B
TENTATIVE TRACT MAP
CITY OF CHINO 3/18/2019

EXHIBIT C

FLOOR ROUTING DIAGRAM



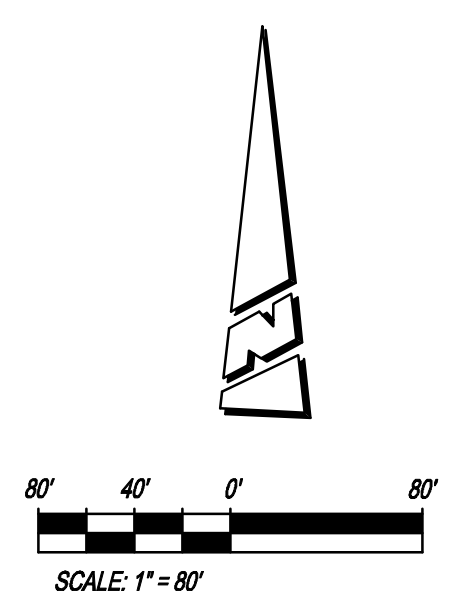
NOTES:
* FROM UNIT HYDROGRAPH CALCULATIONS
** FROM FLOOD ROUTING CALCULATIONS

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LEGEND

Q100=1.6 cfs
BASIN 'A'

MAJOR DRAINAGE AREA BOUNDARY
FLOW RATE OF 100 YEAR STORM (cfs)
DRAINAGE BASIN AREA



FLOOD ROUTING MAP
INTERIM CONDITION
EXHIBIT C
TENTATIVE TRACT MAP
CITY OF CHINO 1/18/2019

APPENDIX B

RAINFALL DATA



NOAA Atlas 14, Volume 6, Version 2
Location name: Chino, California, USA*
Latitude: 33.9652°, Longitude: -117.6469°
Elevation: 588.45 ft**
 * source: ESRI Maps
 ** source: USGS



POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

[PF_tabular](#) | [PF_graphical](#) | [Maps_&_aerials](#)

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.115 (0.096-0.140)	0.152 (0.127-0.184)	0.200 (0.166-0.243)	0.239 (0.197-0.293)	0.293 (0.233-0.372)	0.335 (0.261-0.434)	0.378 (0.287-0.503)	0.423 (0.312-0.579)	0.484 (0.342-0.693)	0.532 (0.363-0.790)
10-min	0.166 (0.138-0.200)	0.218 (0.182-0.263)	0.286 (0.238-0.348)	0.343 (0.283-0.420)	0.420 (0.335-0.533)	0.480 (0.374-0.622)	0.542 (0.411-0.721)	0.606 (0.447-0.830)	0.694 (0.490-0.993)	0.763 (0.520-1.13)
15-min	0.200 (0.167-0.242)	0.263 (0.220-0.319)	0.346 (0.288-0.420)	0.415 (0.342-0.508)	0.508 (0.405-0.644)	0.581 (0.452-0.753)	0.655 (0.498-0.872)	0.733 (0.540-1.00)	0.839 (0.592-1.20)	0.923 (0.628-1.37)
30-min	0.292 (0.244-0.353)	0.384 (0.320-0.465)	0.505 (0.420-0.613)	0.605 (0.499-0.740)	0.741 (0.590-0.940)	0.847 (0.660-1.10)	0.956 (0.726-1.27)	1.07 (0.788-1.46)	1.22 (0.864-1.75)	1.35 (0.917-2.00)
60-min	0.429 (0.358-0.518)	0.564 (0.471-0.682)	0.742 (0.617-0.900)	0.888 (0.732-1.09)	1.09 (0.867-1.38)	1.24 (0.969-1.61)	1.40 (1.07-1.87)	1.57 (1.16-2.15)	1.80 (1.27-2.57)	1.98 (1.35-2.93)
2-hr	0.640 (0.535-0.773)	0.841 (0.702-1.02)	1.10 (0.915-1.33)	1.31 (1.08-1.60)	1.59 (1.27-2.02)	1.80 (1.41-2.34)	2.02 (1.53-2.69)	2.24 (1.65-3.07)	2.54 (1.79-3.63)	2.77 (1.89-4.10)
3-hr	0.802 (0.670-0.970)	1.05 (0.879-1.27)	1.38 (1.14-1.67)	1.63 (1.35-2.00)	1.98 (1.58-2.51)	2.24 (1.75-2.90)	2.50 (1.90-3.33)	2.77 (2.04-3.79)	3.13 (2.21-4.47)	3.40 (2.32-5.05)
6-hr	1.12 (0.938-1.36)	1.48 (1.23-1.78)	1.92 (1.60-2.33)	2.28 (1.88-2.79)	2.76 (2.20-3.50)	3.12 (2.43-4.04)	3.48 (2.64-4.63)	3.85 (2.83-5.27)	4.33 (3.06-6.20)	4.71 (3.21-6.98)
12-hr	1.47 (1.23-1.78)	1.94 (1.62-2.35)	2.54 (2.12-3.08)	3.02 (2.50-3.70)	3.67 (2.92-4.65)	4.16 (3.24-5.39)	4.65 (3.53-6.18)	5.15 (3.79-7.05)	5.82 (4.11-8.32)	6.33 (4.31-9.38)
24-hr	1.94 (1.71-2.23)	2.57 (2.27-2.97)	3.40 (3.00-3.93)	4.07 (3.56-4.75)	4.97 (4.21-5.99)	5.66 (4.70-6.97)	6.36 (5.15-8.02)	7.08 (5.58-9.17)	8.05 (6.09-10.9)	8.81 (6.44-12.3)
2-day	2.35 (2.08-2.71)	3.18 (2.81-3.67)	4.26 (3.76-4.94)	5.16 (4.51-6.02)	6.38 (5.40-7.70)	7.33 (6.08-9.03)	8.31 (6.73-10.5)	9.33 (7.35-12.1)	10.7 (8.11-14.5)	11.8 (8.64-16.5)
3-day	2.53 (2.24-2.92)	3.46 (3.06-4.00)	4.70 (4.14-5.44)	5.72 (5.00-6.68)	7.14 (6.04-8.60)	8.24 (6.84-10.1)	9.39 (7.60-11.8)	10.6 (8.34-13.7)	12.2 (9.27-16.5)	13.6 (9.92-18.9)
4-day	2.74 (2.43-3.16)	3.77 (3.34-4.36)	5.15 (4.54-5.97)	6.29 (5.50-7.35)	7.88 (6.67-9.49)	9.11 (7.56-11.2)	10.4 (8.42-13.1)	11.7 (9.25-15.2)	13.6 (10.3-18.3)	15.1 (11.0-21.0)
7-day	3.14 (2.78-3.63)	4.34 (3.84-5.01)	5.94 (5.24-6.88)	7.26 (6.35-8.47)	9.08 (7.69-10.9)	10.5 (8.71-12.9)	12.0 (9.70-15.1)	13.5 (10.6-17.5)	15.6 (11.8-21.1)	17.3 (12.6-24.1)
10-day	3.42 (3.03-3.94)	4.74 (4.19-5.47)	6.49 (5.72-7.51)	7.94 (6.94-9.27)	9.94 (8.41-12.0)	11.5 (9.54-14.2)	13.1 (10.6-16.5)	14.8 (11.7-19.1)	17.1 (12.9-23.1)	18.9 (13.8-26.4)
20-day	4.09 (3.62-4.72)	5.72 (5.05-6.60)	7.91 (6.97-9.15)	9.73 (8.51-11.4)	12.3 (10.4-14.8)	14.3 (11.8-17.6)	16.4 (13.3-20.6)	18.6 (14.6-24.0)	21.6 (16.4-29.2)	24.1 (17.6-33.6)
30-day	4.86 (4.30-5.61)	6.81 (6.02-7.86)	9.46 (8.34-11.0)	11.7 (10.2-13.7)	14.9 (12.6-17.9)	17.4 (14.4-21.4)	20.1 (16.2-25.3)	22.9 (18.0-29.6)	26.9 (20.3-36.2)	30.1 (22.0-41.9)
45-day	5.75 (5.09-6.63)	8.03 (7.10-9.28)	11.2 (9.87-13.0)	13.9 (12.2-16.2)	17.8 (15.1-21.5)	21.0 (17.4-25.8)	24.4 (19.7-30.7)	28.0 (22.1-36.3)	33.2 (25.1-44.8)	37.5 (27.4-52.3)
60-day	6.63 (5.87-7.65)	9.20 (8.13-10.6)	12.8 (11.3-14.8)	16.0 (14.0-18.6)	20.5 (17.4-24.8)	24.3 (20.2-29.9)	28.4 (23.0-35.8)	32.8 (25.9-42.5)	39.2 (29.7-52.9)	44.6 (32.6-62.2)

¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

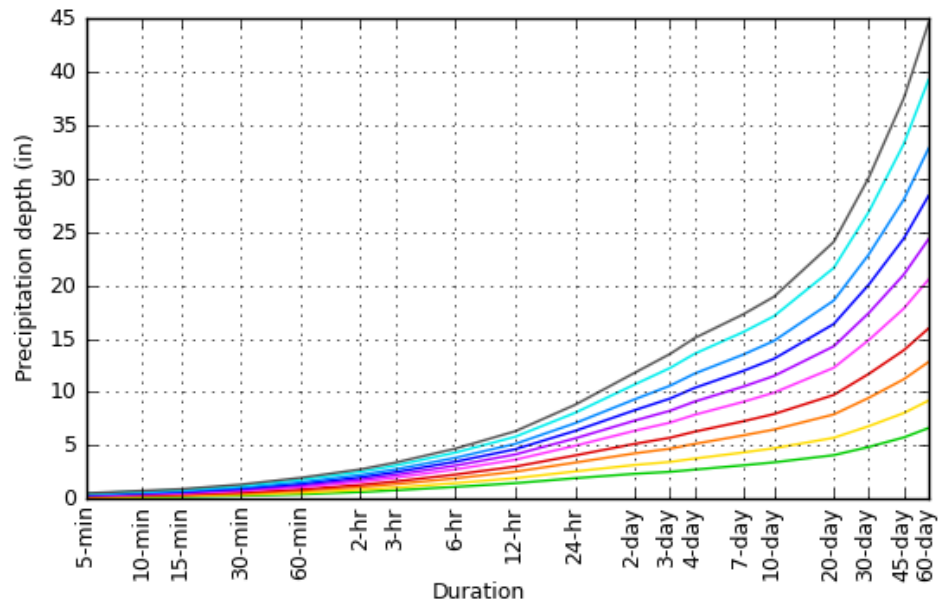
Please refer to NOAA Atlas 14 document for more information.

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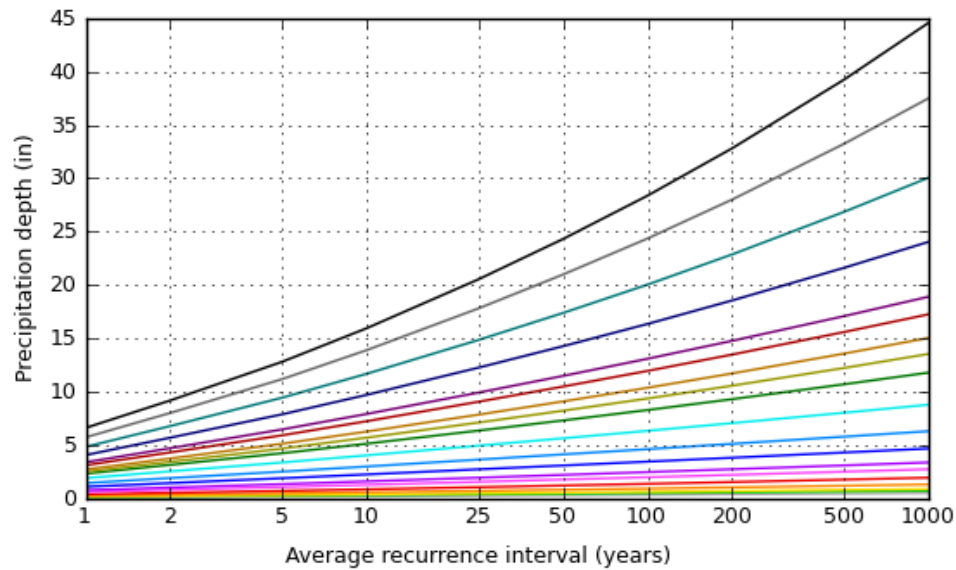
PF graphical

PDS-based depth-duration-frequency (DDF) curves

Latitude: 33.9652°, Longitude: -117.6469°



Average recurrence interval (years)
1
2
5
10
25
50
100
200
500
1000



Duration	
5-min	2-day
10-min	3-day
15-min	4-day
30-min	7-day
60-min	10-day
2-hr	20-day
3-hr	30-day
6-hr	45-day
12-hr	60-day
24-hr	

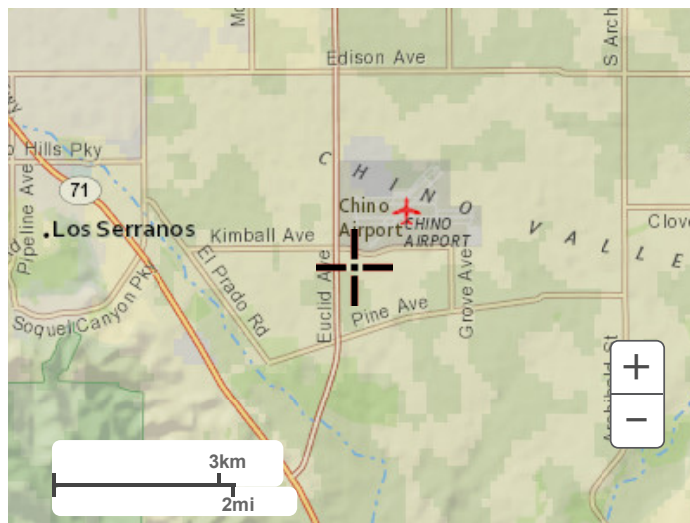
NOAA Atlas 14, Volume 6, Version 2

Created (GMT): Fri Feb 10 15:00:25 2017

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Maps & aerials

Small scale terrain



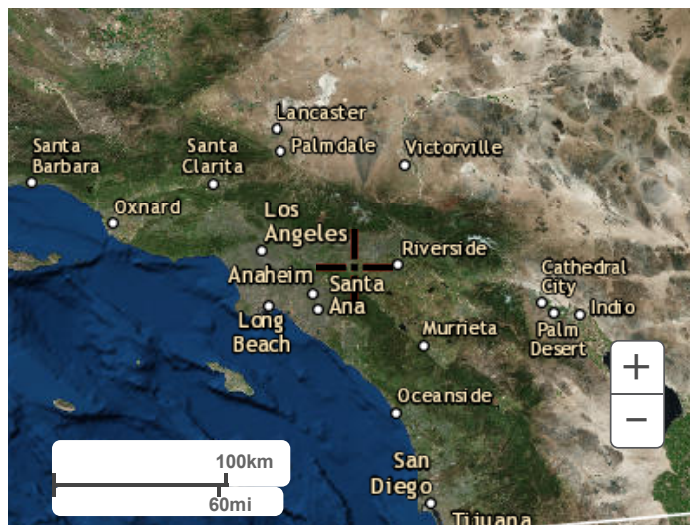
Large scale terrain



Large scale map



Large scale aerial

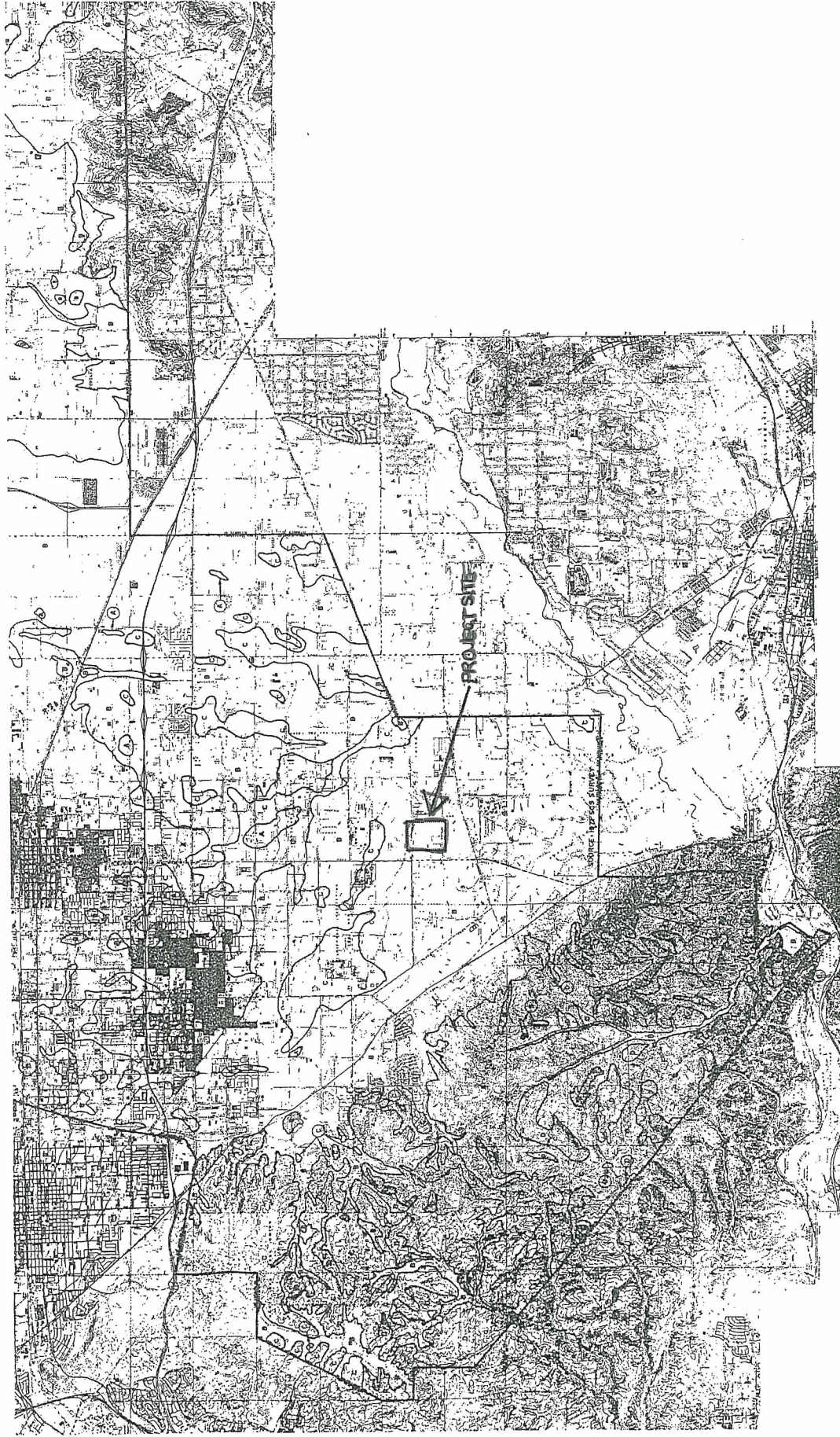


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[US Department of Commerce](#)
[National Oceanic and Atmospheric Administration](#)
[National Weather Service](#)
[National Water Center](#)
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

[Disclaimer](#)

***HYDROLOGIC SOILS
GROUP MAP***

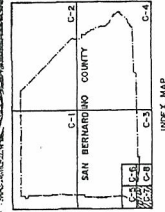


HYDROLOGIC SOILS GROUP MAP
FOR
SOUTHWEST-C AREA

SCALE REDUCED BY 1/2

SCALE 1"=1/2 MI.
1"=1/2 MI.
1"=1/2 MI.

LEGEND
SOIL GROUP BOUNDARY
A
BOUNDARY OF INDICATED SOURCE



SAN BERNARDINO COUNTY
HYDROLOGY MANUAL

FIRM MAP

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations (BFEs)** and/or **Floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 11 North. The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov> or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, NIMS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at <http://www.ngs.noaa.gov>.

Base map information shown on this FIRM was derived from digital orthophotography collected by the U.S. Department of Agriculture Farm Service Agency. This imagery was flown in 2005 and was produced with a 1-meter ground sample distance.

This map may reflect more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

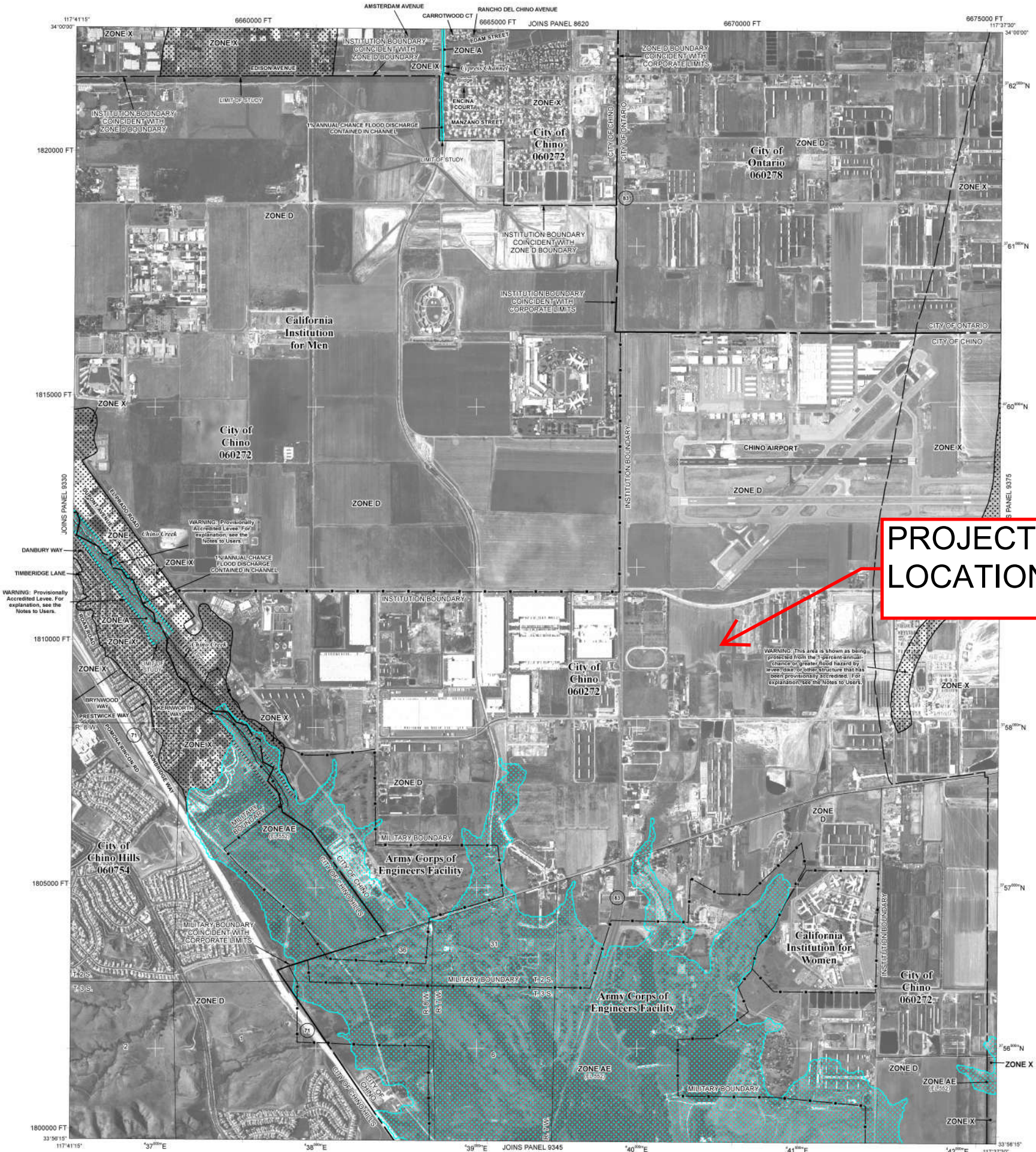
Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels, community map repository addresses, and a listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at <http://msc.fema.gov/>.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA MAP (1-877-336-2627) or visit the FEMA website at <http://www.fema.gov>.

WARNING: This map contains levees, dikes, or other structures that have been provisionally accredited and mapped as providing protection from the 1-percent-annual-chance flood. To maintain accreditation, the levee owner or community is required to submit documentation necessary to comply with 44 CFR Section 65.10 by August 8, 2009. Because of the risk of overtopping or failure of the structure, communities should take proper precautions to protect lives and minimize damages in these areas, such as issuing an evacuation plan and encouraging property owners to purchase flood insurance.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, AP, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A No Base Flood Elevations determined.

ZONE AE Base Flood Elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently determined. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE AP Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary
0.2% annual chance floodplain boundary
Floodway boundary
Zone D boundary
CBRS and OPA boundary
Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
Base Flood Elevation line and value; elevation in feet*
Base Flood Elevation value where uniform within zone; elevation in feet*
Cross section line
Transect line
Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
1000-meter Universal Transverse Mercator grid values, zone 11N
5000-foot grid ticks: California State Plane coordinate system, zone V (FIPSZONE 1405), Lambert Conformal Conic projection
Bench mark (see explanation in Notes to Users section of this FIRM panel)
River Mile
MAP REPOSITORY
Refer to listing of Map Repositories on Map Index
EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
March 18, 1998
EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
August 28, 2008 - to update corporate limits, to change Base Flood Elevations and Special Flood Hazard Areas, to update map format, to add roads and road names, and to incorporate previously issued Letters of Map Revision.
For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.
To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP

PANEL 9335H

FIRM

FLOOD INSURANCE RATE MAP

SAN BERNARDINO COUNTY, CALIFORNIA AND INCORPORATED AREAS

PANEL 9335 OF 9400

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS

COMMUNITY	NUMBER	PANEL	SUFFIX
CHINO HILLS, CITY OF	060754	9335	H
CHINO, CITY OF	060272	9335	H
ONTARIO, CITY OF	060278	9335	H

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
06071C9335H

MAP REVISED
AUGUST 28, 2008

Federal Emergency Management Agency

WORKSHEETS

BASIN A – DETENTION BASIN A

Project Report

Date:9/2/17		Sheet 1 of 2
Project: Kimball		Job No.:
RE: Detention Basin		By: MWN
Basin A		

Detention Basin Size

Stage vs. Volume

Elevation	Depth (FT)	Area (SF)	Storage (CF)	Storage (AF)	Total Storage (AF)
577.5	0.0	0	0	0.00	0.00
578.5	1.0	49000	24500	0.56	0.56
579.5	2.0	50935	49968	1.15	1.71
580.5	3.0	52890	51913	1.19	2.90
581.5	4.0	54880	53885	1.24	4.14
582.5	5.0	56905	55893	1.28	5.42
583.5	6.0	58970	57938	1.33	6.75

Project Report

Date: 9/2/17	Sheet 2 of 2
Project: Kimball	Job No.:
RE: Detention Basin A	

Detention Basin Outlet

Stage vs. Discharge

Side Outlet (Orifice)

$$Q=CA(2gH)^{0.5}$$

$$C= 0.61$$

$$A1= 2.00 \quad 49000$$

$$A2= 1.00 \quad 50935$$

$$A3= 0.50 \quad 52890$$

$$A4= 0.50 \quad 54880$$

12 - 3" x 8" opening at 577.5 (A1)

6 - 3" x 8" opening at 578.5 (A2)

3 - 3" x 8" opening at 579.5 (A3)

3 - 3" x 8" opening at 580.5 (A4)

Riser Top Outlet (Weir)

$$Q=LCH^{1.5}$$

$$C=$$

$$L= 36" \text{ Diameter Riser}$$

$$3.0$$

$$9.42$$

Top of Riser set at 582.5

Elev.	Depth (ft)	Depth (H) above row of orifice	Q1 (Orifice) (cfs)	Depth (H) above 2nd row of orifice	Q2 (Orifice) (cfs)	Depth (H) above 3rd row of orifice	Q3 (Orifice) (cfs)	Depth (H) above 4th row of orifice	Q4 (Orifice) (cfs)	Depth (H) above top of riser	Q5 (Weir) (cfs)	Q Total (cfs)
577.5	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
578.5	1.0	0.67	8.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.01
579.5	2.0	1.67	12.65	0.67	4.01	0.00	0.00	0.00	0.00	0.00	0.00	16.66
580.5	3.0	2.67	16.00	1.67	6.33	0.67	2.00	0.00	0.00	0.00	0.00	24.33
581.5	4.0	3.67	18.76	2.67	8.00	1.67	3.16	0.67	2.00	0.00	0.00	31.92
582.5	5.0	4.67	21.16	3.67	9.38	2.67	4.00	1.67	3.16	0.00	0.00	37.70
583.5	6.0	5.67	23.31	4.67	10.58	3.67	4.69	2.67	4.00	1.00	28.26	70.84

BASIN B – DETENTION BASIN B

Date: 9/2/17		Sheet 1 of 2
Project: Kimball		Job No.:
RE: Detention Basin		By: MWN
Basin B		

Detention Basin Size

Stage vs. Volume

Elevation	Depth (FT)	Area (SF)	Storage (CF)	Storage (AF)	Total Storage (AF)
575.0	0.0	0	0	0.00	0.00
576.0	1.0	38152	19076	0.44	0.44
577.0	2.0	40977	39565	0.91	1.35
578.0	3.0	43878	42428	0.97	2.32
579.0	4.0	46956	45417	1.04	3.36
580.0	5.0	50141	48549	1.11	4.48
581.0	6.0	53382	51762	1.19	5.67
582.0	7.0	56679	55031	1.26	6.93
583.0	8.0	60033	58356	1.34	8.27
584.0	9.0	63700	61867	1.42	9.69

Project Report

Date: 9/2/17	Sheet 2 of 2
Project: Kimball	Job No.:
RE: Detention Basin B	

Detention Basin Outlet

Stage vs. Discharge

Side Outlet (Orifice)

$$Q=CA(2gH)^{0.5}$$

$$C= 0.61$$

$$A1= 0.20$$

$$A2= 0.20$$

$$A3= 0.20$$

$$A4= 0.20$$

10 - 2" dia. opening at 575.0 (A1)

10 - 2" dia. opening at 576.0 (A2)

10 - 2" dia. opening at 577.0 (A3)

10 - 2" dia. opening at 578.0 (A4)

Riser Top Outlet (Weir)

$$Q=LCH^{1.5}$$

$$C=$$

$$L=$$

36" Diameter Riser

Top of Riser set at 583

3.0

9.42

Elev.	Depth (ft)	Depth (H) above 1st row of orifice	Q1 (Orifice) (cfs)	Depth (H) above 2nd row of orifice	Q2 (Orifice) (cfs)	Depth (H) above 3rd row of orifice	Q3 (Orifice) (cfs)	Depth (H) above 4th row of orifice	Q4 (Orifice) (cfs)	Depth (H) above top of riser	Q5 (Weir) (cfs)	Q Total (cfs)
575.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
576.0	1.0	0.96	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.96
577.0	2.0	1.96	1.37	0.96	0.96	0.00	0.00	0.00	0.00	0.00	0.00	2.33
578.0	3.0	2.96	1.68	1.96	1.37	0.96	0.96	0.00	0.00	0.00	0.00	4.01
579.0	4.0	3.96	1.95	2.96	1.68	1.96	1.37	0.96	0.96	0.00	0.00	5.96
580.0	5.0	4.96	2.18	3.96	1.95	2.96	1.68	1.96	1.37	0.00	0.00	7.18
581.0	6.0	5.96	2.39	4.96	2.18	3.96	1.95	2.96	1.68	0.00	0.00	8.20
582.0	7.0	6.96	2.58	5.96	2.39	4.96	2.18	3.96	1.95	0.00	0.00	9.10
583.0	8.0	7.96	2.76	6.96	2.58	5.96	2.39	4.96	2.18	0.00	0.00	9.92
584.0	9.0	8.96	2.93	7.96	2.76	6.96	2.58	5.96	2.39	1.00	28.26	38.93

BASIN CC- DETENTION BASIN CC

Project Report

Date: 1/9/19		Sheet 1 of 2
Project: Kimball		Job No.:
RE: Detention Basin		By: MWN
Basin CC		

Detention Basin Size

Stage vs. Volume

Elevation	Depth (FT)	Area (SF)	Storage (CF)	Storage (AF)	Total Storage (AF)
568.0	0.0	0	0	0.00	0.00
569.0	1.0	12000	6000	0.14	0.14
570.0	2.0	13483	12742	0.29	0.43
571.0	3.0	15052	14268	0.33	0.76
572.0	4.0	16708	15880	0.36	1.12
573.0	5.0	18451	17580	0.40	1.53
574.0	6.0	20280	19366	0.44	1.97

Project Report

Date: 1/9/19	Sheet 2 of 2
Project: Kimball	Job No.:
RE: Detention Basin CC	

Detention Basin Outlet

Stage vs. Discharge

Side Outlet (Orifice)

$$Q=CA(2gH)^{0.5}$$

$$C= 0.61$$

$$A1= 0.50$$

$$A2= 0.50$$

$$A3= 1.00$$

$$A4= 1.00$$

3 - 3" x 8" opening at 568.0 (A1)

3 - 3" x 8" opening at 569.0 (A2)

6 - 3" x 8" opening at 570.0 (A3)

6 - 3" x 8" opening at 571.0 (A4)

Riser Top Outlet (Weir)

$$Q=LCH^{1.5}$$

$$C=$$

$$L=$$

36" Diameter Riser

Top of Riser set at 573

3.0

9.42

Elev.	Depth (ft)	Depth (H) above 1st row of orifice	Q1 (Orifice) (cfs)	Depth (H) above 2nd row of orifice	Q2 (Orifice) (cfs)	Depth (H) above 3rd row of orifice	Q3 (Orifice) (cfs)	Depth (H) above 4th row of orifice	Q4 (Orifice) (cfs)	Depth (H) above top of riser	Q5 (Weir) (cfs)	Q Total (cfs)
568.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
569.0	1.0	0.67	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00
570.0	2.0	1.67	3.16	0.67	2.00	0.00	0.00	0.00	0.00	0.00	0.00	5.17
571.0	3.0	2.67	4.00	1.67	3.16	0.67	4.01	0.00	0.00	0.00	0.00	11.17
572.0	4.0	3.67	4.69	2.67	4.00	1.67	6.33	0.67	4.01	0.00	0.00	19.02
573.0	5.0	4.67	5.29	3.67	4.69	2.67	8.00	1.67	6.33	0.00	0.00	24.30
574.0	6.0	5.67	5.83	4.67	5.29	3.67	9.38	2.67	8.00	1.00	28.26	56.75

BASIN D – DETENTION BASIN 1

TABLE C
PARCEL 2 AREA B
BASIN NO 2
DETENTION BASIN SIZE

STAGE VS. VOLUME

ELEVATION (ft)	DETENTION BASIN DEPTH (ft)	CONTOUR AREA (sf)	AVG. AREA (sf)	VOLUME (cu. ft.)	VOLUME (ac - ft.)	TOTAL VOLUME (ac-ft)	DESIGN FLOW (cfs)
571	0	1,206	0	0	0	0	0.00
572	1	2,015	1,611	1,611	0.037	0.037	6.10
573	2	2,911	2,463	2,463	0.057	0.094	11.85
574	3	3,883	3,397	3,397	0.078	0.171	18.58
575	4	4,918	4,401	4,401	0.101	0.273	23.16
576	5	6,028	5,473	5,473	0.126	0.398	26.87
577	6	7,207	6,618	6,618	0.152	0.550	30.10
578	7	8,449	7,828	7,828	0.180	0.730	33.01
579	8	9,769	9,109	9,109	0.209	0.939	35.67
580	9	11,025	10,397	10,397	0.239	1.178	76.92

BASIN E – DETENTION BASIN 3

TABLE E
PARCEL 2 AREA B20 - AREA B38
BASIN NO 3
DETENTION BASIN SIZE

STAGE VS. VOLUME

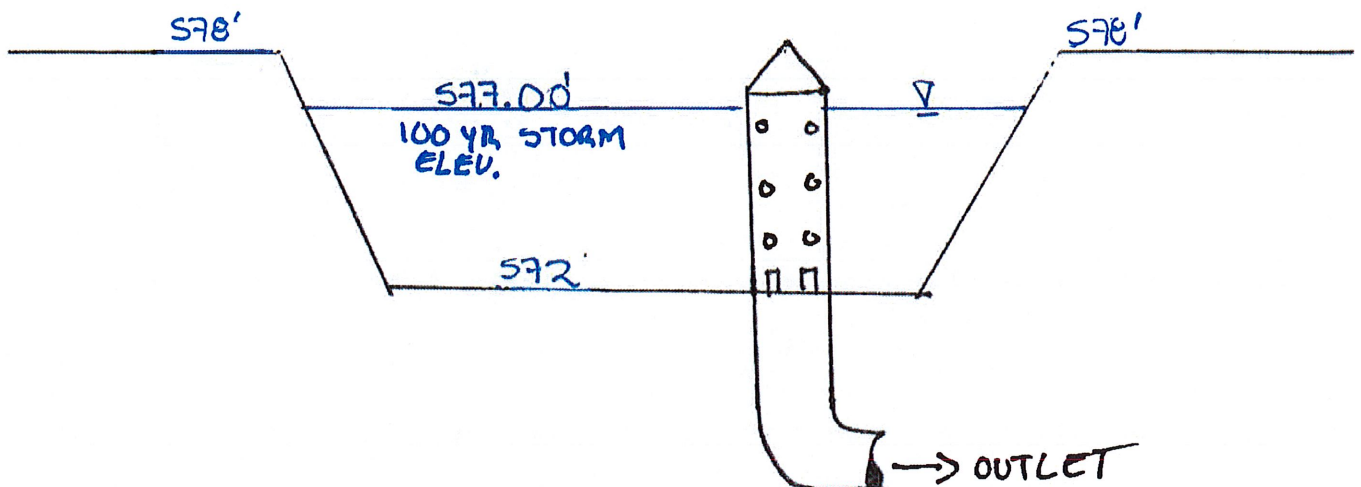
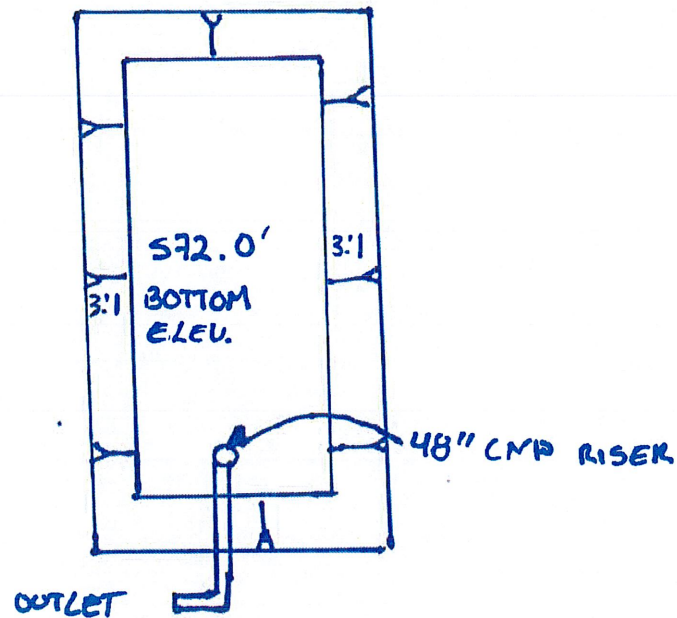
ELEVATION (ft)	CONTOUR AREA (sf)	AVG. AREA (sf)	VOLUME (cu. ft.)	VOLUME (ac - ft.)	TOTAL VOLUME (ac-ft)	DESIGN FLOW (cfs)
572	1134	0	0	0.000	0.000	0.00
573	1,882	1,508	1,508	0.035	0.035	2.85
574	2,727	2,305	2,305	0.053	0.088	5.96
575	3,607	3,167	3,167	0.073	0.160	9.33
576	4,546	4,077	4,077	0.094	0.254	12.90
577	5,591	5,069	5,069	0.116	0.370	15.32
578	6,882	6,237	6,237	0.143	0.513	31.07

NOTES:
SEE ATTACHED FIGURE

BASIN NO. 3

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TABLE F
DETENTION BASIN OUTLET
PARCEL 2 AREA B20 - AREA B38
BASIN NO 3

RISER 1		ORIFICE 2		ORIFICE 3		ORIFICE 4	
ORIFICE 1		Circular Outlet		Circular Outlet		Circular Outlet	
Rectangular Outlet		WQ Outlet (Orifice)		WQ Outlet (Orifice)		WQ Outlet (Orifice)	
$Q(WQ)=CA(2gH)^{0.5}$		$Q(WQ)=CA(2gH)^{0.5}$		$Q(WQ)=CA(2gH)^{0.5}$		$Q(WQ)=CA(2gH)^{0.5}$	
Coefficient (C)=		Coefficient (C)=		Coefficient (C)=		Coefficient (C)=	
Area Total=		Area Total=		Area Total=		Area Total=	
W=		Hole Diameter =		Hole Diameter =		Hole Diameter =	
H=		# of holes =		# of holes =		# of holes =	
# of holes =		Elevation =		Elevation =		Elevation =	
572 ft		573 ft		574 ft		575 ft	
7		11		10		9	
0.6		0.5		0.6		0.6	
0.66 sq-ft		0.37 sq-ft		0.34 sq-ft		0.31 sq-ft	
3 in		2.5 in		2.5 in		2.5 in	
4.5 in		0.6		0.6		0.6	
0.6		0.37 sq-ft		0.34 sq-ft		0.31 sq-ft	
0.66 sq-ft		0.37 sq-ft		0.34 sq-ft		0.31 sq-ft	
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0.66 sq-ft		0.37 sq-ft		0.34 sq-ft		0.31 sq-ft	
3 in		2.5 in		2.5 in		2.5 in	
4.5 in		0.6		0.6		0.6	
0.6		0.37 sq-ft		0.34 sq-ft		0.31 sq-ft	
0.66 sq-ft		0.37 sq-ft		0.34 sq-ft		0.31 sq-ft	
3 in		2.5 in		2.5 in		2.5 in	
4.5 in		0.6		0.6		0.6	
0.6		0.37 sq-ft		0.34 sq-ft		0.31 sq-ft	
0.66 sq-ft		0.37 sq-ft		0.34 sq-ft		0.31 sq-ft	
3 in		2.5 in		2.5 in		2.5 in	
4.5 in		0.6		0.6		0.6	
0.6		0.37 sq-ft		0.34 sq-ft		0.31 sq-ft	
0.66 sq-ft		0.37 sq-ft		0.34 sq-ft		0.31 sq-ft	
3 in		2.5 in		2.5 in		2.5 in	
4.5 in		0.6		0.6		0.6	
0.6		0.37 sq-ft		0.34 sq-ft		0.31 sq-ft	
0.66 sq-ft		0.37 sq-ft		0.34 sq-ft		0.31 sq-ft	
3 in		2.5 in		2.5 in		2.5 in	
4.5 in		0.6		0.6		0.6	
0.6		0.37 sq-ft		0.34 sq-ft		0.31 sq-ft	
0.66 sq-ft		0.37 sq-ft		0.34 sq-ft			

Worksheet for Basin No. 3 Riser Weir Calculations

Project Description

Solve For Discharge

Input Data

Headwater Elevation	578.00	ft
Crest Elevation	577.50	ft
Tailwater Elevation	0.00	ft
Crest Surface Type	Paved	
Crest Breadth	0.01	ft
Crest Length	12.56	ft

Results

Discharge	13.71	ft ³ /s
Headwater Height Above Crest	0.50	ft
Tailwater Height Above Crest	-577.50	ft
Weir Coefficient	3.09	US
Submergence Factor	1.00	
Adjusted Weir Coefficient	3.09	US
Flow Area	6.28	ft ²
Velocity	2.18	ft/s
Wetted Perimeter	13.56	ft
Top Width	12.56	ft

BASIN E – DETENTION BASIN 2

TABLE C
PARCEL 2 AREA B1 - AREA B19
BASIN NO.2
UNDERGROUND DETENTION BASIN SIZE

ELEVATION (ft)	HEIGHT (ft)	VOLUME PROVIDED (cu-ft)	TOTAL VOLUME (cu-ft)	VOLUME PROVIDED PER PIPE (cu-ft) *	TOTAL PIPE VOLUME (cu-ft)**	GRAVEL VOLUME (cu-ft)	EFFECTIVE VOLUME PROVIDED BY GRAVEL (cu-ft) ***	TOTAL SYSTEM VOLUME		DESIGN FLOW (cfs)
								(cu-ft)	(ac-ft)	
565	0	0	0	0	0	0	0	0	0	0.00
566	1	1,836	1,836	0	0	1,836	734	734	0.017	1.16
567	2	5,049	6,885	0	0	6,885	2,754	2,754	0.063	2.97
568	3	5,508	12,393	0	0	12,393	4,957	4,957	0.114	5.20
569	4	5,508	17,901	257	514	17,387	6,955	7,469	0.171	7.63
570	5	5,508	23,409	1,349	2,698	20,711	8,284	10,982	0.252	9.21
571	6	5,508	28,917	2,980	5,960	22,957	9,183	15,143	0.348	10.53
572	7	5,508	34,425	4,781	9,562	24,863	9,945	19,507	0.448	11.70
573	8	5,508	39,933	6,527	13,054	26,879	10,752	23,806	0.547	12.75
574	9	5,508	45,441	7,959	15,918	29,523	11,809	27,727	0.637	20.57

NOTES:

SEE ATTACHED FIGURE

* CALCULATED USING SOFTWARE DEVELOPED BY THE ENGINEERING TOOLBOX, SEE ATTACHED CALCULATIONS.

**THIS IS A DOUBLE BARREL SYSTEM

*** A 0.40 VOID RATIO HAS BEEN APPLIED

TABLE D
DETENTION BASIN OUTLET
PARCEL 2 AREA B1 - AREA B19
BASIN NO 2

RISER 1

ORIFICE 1

Rectangular Outlet

WQ Outlet (Orifice)

$$Q(WQ)=CA(2gH)^{0.5}$$

Coefficient (C)=

0.6

0.27 sq-ft

3 in

4.25 in

3

565 ft

ORIFICE 2

Circular Outlet

WQ Outlet (Orifice)

$$Q(WQ)=CA(2gH)^{0.5}$$

Coefficient (C)=

0.6

0.27 sq-ft

2.5 in

8

566 ft

ORIFICE 3

Circular Outlet

WQ Outlet (Orifice)

$$Q(WQ)=CA(2gH)^{0.5}$$

Coefficient (C)=

0.6

0.27 sq-ft

2.5 in

8

567 ft

ORIFICE 4

Circular Outlet

WQ Outlet (Orifice)

$$Q(WQ)=CA(2gH)^{0.5}$$

Coefficient (C)=

0.6

0.24 sq-ft

2.5 in

7

568 ft

ELEVATION (ft)	DEPTH (H) ABOVE ORIFICE 1 (ft)	Q(WQ) (cfs)	DEPTH (H) ABOVE ORIFICE 2 (ft)	Q(WQ) (cfs)	DEPTH (H) ABOVE ORIFICE 3 (ft)	Q(WQ) (cfs)	DEPTH (H) ABOVE ORIFICE 4 (ft)	Q(WQ) (cfs)	Q.TG (Weir) (cfs)**	Q TOTAL (cfs)
565	0	0.00	0	0.00	0	0.00	0	0.00	0.00	0.00
566	1	1.16	0	0.00	0	0.00	0	0.00	0.00	1.16
567	2	1.73	1	1.24	0	0.00	0	0.00	0.00	2.97
568	3	2.15	2	1.81	1	1.24	0	0.00	0.00	5.20
569	4	2.50	3	2.23	2	1.81	1	1.09	0.00	7.63
570	5	2.81	4	2.59	3	2.23	2	1.58	0.00	9.21
571	6	3.09	5	2.90	4	2.59	3	1.95	0.00	10.53
572	7	3.34	6	3.19	5	2.90	4	2.27	0.00	11.70
573	8	3.58	7	3.45	6	3.19	5	2.54	0.00	12.75
574	9	3.80	8	3.69	7	3.45	6	2.79	6.85	20.57

Riser Outlet - Broad Crested Weir

$$Q(Weir) = LCH^{1.5}$$

3.09

6.28 ft

12 in

573.5 ft

NOTES:

** SEE ATTACHED CALCULATIONS

Worksheet for Basin No. 2 Riser Weir Calculations

Project Description

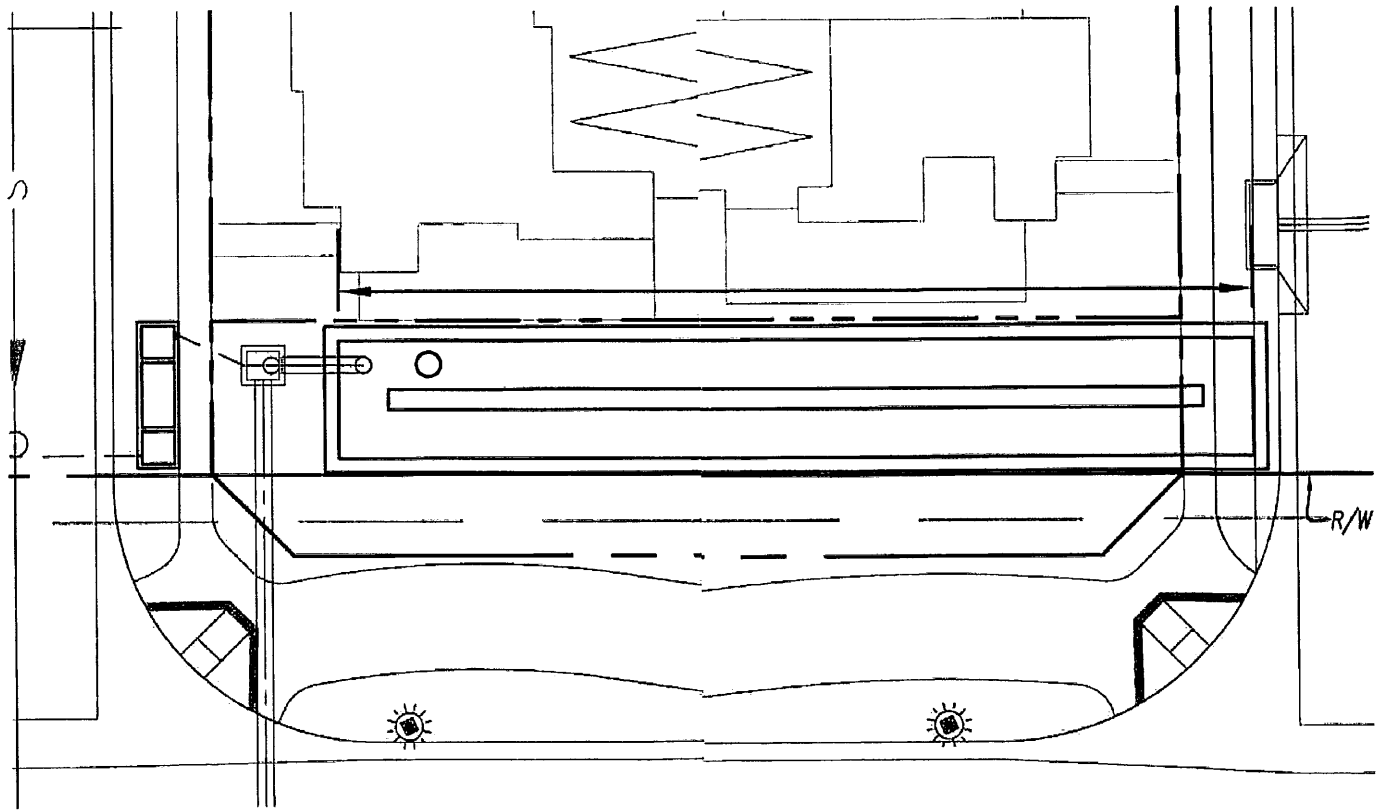
Solve For Discharge

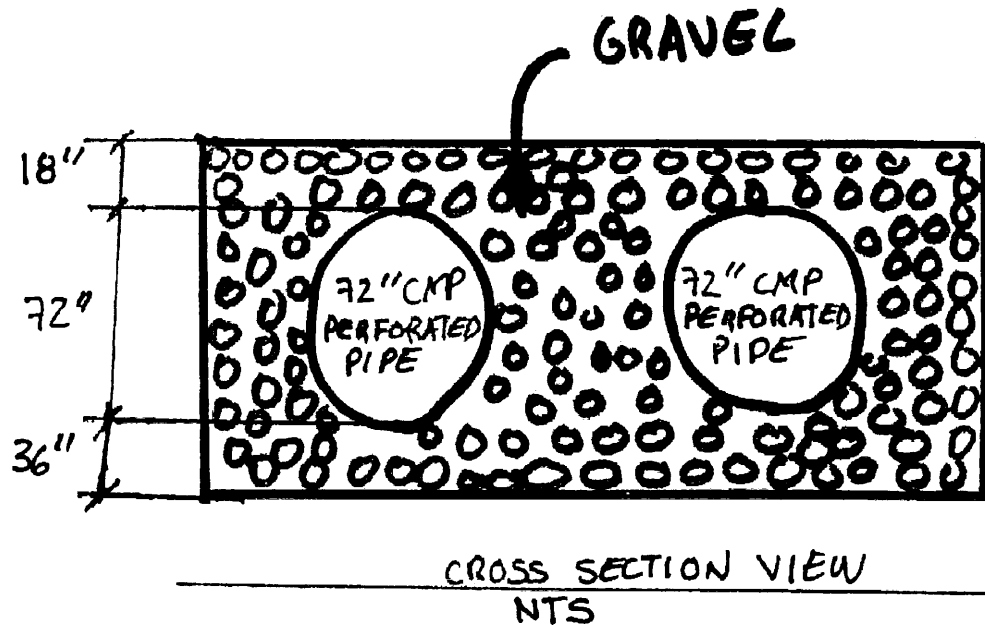
Input Data

Headwater Elevation	574.00	ft
Crest Elevation	573.50	ft
Tailwater Elevation	0.00	ft
Crest Surface Type	Paved	
Crest Breadth	0.01	ft
Crest Length	6.28	ft

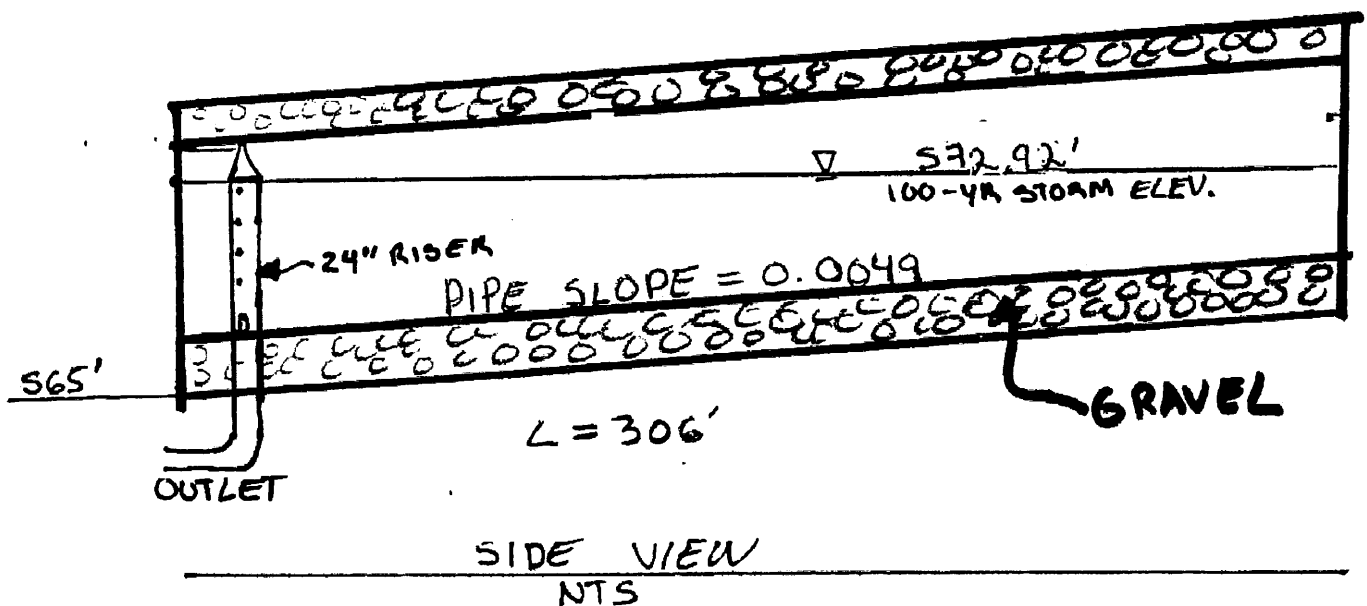
Results

Discharge	6.85	ft ³ /s
Headwater Height Above Crest	0.50	ft
Tailwater Height Above Crest	-573.50	ft
Weir Coefficient	3.09	US
Submergence Factor	1.00	
Adjusted Weir Coefficient	3.09	US
Flow Area	3.14	ft ²
Velocity	2.18	ft/s
Wetted Perimeter	7.28	ft
Top Width	6.28	ft





* VOLUMES WERE CALCULATED AT 1' INTERVALS



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Content of Horizontal - or Sloped - Cylindrical Tank and Pipe

Volume of partly filled horizontal or sloped cylindrical tanks and pipes - an online calculator

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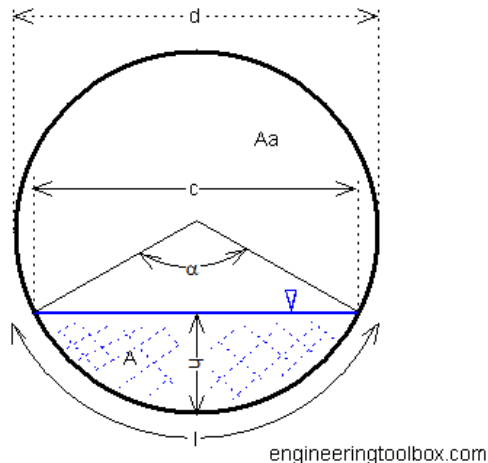
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The online calculator below can be used to calculate the volume and mass of liquid in a partly filled horizontal or sloped cylindrical tank if you know the inside diameter and the level of the liquid the tank. The calculator can also be used for partly filled circular pipes.



The calculator outputs

- the liquid volume in the tank
- the liquid mass
- the central angle
- the chord length
- the arc length
- the cross sectional area of both liquid and air
- the air volume in the tank

The calculator is generic and can be used for common metric and imperial units as long as the values are based on the same units.

 inside diameter of tank or pipe - d - (m, ft, in)

 liquid level inside tank or pipe - h - (m, ft, in)

 liquid density - ρ - (kg/m³, lb/ft³, lb/in³)

 length of tank or pipe - L - (m, ft, in)

 slope of tank (degrees)

Horizontal (slope is zero) Tank or Pipe

- Liquid volume in tank or pipe - V : **948** (m³, ft³, in³)
- Liquid fill - : **11** (% of max volume)
- Liquid mass in tank or pipe - m : **1839** (kg, lb)
- Angle - α : **96.4** (degrees)
- Chord Length - c : **4.47** (m, ft, in)
- Arc length - l : **5.05** (m, ft, in)
- Liquid cross sectional area - a : **3.1** (m², ft², in²)
- Air cross sectional area - Aa : **25.2** (m², ft², in²)
- Air volume in tank or pipe - Va : **7704** (m³, ft³, in³)
- Total volume in tank or pipe - : **8652** (m³, ft³, in³)

Sloped Tank or Pipe

- Slope : **0.281** degrees
- Liquid Volume : **257** (m³, ft³, in³)
- Air Volume : **8395** (m³, ft³, in³)
- Total Volume : **8652** (m³, ft³, in³)
- Liquid mass in tank or pipe - m : **499** (kg, lb)

Side-view of the Cylindrical Tank or Pipe

The figure redraws when the parameters in the calculator are changed and calculated.

The Engineering ToolBox Volume of Partly Filled "Horizontal" Sloped Cylindrical Tank or Pipe

Liquid Volume : 257.2

Air Volume : 8394.7

Total Volume : 8651.9

liquid level

liquid level = 1

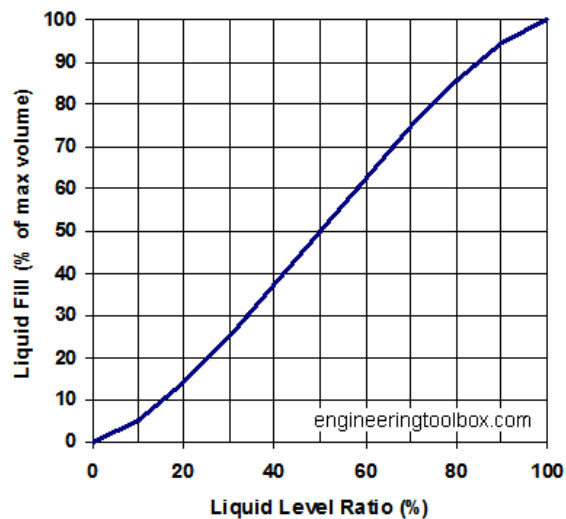
Slope = 0.3 degrees, Diameter = 6, Length = 306

http://www.engineeringtoolbox.com/content-cylindrical-tank-d_1301.html

• [Print or Save the Figure!](#)

Liquid Level and Volume in a Horizontal Tank or Pipe

The chart below can be used for horizontal tanks or pipes where the slope is zero.



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Content of Horizontal - or Sloped - Cylindrical Tank and Pipe

Volume of partly filled horizontal or sloped cylindrical tanks and pipes - an online calculator

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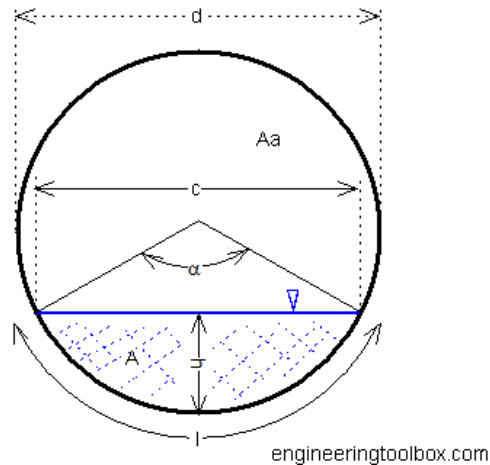
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The online calculator below can be used to calculate the volume and mass of liquid in a partly filled horizontal or sloped cylindrical tank if you know the inside diameter and the level of the liquid the tank. The calculator can also be used for partly filled circular pipes.



The calculator outputs

- the liquid volume in the tank
- the liquid mass
- the central angle
- the chord length
- the arc length
- the cross sectional area of both liquid and air
- the air volume in the tank

The calculator is generic and can be used for common metric and imperial units as long as the values are based on the same units.

 inside diameter of tank or pipe - d - (m, ft, in)

 liquid level inside tank or pipe - h - (m, ft, in)

 liquid density - ρ - (kg/m³, lb/ft³, lb/in³)

 length of tank or pipe - L - (m, ft, in)

 slope of tank (degrees)

Horizontal (slope is zero) Tank or Pipe

- Liquid volume in tank or pipe - V : **2525** (m³, ft³, in³)
- Liquid fill - : **29.2** (% of max volume)
- Liquid mass in tank or pipe - m : **4898** (kg, lb)
- Angle - α : **141** (degrees)
- Chord Length - c : **5.66** (m, ft, in)
- Arc length - l : **7.39** (m, ft, in)
- Liquid cross sectional area - a : **8.25** (m², ft², in²)
- Air cross sectional area - Aa : **20** (m², ft², in²)
- Air volume in tank or pipe - Va : **6127** (m³, ft³, in³)
- Total volume in tank or pipe - : **8652** (m³, ft³, in³)

Sloped Tank or Pipe

- Slope : **0.281** degrees
- Liquid Volume : **1349** (m³, ft³, in³)
- Air Volume : **7303** (m³, ft³, in³)
- Total Volume : **8652** (m³, ft³, in³)
- Liquid mass in tank or pipe - m : **2617** (kg, lb)

Side-view of the Cylindrical Tank or Pipe

The figure redraws when the parameters in the calculator are changed and calculated.

The Engineering ToolBox Volume of Partly Filled "Horizontal" Sloped Cylindrical Tank or Pipe

Liquid Volume : 1349
Air Volume : 7302.9
Total Volume : 8651.9

liquid level

Horizontal Sloped Tank

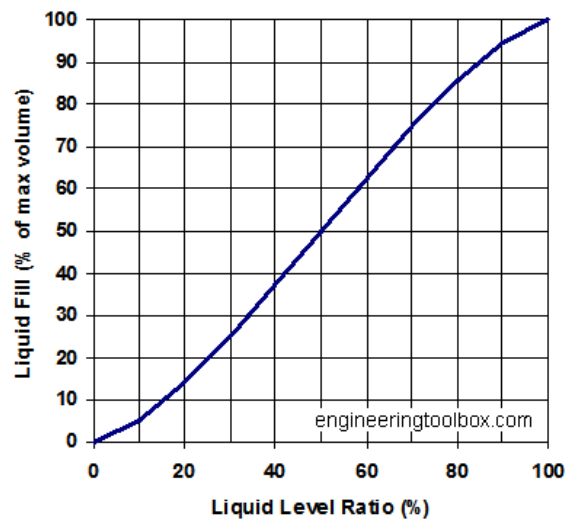
Slope = 0.3 degrees, Diameter = 6, Length = 306

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Liquid Level and Volume in a Horizontal Tank or Pipe

The chart below can be used for horizontal tanks or pipes where the slope is zero.



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Content of Horizontal - or Sloped - Cylindrical Tank and Pipe

Volume of partly filled horizontal or sloped cylindrical tanks and pipes - an online calculator

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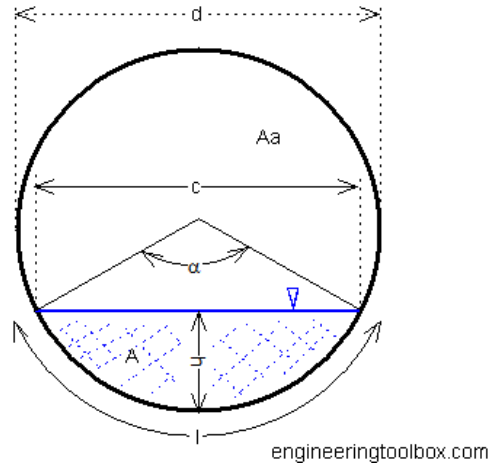
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The calculator outputs

- the liquid volume in the tank
- the liquid mass
- the central angle
- the chord length
- the arc length
- the cross sectional area of both liquid and air
- the air volume in the tank

The calculator is generic and can be used for common metric and imperial units as long as the values are based on the same units.

 inside diameter of tank or pipe - d - (m, ft, in)

 liquid level inside tank or pipe - h - (m, ft, in)

 liquid density - ρ - (kg/m³, lb/ft³, lb/in³)

 length of tank or pipe - L - (m, ft, in)

 slope of tank (degrees)

Horizontal (slope is zero) Tank or Pipe

- Liquid volume in tank or pipe - V : **4326** (m³, ft³, in³)
- Liquid fill - : **50** (% of max volume)
- Liquid mass in tank or pipe - m : **8392** (kg, lb)
- Angle - α : **180** (degrees)
- Chord Length - c : **6** (m, ft, in)
- Arc length - l : **9.42** (m, ft, in)
- Liquid cross sectional area - a : **14.1** (m², ft², in²)
- Air cross sectional area - Aa : **14.1** (m², ft², in²)
- Air volume in tank or pipe - Va : **4326** (m³, ft³, in³)
- Total volume in tank or pipe - : **8652** (m³, ft³, in³)

Sloped Tank or Pipe

- Slope : **0.281** degrees
- Liquid Volume : **2980** (m³, ft³, in³)
- Air Volume : **5672** (m³, ft³, in³)
- Total Volume : **8652** (m³, ft³, in³)
- Liquid mass in tank or pipe - m : **5780** (kg, lb)

Side-view of the Cylindrical Tank or Pipe

The figure redraws when the parameters in the calculator are changed and calculated.

The Engineering ToolBox Volume of Partly Filled "Horizontal" Sloped Cylindrical Tank or Pipe

Liquid Volume : 2979.6
Air Volume : 5672.3
Total Volume : 8651.9

liquid level



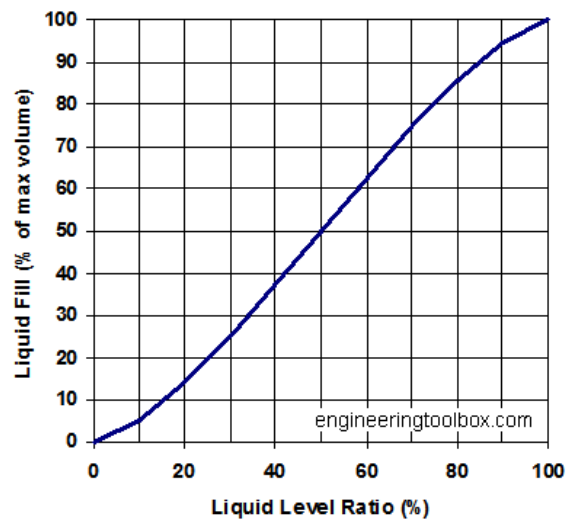
Slope = 0.3 degrees, Diameter = 6, Length = 306

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Liquid Level and Volume in a Horizontal Tank or Pipe

The chart below can be used for horizontal tanks or pipes where the slope is zero.



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Content of Horizontal - or Sloped - Cylindrical Tank and Pipe

Volume of partly filled horizontal or sloped cylindrical tanks and pipes - an online calculator

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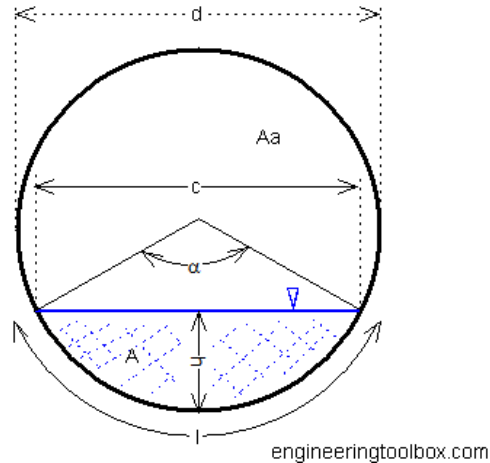
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The calculator outputs

- the liquid volume in the tank
- the liquid mass
- the central angle
- the chord length
- the arc length
- the cross sectional area of both liquid and air
- the air volume in the tank

The calculator is generic and can be used for common metric and imperial units as long as the values are based on the same units.

 inside diameter of tank or pipe - d - (m, ft, in)

 liquid level inside tank or pipe - h - (m, ft, in)

 liquid density - ρ - (kg/m³, lb/ft³, lb/in³)

 length of tank or pipe - L - (m, ft, in)

 slope of tank (degrees)

Horizontal (slope is zero) Tank or Pipe

- Liquid volume in tank or pipe - V : **6127** (m³, ft³, in³)
- Liquid fill - : **70.8** (% of max volume)
- Liquid mass in tank or pipe - m : **11887** (kg, lb)
- Angle - α : **219** (degrees)
- Chord Length - c : **5.66** (m, ft, in)
- Arc length - l : **11.5** (m, ft, in)
- Liquid cross sectional area - a : **20** (m², ft², in²)
- Air cross sectional area - Aa : **8.25** (m², ft², in²)
- Air volume in tank or pipe - Va : **2525** (m³, ft³, in³)
- Total volume in tank or pipe - : **8652** (m³, ft³, in³)

Sloped Tank or Pipe

- Slope : **0.281** degrees
- Liquid Volume : **4781** (m³, ft³, in³)
- Air Volume : **3871** (m³, ft³, in³)
- Total Volume : **8652** (m³, ft³, in³)
- Liquid mass in tank or pipe - m : **9275** (kg, lb)

Side-view of the Cylindrical Tank or Pipe

The figure redraws when the parameters in the calculator are changed and calculated.

The Engineering ToolBox Volume of Partly Filled "Horizontal" Sloped Cylindrical Tank or Pipe

Liquid Volume : 4780.8
Air Volume : 3871.1
Total Volume : 8651.9

liquid level



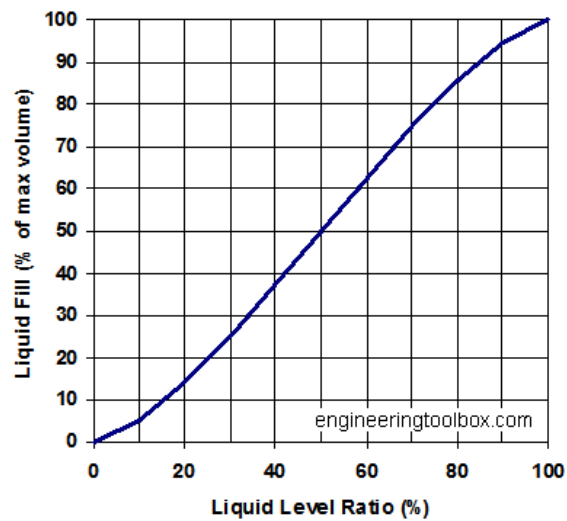
Slope = 0.3 degrees, Diameter = 6, Length = 306

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Liquid Level and Volume in a Horizontal Tank or Pipe

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Content of Horizontal - or Sloped - Cylindrical Tank and Pipe

Volume of partly filled horizontal or sloped cylindrical tanks and pipes - an online calculator

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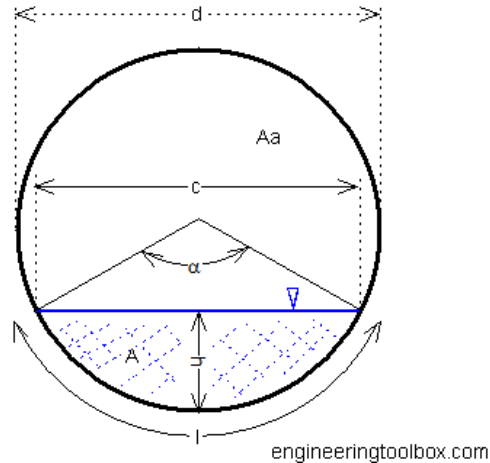
2019 TAHOE

FIRST-CLASS COMFORT

*Important Info



The online calculator below can be used to calculate the volume and mass of liquid in a partly filled horizontal or sloped cylindrical tank if you know the inside diameter and the level of the liquid the tank. The calculator can also be used for partly filled circular pipes.



The calculator outputs

- the liquid volume in the tank
- the liquid mass
- the central angle
- the chord length
- the arc length
- the cross sectional area of both liquid and air
- the air volume in the tank

The calculator is generic and can be used for common metric and imperial units as long as the values are based on the same units.

 inside diameter of tank or pipe - d - (m, ft, in)

 liquid level inside tank or pipe - h - (m, ft, in)

 liquid density - ρ - (kg/m³, lb/ft³, lb/in³)

 length of tank or pipe - L - (m, ft, in)

 slope of tank (degrees)

Horizontal (slope is zero) Tank or Pipe

- Liquid volume in tank or pipe - V : **6127** (m³, ft³, in³)
- Liquid fill - : **70.8** (% of max volume)
- Liquid mass in tank or pipe - m : **11887** (kg, lb)
- Angle - α : **219** (degrees)
- Chord Length - c : **5.66** (m, ft, in)
- Arc length - l : **11.5** (m, ft, in)
- Liquid cross sectional area - a : **20** (m², ft², in²)
- Air cross sectional area - Aa : **8.25** (m², ft², in²)
- Air volume in tank or pipe - Va : **2525** (m³, ft³, in³)
- Total volume in tank or pipe - : **8652** (m³, ft³, in³)

Sloped Tank or Pipe

- Slope : **0.281** degrees
- Liquid Volume : **4781** (m³, ft³, in³)
- Air Volume : **3871** (m³, ft³, in³)
- Total Volume : **8652** (m³, ft³, in³)
- Liquid mass in tank or pipe - m : **9275** (kg, lb)

Side-view of the Cylindrical Tank or Pipe

The figure redraws when the parameters in the calculator are changed and calculated.

The Engineering ToolBox Volume of Partly Filled "Horizontal" Sloped Cylindrical Tank or Pipe

Liquid Volume : 4780.8
Air Volume : 3871.1
Total Volume : 8651.9

liquid level



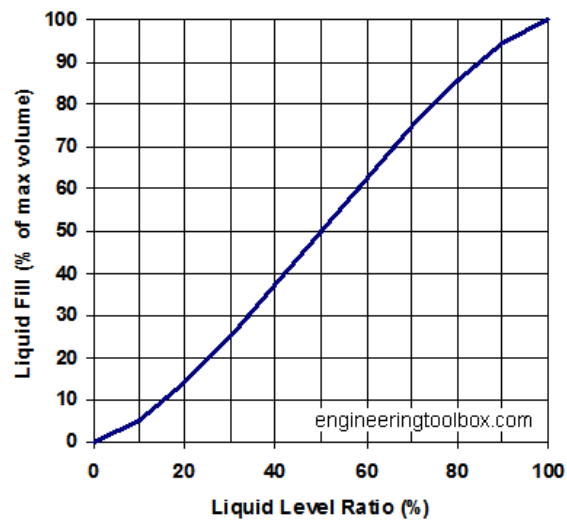
Slope = 0.3 degrees, Diameter = 6, Length = 306

http://www.engineeringtoolbox.com/content-cylindrical-tank-d_1301.html

• [Print or Save the Figure!](#)

Liquid Level and Volume in a Horizontal Tank or Pipe

The chart below can be used for horizontal tanks or pipes where the slope is zero.



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Related Topics

- [Mathematics](#) - Mathematical rules and laws - numbers, areas, volumes, exponents, trigonometric functions and more
- [Piping Systems](#) - Dimensions of pipes and tubes, materials and capacities, pressure drop calculations and charts, insulation and heat loss diagrams

Related Documents

- [Content of Pipes and Cylindrical Tanks](#) - Liquid volume in partly filled horizontal tanks or pipes
- [Excavation Slope](#) - Calculating excavation slope
- [Fuel Oil - Storage Tanks](#) - Dimensions of fuel oil storage tanks
- [Heat Loss from Oil Filled Tanks](#) - Heat loss from insulated and uninsulated, sheltered and exposed heated oil tanks
- [Heat Loss from Oil filled Tanks and Pipe Lines](#) - Heat loss from insulated and non insulated sheltered and exposed oil tanks and pipes
- [Heat Loss from Open Water Tanks](#) - Due to evaporation heat loss from open water tank as a swimming pools may be considerable
- [Pipes and Tubes - Water Content](#) - The water content in steel pipes and copper tubes
- [Rectangular Tanks - Volume](#) - Tank volume per foot depth
- [Septic Systems](#) - A septic system handles the waste from a drain system
- [Slope - Degree, Gradient and Grade Converter](#) - Converting slopes between degrees, gradients and grades

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Content of Horizontal - or Sloped - Cylindrical Tank and Pipe

Volume of partly filled horizontal or sloped cylindrical tanks and pipes - an online calculator

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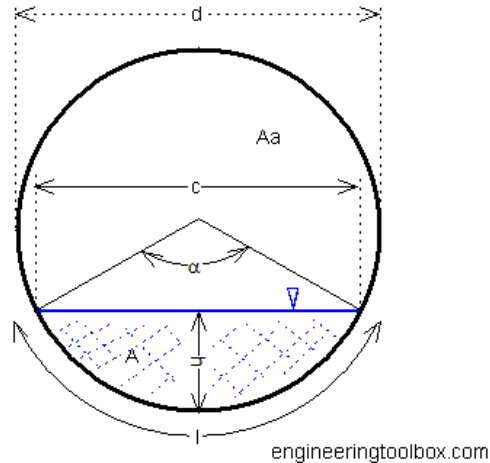
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- the liquid volume in the tank
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- the cross sectional area of both liquid and air
- the air volume in the tank

The calculator is generic and can be used for common metric and imperial units as long as the values are based on the same units.

 inside diameter of tank or pipe - d - (m, ft, in)

 liquid level inside tank or pipe - h - (m, ft, in)

 liquid density - ρ - (kg/m³, lb/ft³, lb/in³)

 length of tank or pipe - L - (m, ft, in)

 slope of tank (degrees)

Horizontal (slope is zero) Tank or Pipe

- Liquid volume in tank or pipe - V : **6127** (m³, ft³, in³)
- Liquid fill - : **70.8** (% of max volume)
- Liquid mass in tank or pipe - m : **11887** (kg, lb)
- Angle - α : **219** (degrees)
- Chord Length - c : **5.66** (m, ft, in)
- Arc length - l : **11.5** (m, ft, in)
- Liquid cross sectional area - a : **20** (m², ft², in²)
- Air cross sectional area - Aa : **8.25** (m², ft², in²)
- Air volume in tank or pipe - Va : **2525** (m³, ft³, in³)
- Total volume in tank or pipe - : **8652** (m³, ft³, in³)

Sloped Tank or Pipe

- Slope : **0.281** degrees
- Liquid Volume : **4781** (m³, ft³, in³)
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- Total Volume : **8652** (m³, ft³, in³)
- Liquid mass in tank or pipe - m : **9275** (kg, lb)

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The figure redraws when the parameters in the calculator are changed and calculated.

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liquid level



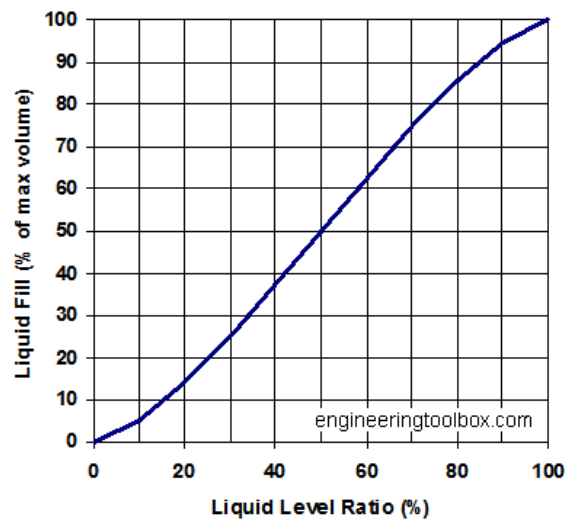
Slope = 0.3 degrees, Diameter = 6, Length = 306

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The chart below can be used for horizontal tanks or pipes where the slope is zero.



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APPENDIX C

RATIONAL METHOD CALCULATIONS

100-Year Rational Method Calculations

***100-Year Rational Method Calculations
(Existing Condition)***

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2005 Version 7.1
Rational Hydrology Study Date: 03/12/19

BASIN A & BASIN D
EXISTING CONDITIONS
100 YR STORM 1HR

Program License Serial Number 6094

***** Hydrology Study Control Information *****

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.400 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 3

+++++
Process from Point/Station 10.000 to Point/Station 11.000
**** INITIAL AREA EVALUATION ****

RESIDENTIAL(3 - 4 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.6000 Max loss rate(Fm)= 0.264(In/Hr)
Initial subarea data:
Initial area flow distance = 168.000(Ft.)
Top (of initial area) elevation = 603.600(Ft.)
Bottom (of initial area) elevation = 602.000(Ft.)
Difference in elevation = 1.600(Ft.)
Slope = 0.00952 s(%)= 0.95
 $TC = k(0.412)*[(length^3)/(elevation\ change)]^{0.2}$
Initial area time of concentration = 8.114 min.
Rainfall intensity = 4.650(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.849
Subarea runoff = 7.027(CFS)
Total initial stream area = 1.780(Ac.)
Pervious area fraction = 0.600
Initial area Fm value = 0.264(In/Hr)

+++++
Process from Point/Station 11.000 to Point/Station 12.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

Depth of flow = 0.137(Ft.), Average velocity = 1.420(Ft/s)
***** Irregular Channel Data *****

Information entered for subchannel number 1 :

Point number	'X' coordinate	'Y' coordinate
1	0.00	0.38
2	100.00	0.00
3	200.00	0.38

Manning's 'N' friction factor = 0.025

Sub-Channel flow = 7.027(CFS)
' ' flow top width = 72.179(Ft.)
' ' velocity = 1.420(Ft/s)
' ' area = 4.949(Sq.Ft)
' ' Froude number = 0.955

Upstream point elevation = 602.000(Ft.)
Downstream point elevation = 593.300(Ft.)
Flow length = 428.000(Ft.)
Travel time = 5.02 min.
Time of concentration = 13.14 min.
Depth of flow = 0.137(Ft.)
Average velocity = 1.420(Ft/s)
Total irregular channel flow = 7.027(CFS)
Irregular channel normal depth above invert elev. = 0.137(Ft.)
Average velocity of channel(s) = 1.420(Ft/s)

+++++
Process from Point/Station 11.000 to Point/Station 12.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:

In Main Stream number: 1
Stream flow area = 1.780(Ac.)
Runoff from this stream = 7.027(CFS)
Time of concentration = 13.14 min.
Rainfall intensity = 3.482(In/Hr)
Area averaged loss rate (Fm) = 0.2640(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6000
Program is now starting with Main Stream No. 2

+++++
Process from Point/Station 11.000 to Point/Station 12.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Adjusted SCS curve number for AMC 3 = 86.20
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.262(In/Hr)
Initial subarea data:
Initial area flow distance = 428.000(Ft.)
Top (of initial area) elevation = 602.000(Ft.)
Bottom (of initial area) elevation = 593.300(Ft.)
Difference in elevation = 8.700(Ft.)

Slope = 0.02033 s(%)= 2.03
 TC = $k(0.706)*[(\text{length}^3)/(\text{elevation change})]^{0.2}$
 Initial area time of concentration = 17.369 min.
 Rainfall intensity = 2.945(In/Hr) for a 100.0 year storm
 Effective runoff coefficient used for area (Q=KCIA) is C = 0.820
 Subarea runoff = 10.049(CFS)
 Total initial stream area = 4.160(Ac.)
 Pervious area fraction = 1.000
 Initial area Fm value = 0.262(In/Hr)

++++++
 Process from Point/Station 11.000 to Point/Station 12.000
 **** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:

In Main Stream number: 2

Stream flow area = 4.160(Ac.)
 Runoff from this stream = 10.049(CFS)
 Time of concentration = 17.37 min.
 Rainfall intensity = 2.945(In/Hr)
 Area averaged loss rate (Fm) = 0.2615(In/Hr)
 Area averaged Pervious ratio (Ap) = 1.0000

Summary of stream data:

Stream No.	Flow rate (CFS)	Area (Ac.)	TC (min)	Fm (In/Hr)	Rainfall Intensity (In/Hr)
1	7.03	1.780	13.14	0.264	3.482
2	10.05	4.160	17.37	0.262	2.945

Qmax(1) =
 1.000 * 1.000 * 7.027) +
 1.200 * 0.756 * 10.049) + = 16.149

Qmax(2) =
 0.833 * 1.000 * 7.027) +
 1.000 * 1.000 * 10.049) + = 15.903

Total of 2 main streams to confluence:

Flow rates before confluence point:

8.027 11.049

Maximum flow rates at confluence using above data:

16.149 15.903

Area of streams before confluence:

1.780 4.160

Effective area values after confluence:

4.927 5.940

Results of confluence:

Total flow rate = 16.149(CFS)
 Time of concentration = 13.139 min.
 Effective stream area after confluence = 4.927(Ac.)
 Study area average Pervious fraction(Ap) = 0.880
 Study area average soil loss rate(Fm) = 0.262(In/Hr)
 Study area total = 5.94(Ac.)

++++++
 Process from Point/Station 12.000 to Point/Station 13.000

**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

Depth of flow = 0.245(Ft.), Average velocity = 1.022(Ft/s)
 ***** Irregular Channel Data *****

Information entered for subchannel number 1 :

Point number	'X' coordinate	'Y' coordinate
1	0.00	0.38
2	100.00	0.00
3	200.00	0.38

Manning's 'N' friction factor = 0.025

Sub-Channel flow = 16.149(CFS)
 ' ' flow top width = 128.988(Ft.)
 ' ' velocity = 1.022(Ft/s)
 ' ' area = 15.806(Sq.Ft)
 ' ' Froude number = 0.514

Upstream point elevation = 593.300(Ft.)
 Downstream point elevation = 590.800(Ft.)
 Flow length = 515.000(Ft.)
 Travel time = 8.40 min.
 Time of concentration = 21.54 min.
 Depth of flow = 0.245(Ft.)
 Average velocity = 1.022(Ft/s)
 Total irregular channel flow = 16.149(CFS)
 Irregular channel normal depth above invert elev. = 0.245(Ft.)
 Average velocity of channel(s) = 1.022(Ft/s)

+++++
 Process from Point/Station 12.000 to Point/Station 13.000
 **** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:

In Main Stream number: 1
 Stream flow area = 4.927(Ac.)
 Runoff from this stream = 16.149(CFS)
 Time of concentration = 21.54 min.
 Rainfall intensity = 2.589(In/Hr)
 Area averaged loss rate (Fm) = 0.2622(In/Hr)
 Area averaged Pervious ratio (Ap) = 0.8801
 Program is now starting with Main Stream No. 2

+++++
 Process from Point/Station 12.000 to Point/Station 13.000
 **** INITIAL AREA EVALUATION ****

UNDEVELOPED (average cover) subarea
 Decimal fraction soil group A = 0.000
 Decimal fraction soil group B = 1.000
 Decimal fraction soil group C = 0.000
 Decimal fraction soil group D = 0.000
 SCS curve number for soil(AMC 2) = 69.00
 Adjusted SCS curve number for AMC 3 = 86.20
 Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.262(In/Hr)
 Initial subarea data:
 Initial area flow distance = 515.000(Ft.)
 Top (of initial area) elevation = 593.300(Ft.)

Bottom (of initial area) elevation = 590.800 (Ft.)
 Difference in elevation = 2.500 (Ft.)
 Slope = 0.00485 s(%) = 0.49
 $TC = k(0.706) * [(length^3) / (elevation\ change)]^{0.2}$
 Initial area time of concentration = 24.906 min.
 Rainfall intensity = 2.373 (In/Hr) for a 100.0 year storm
 Effective runoff coefficient used for area (Q=KCIA) is C = 0.801
 Subarea runoff = 9.234 (CFS)
 Total initial stream area = 4.860 (Ac.)
 Pervious area fraction = 1.000
 Initial area Fm value = 0.262 (In/Hr)

++++++
 Process from Point/Station 12.000 to Point/Station 13.000
 **** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:

In Main Stream number: 2
 Stream flow area = 4.860 (Ac.)
 Runoff from this stream = 9.234 (CFS)
 Time of concentration = 24.91 min.
 Rainfall intensity = 2.373 (In/Hr)
 Area averaged loss rate (Fm) = 0.2615 (In/Hr)
 Area averaged Pervious ratio (Ap) = 1.0000
 Summary of stream data:

Stream No.	Flow rate (CFS)	Area (Ac.)	TC (min)	Fm (In/Hr)	Rainfall Intensity (In/Hr)
1	16.15	4.927	21.54	0.262	2.589
2	9.23	4.860	24.91	0.262	2.373

Qmax(1) =
 1.000 * 1.000 * 16.149) +
 1.102 * 0.865 * 9.234) + = 24.952
 Qmax(2) =
 0.907 * 1.000 * 16.149) +
 1.000 * 1.000 * 9.234) + = 23.884

Total of 2 main streams to confluence:
 Flow rates before confluence point:
 17.149 10.234
 Maximum flow rates at confluence using above data:
 24.952 23.884
 Area of streams before confluence:
 4.927 4.860
 Effective area values after confluence:
 9.130 9.787

Results of confluence:
 Total flow rate = 24.952 (CFS)
 Time of concentration = 21.540 min.
 Effective stream area after confluence = 9.130 (Ac.)
 Study area average Pervious fraction (Ap) = 0.940
 Study area average soil loss rate (Fm) = 0.262 (In/Hr)
 Study area total = 9.79 (Ac.)

+++++
Process from Point/Station 13.000 to Point/Station 14.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

Depth of flow = 0.282(Ft.), Average velocity = 1.190(Ft/s)
***** Irregular Channel Data *****

Information entered for subchannel number 1 :
Point number 'X' coordinate 'Y' coordinate
 1 0.00 0.38
 2 100.00 0.00
 3 200.00 0.38
Manning's 'N' friction factor = 0.025

Sub-Channel flow = 24.952(CFS)
 ' ' flow top width = 148.566(Ft.)
 ' ' velocity= 1.190(Ft/s)
 ' ' area = 20.968(Sq.Ft)
 ' ' Froude number = 0.558

Upstream point elevation = 590.800(Ft.)
Downstream point elevation = 589.900(Ft.)
Flow length = 165.000(Ft.)
Travel time = 2.31 min.
Time of concentration = 23.85 min.
Depth of flow = 0.282(Ft.)
Average velocity = 1.190(Ft/s)
Total irregular channel flow = 24.952(CFS)
Irregular channel normal depth above invert elev. = 0.282(Ft.)
Average velocity of channel(s) = 1.190(Ft/s)

+++++
Process from Point/Station 13.000 to Point/Station 14.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area = 9.130(Ac.)
Runoff from this stream = 24.952(CFS)
Time of concentration = 23.85 min.
Rainfall intensity = 2.435(In/Hr)
Area averaged loss rate (Fm) = 0.2619(In/Hr)
Area averaged Pervious ratio (Ap) = 0.9397
Program is now starting with Main Stream No. 2

+++++
Process from Point/Station 13.000 to Point/Station 14.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Adjusted SCS curve number for AMC 3 = 86.20
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.262(In/Hr)
Initial subarea data:

Initial area flow distance = 165.000 (Ft.)
 Top (of initial area) elevation = 590.800 (Ft.)
 Bottom (of initial area) elevation = 589.900 (Ft.)
 Difference in elevation = 0.900 (Ft.)
 Slope = 0.00545 s(%) = 0.55
 $TC = k(0.706) * [(length^3) / (elevation\ change)]^{0.2}$
 Initial area time of concentration = 15.433 min.
 Rainfall intensity = 3.162 (In/Hr) for a 100.0 year storm
 Effective runoff coefficient used for area (Q=KCIA) is C = 0.826
 Subarea runoff = 22.867 (CFS)
 Total initial stream area = 8.760 (Ac.)
 Pervious area fraction = 1.000
 Initial area Fm value = 0.262 (In/Hr)

++++++
 Process from Point/Station 13.000 to Point/Station 14.000
 **** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:

In Main Stream number: 2
 Stream flow area = 8.760 (Ac.)
 Runoff from this stream = 22.867 (CFS)
 Time of concentration = 15.43 min.
 Rainfall intensity = 3.162 (In/Hr)
 Area averaged loss rate (Fm) = 0.2615 (In/Hr)
 Area averaged Pervious ratio (Ap) = 1.0000
 Summary of stream data:

Stream No.	Flow rate (CFS)	Area (Ac.)	TC (min)	Fm (In/Hr)	Rainfall Intensity (In/Hr)
------------	-----------------	------------	----------	------------	----------------------------

1	24.95	9.130	23.85	0.262	2.435
2	22.87	8.760	15.43	0.262	3.162

Qmax(1) =
 $1.000 * 1.000 * 24.952) +$
 $0.749 * 1.000 * 22.867) + = 42.089$
 Qmax(2) =
 $1.334 * 0.647 * 24.952) +$
 $1.000 * 1.000 * 22.867) + = 44.412$

Total of 2 main streams to confluence:

Flow rates before confluence point:

25.952 23.867

Maximum flow rates at confluence using above data:

42.089 44.412

Area of streams before confluence:

9.130 8.760

Effective area values after confluence:

17.890 14.668

Results of confluence:

Total flow rate = 44.412 (CFS)

Time of concentration = 15.433 min.

Effective stream area after confluence = 14.668 (Ac.)

Study area average Pervious fraction (Ap) = 0.969

Study area average soil loss rate (Fm) = 0.262 (In/Hr)

Study area total = 17.89 (Ac.)

+++++
Process from Point/Station 14.000 to Point/Station 15.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

Depth of flow = 0.360 (Ft.), Average velocity = 1.302 (Ft/s)
***** Irregular Channel Data *****

Information entered for subchannel number 1 :
Point number 'X' coordinate 'Y' coordinate
 1 0.00 0.38
 2 100.00 0.00
 3 200.00 0.38
Manning's 'N' friction factor = 0.025

Sub-Channel flow = 44.413 (CFS)
' ' flow top width = 189.477 (Ft.)
' ' velocity = 1.302 (Ft/s)
' ' area = 34.106 (Sq.Ft)
' ' Froude number = 0.541

Upstream point elevation = 589.900 (Ft.)
Downstream point elevation = 588.200 (Ft.)
Flow length = 360.000 (Ft.)
Travel time = 4.61 min.
Time of concentration = 20.04 min.
Depth of flow = 0.360 (Ft.)
Average velocity = 1.302 (Ft/s)
Total irregular channel flow = 44.412 (CFS)
Irregular channel normal depth above invert elev. = 0.360 (Ft.)
Average velocity of channel(s) = 1.302 (Ft/s)

+++++
Process from Point/Station 14.000 to Point/Station 15.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area = 14.668 (Ac.)
Runoff from this stream = 44.412 (CFS)
Time of concentration = 20.04 min.
Rainfall intensity = 2.703 (In/Hr)
Area averaged loss rate (Fm) = 0.2617 (In/Hr)
Area averaged Pervious ratio (Ap) = 0.9692
Program is now starting with Main Stream No. 2

+++++
Process from Point/Station 14.000 to Point/Station 15.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil (AMC 2) = 69.00
Adjusted SCS curve number for AMC 3 = 86.20

Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.262(In/Hr)
 Initial subarea data:
 Initial area flow distance = 360.000(Ft.)
 Top (of initial area) elevation = 589.900(Ft.)
 Bottom (of initial area) elevation = 588.200(Ft.)
 Difference in elevation = 1.700(Ft.)
 Slope = 0.00472 s(%)= 0.47
 $TC = k(0.706)*[(length^3)/(elevation\ change)]^{0.2}$
 Initial area time of concentration = 21.702 min.
 Rainfall intensity = 2.577(In/Hr) for a 100.0 year storm
 Effective runoff coefficient used for area (Q=KCIA) is C = 0.809
 Subarea runoff = 9.649(CFS)
 Total initial stream area = 4.630(Ac.)
 Pervious area fraction = 1.000
 Initial area Fm value = 0.262(In/Hr)

++++++
 Process from Point/Station 14.000 to Point/Station 15.000
 **** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:

In Main Stream number: 2
 Stream flow area = 4.630(Ac.)
 Runoff from this stream = 9.649(CFS)
 Time of concentration = 21.70 min.
 Rainfall intensity = 2.577(In/Hr)
 Area averaged loss rate (Fm) = 0.2615(In/Hr)
 Area averaged Pervious ratio (Ap) = 1.0000
 Summary of stream data:

Stream No.	Flow rate (CFS)	Area (Ac.)	TC (min)	Fm (In/Hr)	Rainfall Intensity (In/Hr)
1	44.41	14.668	20.04	0.262	2.703
2	9.65	4.630	21.70	0.262	2.577

Qmax(1) =
 1.000 * 1.000 * 44.412) +
 1.054 * 0.923 * 9.649) + = 53.808
 Qmax(2) =
 0.948 * 1.000 * 44.412) +
 1.000 * 1.000 * 9.649) + = 51.767

Total of 2 main streams to confluence:
 Flow rates before confluence point:
 45.412 10.649
 Maximum flow rates at confluence using above data:
 53.808 51.767
 Area of streams before confluence:
 14.668 4.630
 Effective area values after confluence:
 18.943 19.298

Results of confluence:
 Total flow rate = 53.808(CFS)
 Time of concentration = 20.041 min.
 Effective stream area after confluence = 18.943(Ac.)
 Study area average Pervious fraction(Ap) = 0.977

Study area average soil loss rate(Fm) = 0.262(In/Hr)
Study area total = 19.30(Ac.)

+++++
Process from Point/Station 15.000 to Point/Station 16.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

Depth of flow = 0.353(Ft.), Average velocity = 1.638(Ft/s)
***** Irregular Channel Data *****

Information entered for subchannel number 1 :
Point number 'X' coordinate 'Y' coordinate
1 0.00 0.38
2 100.00 0.00
3 200.00 0.38
Manning's 'N' friction factor = 0.025

Sub-Channel flow = 53.808(CFS)
' ' flow top width = 185.947(Ft.)
' ' velocity= 1.638(Ft/s)
' ' area = 32.847(Sq.Ft)
' ' Froude number = 0.687

Upstream point elevation = 588.200(Ft.)
Downstream point elevation = 584.200(Ft.)
Flow length = 522.000(Ft.)
Travel time = 5.31 min.
Time of concentration = 25.35 min.
Depth of flow = 0.353(Ft.)
Average velocity = 1.638(Ft/s)
Total irregular channel flow = 53.808(CFS)
Irregular channel normal depth above invert elev. = 0.353(Ft.)
Average velocity of channel(s) = 1.638(Ft/s)

+++++
Process from Point/Station 15.000 to Point/Station 16.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area = 18.943(Ac.)
Runoff from this stream = 53.808(CFS)
Time of concentration = 25.35 min.
Rainfall intensity = 2.348(In/Hr)
Area averaged loss rate (Fm) = 0.2617(In/Hr)
Area averaged Pervious ratio (Ap) = 0.9766
Program is now starting with Main Stream No. 2

+++++
Process from Point/Station 15.000 to Point/Station 16.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000

SCS curve number for soil(AMC 2) = 69.00
Adjusted SCS curve number for AMC 3 = 86.20
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.262(In/Hr)
Initial subarea data:
Initial area flow distance = 522.000(Ft.)
Top (of initial area) elevation = 588.200(Ft.)
Bottom (of initial area) elevation = 584.200(Ft.)
Difference in elevation = 4.000(Ft.)
Slope = 0.00766 s(%)= 0.77
 $TC = k(0.706)*[(length^3)/(elevation\ change)]^{0.2}$
Initial area time of concentration = 22.856 min.
Rainfall intensity = 2.498(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.806
Subarea runoff = 17.090(CFS)
Total initial stream area = 8.490(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.262(In/Hr)

+++++
Process from Point/Station 15.000 to Point/Station 16.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:

In Main Stream number: 2
Stream flow area = 8.490(Ac.)
Runoff from this stream = 17.090(CFS)
Time of concentration = 22.86 min.
Rainfall intensity = 2.498(In/Hr)
Area averaged loss rate (Fm) = 0.2615(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Summary of stream data:

Stream No.	Flow rate (CFS)	Area (Ac.)	TC (min)	Fm (In/Hr)	Rainfall Intensity (In/Hr)
------------	-----------------	------------	----------	------------	----------------------------

1	53.81	18.943	25.35	0.262	2.348
2	17.09	8.490	22.86	0.262	2.498

Qmax(1) =
1.000 * 1.000 * 53.808) +
0.933 * 1.000 * 17.090) + = 69.747

Qmax(2) =
1.072 * 0.902 * 53.808) +
1.000 * 1.000 * 17.090) + = 69.103

Total of 2 main streams to confluence:

Flow rates before confluence point:

54.808 18.090

Maximum flow rates at confluence using above data:

69.747 69.103

Area of streams before confluence:

18.943 8.490

Effective area values after confluence:

27.433 25.568

Results of confluence:

Total flow rate = 69.747(CFS)

Time of concentration = 25.352 min.

Effective stream area after confluence = 27.433(Ac.)
Study area average Pervious fraction(Ap) = 0.984
Study area average soil loss rate(Fm) = 0.262(In/Hr)
Study area total = 27.43(Ac.)

+++++
Process from Point/Station 16.000 to Point/Station 17.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

Depth of flow = 0.307(Ft.), Average velocity = 2.813(Ft/s)
***** Irregular Channel Data *****

Information entered for subchannel number 1 :
Point number 'X' coordinate 'Y' coordinate
1 0.00 0.38
2 100.00 0.00
3 200.00 0.38
Manning's 'N' friction factor = 0.025

Sub-Channel flow = 69.748(CFS)
' ' flow top width = 161.567(Ft.)
' ' velocity= 2.813(Ft/s)
' ' area = 24.799(Sq.Ft)
' ' Froude number = 1.265

Upstream point elevation = 584.200(Ft.)
Downstream point elevation = 575.400(Ft.)
Flow length = 323.000(Ft.)
Travel time = 1.91 min.
Time of concentration = 27.27 min.
Depth of flow = 0.307(Ft.)
Average velocity = 2.813(Ft/s)
Total irregular channel flow = 69.747(CFS)
Irregular channel normal depth above invert elev. = 0.307(Ft.)
Average velocity of channel(s) = 2.813(Ft/s)

+++++
Process from Point/Station 16.000 to Point/Station 17.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area = 27.433(Ac.)
Runoff from this stream = 69.747(CFS)
Time of concentration = 27.27 min.
Rainfall intensity = 2.247(In/Hr)
Area averaged loss rate (Fm) = 0.2616(In/Hr)
Area averaged Pervious ratio (Ap) = 0.9838
Program is now starting with Main Stream No. 2

+++++
Process from Point/Station 16.000 to Point/Station 17.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000

Decimal fraction soil group C = 0.000
 Decimal fraction soil group D = 0.000
 SCS curve number for soil(AMC 2) = 69.00
 Adjusted SCS curve number for AMC 3 = 86.20
 Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.262(In/Hr)
 Initial subarea data:
 Initial area flow distance = 323.000(Ft.)
 Top (of initial area) elevation = 584.200(Ft.)
 Bottom (of initial area) elevation = 575.400(Ft.)
 Difference in elevation = 8.800(Ft.)
 Slope = 0.02724 s(%)= 2.72
 $TC = k(0.706)*[(length^3)/(elevation\ change)]^{0.2}$
 Initial area time of concentration = 14.636 min.
 Rainfall intensity = 3.264(In/Hr) for a 100.0 year storm
 Effective runoff coefficient used for area (Q=KCIA) is C = 0.828
 Subarea runoff = 20.186(CFS)
 Total initial stream area = 7.470(Ac.)
 Pervious area fraction = 1.000
 Initial area Fm value = 0.262(In/Hr)

++++++
 Process from Point/Station 16.000 to Point/Station 17.000
 **** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:

In Main Stream number: 2
 Stream flow area = 7.470(Ac.)
 Runoff from this stream = 20.186(CFS)
 Time of concentration = 14.64 min.
 Rainfall intensity = 3.264(In/Hr)
 Area averaged loss rate (Fm) = 0.2615(In/Hr)
 Area averaged Pervious ratio (Ap) = 1.0000
 Summary of stream data:

Stream No.	Flow rate (CFS)	Area (Ac.)	TC (min)	Fm (In/Hr)	Rainfall Intensity (In/Hr)
1	69.75	27.433	27.27	0.262	2.247
2	20.19	7.470	14.64	0.262	3.264

Qmax(1) =
 1.000 * 1.000 * 69.747) +
 0.661 * 1.000 * 20.186) + = 83.097
 Qmax(2) =
 1.512 * 0.537 * 69.747) +
 1.000 * 1.000 * 20.186) + = 76.800

Total of 2 main streams to confluence:

Flow rates before confluence point:

 70.747 21.186

Maximum flow rates at confluence using above data:

 83.097 76.800

Area of streams before confluence:

 27.433 7.470

Effective area values after confluence:

 34.903 22.196

Results of confluence:

Total flow rate = 83.097(CFS)
Time of concentration = 27.266 min.
Effective stream area after confluence = 34.903(Ac.)
Study area average Pervious fraction(A_p) = 0.987
Study area average soil loss rate(F_m) = 0.262(In/Hr)
Study area total = 34.90(Ac.)
End of computations, Total Study Area = 40.15 (Ac.)

The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(A_p) = 0.982
Area averaged SCS curve number = 68.4

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2005 Version 7.1
Rational Hydrology Study Date: 01/12/18

BASIN B & BASIN E
EXISTING CONDITIONS
100 YR STORM 1HR

Program License Serial Number 6094

***** Hydrology Study Control Information *****

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.400 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 3

+++++
Process from Point/Station 1.000 to Point/Station 2.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil (AMC 2) = 69.00
Adjusted SCS curve number for AMC 3 = 86.20
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.262(In/Hr)
Initial subarea data:
Initial area flow distance = 311.000(Ft.)
Top (of initial area) elevation = 600.500(Ft.)
Bottom (of initial area) elevation = 595.300(Ft.)
Difference in elevation = 5.200(Ft.)
Slope = 0.01672 s(%)= 1.67
 $TC = k(0.706)*[(length^3)/(elevation\ change)]^{0.2}$
Initial area time of concentration = 15.895 min.
Rainfall intensity = 3.106(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.824
Subarea runoff = 5.633(CFS)
Total initial stream area = 2.200(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.262(In/Hr)

+++++
Process from Point/Station 2.000 to Point/Station 3.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

BASIN B & E
EXIST.
100 YR

Depth of flow = 0.082(Ft.), Average velocity = 1.253(Ft/s)

***** Irregular Channel Data *****

Information entered for subchannel number 1 :

Point number	'X' coordinate	'Y' coordinate
1	0.00	1.00
2	62.00	0.00
3	112.00	0.00
4	164.00	1.00

Manning's 'N' friction factor = 0.020

Sub-Channel flow = 5.633(CFS)
' ' flow top width = 59.371(Ft.)
' ' velocity= 1.253(Ft/s)
' ' area = 4.495(Sq.Ft)
' ' Froude number = 0.803

Upstream point elevation = 595.300(Ft.)

Downstream point elevation = 592.600(Ft.)

Flow length = 304.000(Ft.)

Travel time = 4.04 min.

Time of concentration = 19.94 min.

Depth of flow = 0.082(Ft.)

Average velocity = 1.253(Ft/s)

Total irregular channel flow = 5.633(CFS)

Irregular channel normal depth above invert elev. = 0.082(Ft.)

Average velocity of channel(s) = 1.253(Ft/s)

+++++

Process from Point/Station 2.000 to Point/Station 3.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:

In Main Stream number: 1

Stream flow area = 2.200(Ac.)

Runoff from this stream = 5.633(CFS)

Time of concentration = 19.94 min.

Rainfall intensity = 2.711(In/Hr)

Area averaged loss rate (Fm) = 0.2615(In/Hr)

Area averaged Pervious ratio (Ap) = 1.0000

Program is now starting with Main Stream No. 2

+++++

Process from Point/Station 2.000 to Point/Station 3.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (average cover) subarea

Decimal fraction soil group A = 0.000

Decimal fraction soil group B = 1.000

Decimal fraction soil group C = 0.000

Decimal fraction soil group D = 0.000

SCS curve number for soil(AMC 2) = 69.00

Adjusted SCS curve number for AMC 3 = 86.20

Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.262(In/Hr)

Initial subarea data:

Initial area flow distance = 304.000(Ft.)

Top (of initial area) elevation = 595.300(Ft.)

Bottom (of initial area) elevation = 592.600(Ft.)

Difference in elevation = 2.700(Ft.)
 Slope = 0.00888 s(%)= 0.89
 $TC = k(0.706) * [(length^3) / (elevation\ change)]^{0.2}$
 Initial area time of concentration = 17.875 min.
 Rainfall intensity = 2.895(In/Hr) for a 100.0 year storm
 Effective runoff coefficient used for area (Q=KCIA) is C = 0.819
 Subarea runoff = 10.619(CFS)
 Total initial stream area = 4.480(Ac.)
 Pervious area fraction = 1.000
 Initial area Fm value = 0.262(In/Hr)

++++++
 Process from Point/Station 2.000 to Point/Station 3.000
 **** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:

In Main Stream number: 2
 Stream flow area = 4.480(Ac.)
 Runoff from this stream = 10.619(CFS)
 Time of concentration = 17.88 min.
 Rainfall intensity = 2.895(In/Hr)
 Area averaged loss rate (Fm) = 0.2615(In/Hr)
 Area averaged Pervious ratio (Ap) = 1.0000
 Summary of stream data:

Stream No.	Flow rate (CFS)	Area (Ac.)	TC (min)	Fm (In/Hr)	Rainfall Intensity (In/Hr)
1	5.63	2.200	19.94	0.262	2.711
2	10.62	4.480	17.88	0.262	2.895

Qmax(1) =
 1.000 * 1.000 * 5.633) +
 0.930 * 1.000 * 10.619) + = 15.511
 Qmax(2) =
 1.075 * 0.897 * 5.633) +
 1.000 * 1.000 * 10.619) + = 16.047

Total of 2 main streams to confluence:

Flow rates before confluence point:

6.633 11.619

Maximum flow rates at confluence using above data:

15.511 16.047

Area of streams before confluence:

2.200 4.480

Effective area values after confluence:

6.680 6.452

Results of confluence:

Total flow rate = 16.047(CFS)

Time of concentration = 17.875 min.

Effective stream area after confluence = 6.452(Ac.)

Study area average Pervious fraction(Ap) = 1.000

Study area average soil loss rate(Fm) = 0.262(In/Hr)

Study area total = 6.68(Ac.)

+++++

Process from Point/Station 3.000 to Point/Station 4.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

Depth of flow = 0.158(Ft.), Average velocity = 1.716(Ft/s)
***** Irregular Channel Data *****

Information entered for subchannel number 1 :

Point number	'X' coordinate	'Y' coordinate
1	0.00	1.00
2	62.00	0.00
3	112.00	0.00
4	164.00	1.00

Manning's 'N' friction factor = 0.020

Sub-Channel flow = 16.048(CFS)
' ' flow top width = 68.059(Ft.)
' ' velocity = 1.716(Ft/s)
' ' area = 9.351(Sq.Ft)
' ' Froude number = 0.816

Upstream point elevation = 592.600(Ft.)
Downstream point elevation = 588.800(Ft.)
Flow length = 505.000(Ft.)
Travel time = 4.90 min.
Time of concentration = 22.78 min.
Depth of flow = 0.158(Ft.)
Average velocity = 1.716(Ft/s)
Total irregular channel flow = 16.047(CFS)
Irregular channel normal depth above invert elev. = 0.158(Ft.)
Average velocity of channel(s) = 1.716(Ft/s)

+++++
Process from Point/Station 3.000 to Point/Station 4.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:

In Main Stream number: 1
Stream flow area = 6.452(Ac.)
Runoff from this stream = 16.047(CFS)
Time of concentration = 22.78 min.
Rainfall intensity = 2.503(In/Hr)
Area averaged loss rate (Fm) = 0.2615(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Program is now starting with Main Stream No. 2

+++++
Process from Point/Station 3.000 to Point/Station 4.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Adjusted SCS curve number for AMC 3 = 86.20
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.262(In/Hr)
Initial subarea data:

Initial area flow distance = 505.000 (Ft.)
 Top (of initial area) elevation = 592.600 (Ft.)
 Bottom (of initial area) elevation = 588.800 (Ft.)
 Difference in elevation = 3.800 (Ft.)
 Slope = 0.00752 s(%) = 0.75
 $TC = k(0.706) * [(length^3) / (elevation\ change)]^{0.2}$
 Initial area time of concentration = 22.637 min.
 Rainfall intensity = 2.513 (In/Hr) for a 100.0 year storm
 Effective runoff coefficient used for area (Q=KCIA) is C = 0.806
 Subarea runoff = 16.593 (CFS)
 Total initial stream area = 8.190 (Ac.)
 Pervious area fraction = 1.000
 Initial area Fm value = 0.262 (In/Hr)

++++++
 Process from Point/Station 3.000 to Point/Station 4.000
 **** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:

In Main Stream number: 2
 Stream flow area = 8.190 (Ac.)
 Runoff from this stream = 16.593 (CFS)
 Time of concentration = 22.64 min.
 Rainfall intensity = 2.513 (In/Hr)
 Area averaged loss rate (Fm) = 0.2615 (In/Hr)
 Area averaged Pervious ratio (Ap) = 1.0000
 Summary of stream data:

Stream No.	Flow rate (CFS)	Area (Ac.)	TC (min)	Fm (In/Hr)	Rainfall Intensity (In/Hr)
1	16.05	6.452	22.78	0.262	2.503
2	16.59	8.190	22.64	0.262	2.513

Qmax(1) =
 1.000 * 1.000 * 16.047) +
 0.996 * 1.000 * 16.593) + = 32.570
 Qmax(2) =
 1.004 * 0.994 * 16.047) +
 1.000 * 1.000 * 16.593) + = 32.607

Total of 2 main streams to confluence:

Flow rates before confluence point:

17.047 17.593

Maximum flow rates at confluence using above data:

32.570 32.607

Area of streams before confluence:

6.452 8.190

Effective area values after confluence:

14.642 14.602

Results of confluence:

Total flow rate = 32.607 (CFS)

Time of concentration = 22.637 min.

Effective stream area after confluence = 14.602 (Ac.)

Study area average Pervious fraction (Ap) = 1.000

Study area average soil loss rate (Fm) = 0.262 (In/Hr)

Study area total = 14.64 (Ac.)

+++++
Process from Point/Station 4.000 to Point/Station 5.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

Depth of flow = 0.206(Ft.), Average velocity = 1.538(Ft/s)
***** Irregular Channel Data *****

Information entered for subchannel number 1 :
Point number 'X' coordinate 'Y' coordinate
 1 0.00 0.50
 2 250.00 0.00
 3 500.00 0.50
Manning's 'N' friction factor = 0.020

Sub-Channel flow = 32.607(CFS)
 ' ' flow top width = 205.946(Ft.)
 ' ' velocity= 1.538(Ft/s)
 ' ' area = 21.207(Sq.Ft)
 ' ' Froude number = 0.844

Upstream point elevation = 588.800(Ft.)
Downstream point elevation = 581.400(Ft.)
Flow length = 834.000(Ft.)
Travel time = 9.04 min.
Time of concentration = 31.68 min.
Depth of flow = 0.206(Ft.)
Average velocity = 1.538(Ft/s)
Total irregular channel flow = 32.607(CFS)
Irregular channel normal depth above invert elev. = 0.206(Ft.)
Average velocity of channel(s) = 1.538(Ft/s)

+++++
Process from Point/Station 4.000 to Point/Station 5.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area = 14.602(Ac.)
Runoff from this stream = 32.607(CFS)
Time of concentration = 31.68 min.
Rainfall intensity = 2.054(In/Hr)
Area averaged loss rate (Fm) = 0.2615(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Program is now starting with Main Stream No. 2

+++++
Process from Point/Station 4.000 to Point/Station 5.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Adjusted SCS curve number for AMC 3 = 86.20

Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.262(In/Hr)
 Initial subarea data:
 Initial area flow distance = 834.000(Ft.)
 Top (of initial area) elevation = 588.800(Ft.)
 Bottom (of initial area) elevation = 581.400(Ft.)
 Difference in elevation = 7.400(Ft.)
 Slope = 0.00887 s(%)= 0.89
 $TC = k(0.706) * [(length^3) / (elevation\ change)]^{0.2}$
 Initial area time of concentration = 26.771 min.
 Rainfall intensity = 2.272(In/Hr) for a 100.0 year storm
 Effective runoff coefficient used for area (Q=KCIA) is C = 0.796
 Subarea runoff = 15.417(CFS)
 Total initial stream area = 8.520(Ac.)
 Pervious area fraction = 1.000
 Initial area Fm value = 0.262(In/Hr)

++++++
 Process from Point/Station 4.000 to Point/Station 5.000
 **** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:

In Main Stream number: 2
 Stream flow area = 8.520(Ac.)
 Runoff from this stream = 15.417(CFS)
 Time of concentration = 26.77 min.
 Rainfall intensity = 2.272(In/Hr)
 Area averaged loss rate (Fm) = 0.2615(In/Hr)
 Area averaged Pervious ratio (Ap) = 1.0000
 Summary of stream data:

Stream No.	Flow rate (CFS)	Area (Ac.)	TC (min)	Fm (In/Hr)	Rainfall Intensity (In/Hr)
------------	-----------------	------------	----------	------------	----------------------------

1	32.61	14.602	31.68	0.262	2.054
2	15.42	8.520	26.77	0.262	2.272

Qmax(1) =
 1.000 * 1.000 * 32.607) +
 0.891 * 1.000 * 15.417) + = 46.350
 Qmax(2) =
 1.122 * 0.845 * 32.607) +
 1.000 * 1.000 * 15.417) + = 46.328

Total of 2 main streams to confluence:

Flow rates before confluence point:

 33.607 16.417

Maximum flow rates at confluence using above data:

 46.350 46.328

Area of streams before confluence:

 14.602 8.520

Effective area values after confluence:

 23.122 20.860

Results of confluence:

Total flow rate = 46.350(CFS)

Time of concentration = 31.677 min.

Effective stream area after confluence = 23.122(Ac.)

Study area average Pervious fraction(Ap) = 1.000

Study area average soil loss rate(Fm) = 0.262(In/Hr)
Study area total = 23.12(Ac.)

+++++
Process from Point/Station 5.000 to Point/Station 6.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

Depth of flow = 0.228(Ft.), Average velocity = 1.789(Ft/s)
***** Irregular Channel Data *****

Information entered for subchannel number 1 :
Point number 'X' coordinate 'Y' coordinate
1 0.00 0.50
2 250.00 0.00
3 500.00 0.50
Manning's 'N' friction factor = 0.020

Sub-Channel flow = 46.351(CFS)
' ' flow top width = 227.610(Ft.)
' ' velocity = 1.789(Ft/s)
' ' area = 25.903(Sq.Ft)
' ' Froude number = 0.935

Upstream point elevation = 581.400(Ft.)
Downstream point elevation = 575.500(Ft.)
Flow length = 561.000(Ft.)
Travel time = 5.23 min.
Time of concentration = 36.90 min.
Depth of flow = 0.228(Ft.)
Average velocity = 1.789(Ft/s)
Total irregular channel flow = 46.350(CFS)
Irregular channel normal depth above invert elev. = 0.228(Ft.)
Average velocity of channel(s) = 1.789(Ft/s)

+++++
Process from Point/Station 5.000 to Point/Station 6.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area = 23.122(Ac.)
Runoff from this stream = 46.350(CFS)
Time of concentration = 36.90 min.
Rainfall intensity = 1.874(In/Hr)
Area averaged loss rate (Fm) = 0.2615(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Program is now starting with Main Stream No. 2

+++++
Process from Point/Station 5.000 to Point/Station 6.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000

SCS curve number for soil(AMC 2) = 69.00
 Adjusted SCS curve number for AMC 3 = 86.20
 Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.262(In/Hr)
 Initial subarea data:
 Initial area flow distance = 561.000(Ft.)
 Top (of initial area) elevation = 581.400(Ft.)
 Bottom (of initial area) elevation = 575.500(Ft.)
 Difference in elevation = 5.900(Ft.)
 Slope = 0.01052 s(%)= 1.05
 $TC = k(0.706) * [(length^3)/(elevation\ change)]^{0.2}$
 Initial area time of concentration = 22.081 min.
 Rainfall intensity = 2.550(In/Hr) for a 100.0 year storm
 Effective runoff coefficient used for area (Q=KCIA) is C = 0.808
 Subarea runoff = 20.600(CFS)
 Total initial stream area = 10.000(Ac.)
 Pervious area fraction = 1.000
 Initial area Fm value = 0.262(In/Hr)

++++++
 Process from Point/Station 5.000 to Point/Station 6.000
 **** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:

In Main Stream number: 2
 Stream flow area = 10.000(Ac.)
 Runoff from this stream = 20.600(CFS)
 Time of concentration = 22.08 min.
 Rainfall intensity = 2.550(In/Hr)
 Area averaged loss rate (Fm) = 0.2615(In/Hr)
 Area averaged Pervious ratio (Ap) = 1.0000
 Summary of stream data:

Stream No.	Flow rate (CFS)	Area (Ac.)	TC (min)	Fm (In/Hr)	Rainfall Intensity (In/Hr)
------------	-----------------	------------	----------	------------	----------------------------

1	46.35	23.122	36.90	0.262	1.874
2	20.60	10.000	22.08	0.262	2.550

Qmax(1) =
 1.000 * 1.000 * 46.350) +
 0.705 * 1.000 * 20.600) + = 60.863

Qmax(2) =
 1.419 * 0.598 * 46.350) +
 1.000 * 1.000 * 20.600) + = 59.966

Total of 2 main streams to confluence:

Flow rates before confluence point:

47.350 21.600

Maximum flow rates at confluence using above data:

60.863 59.966

Area of streams before confluence:

23.122 10.000

Effective area values after confluence:

33.122 23.835

Results of confluence:

Total flow rate = 60.863(CFS)

Time of concentration = 36.903 min.

Effective stream area after confluence = 33.122 (Ac.)
Study area average Pervious fraction(A_p) = 1.000
Study area average soil loss rate(F_m) = 0.262 (In/Hr)
Study area total = 33.12 (Ac.)
End of computations, Total Study Area = 33.39 (Ac.)

The following figures may

be used for a unit hydrograph study of the same area.

Note: These figures do not consider reduced effective area effects caused by confluences in the rational equation.

Area averaged pervious area fraction(A_p) = 1.000

Area averaged SCS curve number = 69.0

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2005 Version 7.1
Rational Hydrology Study Date: 03/12/19

BASIN C
EXISTING CONDITIONS
100 YR STORM 1HR
100 YR STORM

Program License Serial Number 6094

***** Hydrology Study Control Information *****

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.400 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 3

+++++
Process from Point/Station 30.000 to Point/Station 31.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil (AMC 2) = 69.00
Adjusted SCS curve number for AMC 3 = 86.20
Pervious ratio (Ap) = 1.0000 Max loss rate (Fm) = 0.262 (In/Hr)
Initial subarea data:
Initial area flow distance = 311.000 (Ft.)
Top (of initial area) elevation = 597.000 (Ft.)
Bottom (of initial area) elevation = 594.000 (Ft.)
Difference in elevation = 3.000 (Ft.)
Slope = 0.00965 s(%) = 0.96
 $TC = k(0.706) * [(length^3) / (elevation\ change)]^{0.2}$
Initial area time of concentration = 17.743 min.
Rainfall intensity = 2.908 (In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.819
Subarea runoff = 3.787 (CFS)
Total initial stream area = 1.590 (Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.262 (In/Hr)

+++++
Process from Point/Station 31.000 to Point/Station 32.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

Estimated mean flow rate at midpoint of channel = 0.000(CFS)
Depth of flow = 0.151(Ft.), Average velocity = 1.465(Ft/s)
***** Irregular Channel Data *****

Information entered for subchannel number 1 :

Point number	'X' coordinate	'Y' coordinate
1	0.00	0.50
2	250.00	0.00
3	500.00	0.50

Manning's 'N' friction factor = 0.020

Sub-Channel flow = 16.722(CFS)
' ' flow top width = 151.072(Ft.)
' ' velocity= 1.465(Ft/s)
' ' area = 11.411(Sq.Ft)
' ' Froude number = 0.940

Upstream point elevation = 594.000(Ft.)
Downstream point elevation = 578.700(Ft.)
Flow length = 1256.000(Ft.)
Travel time = 14.29 min.
Time of concentration = 32.03 min.
Depth of flow = 0.151(Ft.)
Average velocity = 1.465(Ft/s)
Total irregular channel flow = 16.721(CFS)
Irregular channel normal depth above invert elev. = 0.151(Ft.)
Average velocity of channel(s) = 1.465(Ft/s)

Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Adjusted SCS curve number for AMC 3 = 86.20
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.262(In/Hr)
Rainfall intensity = 2.040(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified
rational method) (Q=KCIA) is C = 0.785
Subarea runoff = 25.781(CFS) for 16.880(Ac.)
Total runoff = 29.568(CFS)
Effective area this stream = 18.47(Ac.)
Total Study Area (Main Stream No. 1) = 18.47(Ac.)
Area averaged Fm value = 0.262(In/Hr)
Depth of flow = 0.187(Ft.), Average velocity = 1.690(Ft/s)

+++++
Process from Point/Station 31.000 to Point/Station 32.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:

In Main Stream number: 1
Stream flow area = 18.470(Ac.)
Runoff from this stream = 29.568(CFS)
Time of concentration = 32.03 min.
Rainfall intensity = 2.040(In/Hr)
Area averaged loss rate (Fm) = 0.2615(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Program is now starting with Main Stream No. 2

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+++++
Process from Point/Station      33.000 to Point/Station      34.000
**** INITIAL AREA EVALUATION ****

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UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Adjusted SCS curve number for AMC 3 = 86.20
Pervious ratio(Ap) = 1.0000      Max loss rate(Fm)=      0.262(In/Hr)
Initial subarea data:
Initial area flow distance = 275.000(Ft.)
Top (of initial area) elevation = 593.200(Ft.)
Bottom (of initial area) elevation = 591.500(Ft.)
Difference in elevation = 1.700(Ft.)
Slope = 0.00618 s(%)= 0.62
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 18.464 min.
Rainfall intensity = 2.839(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.817
Subarea runoff = 2.042(CFS)
Total initial stream area = 0.880(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.262(In/Hr)

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+++++
Process from Point/Station      34.000 to Point/Station      32.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

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Estimated mean flow rate at midpoint of channel = 0.000(CFS)
Depth of flow = 0.142(Ft.), Average velocity = 1.221(Ft/s)
***** Irregular Channel Data *****

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-----
Information entered for subchannel number 1 :
Point number      'X' coordinate      'Y' coordinate
      1              0.00              0.50
      2             250.00              0.00
      3             500.00              0.50
Manning's 'N' friction factor = 0.020
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```

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Sub-Channel flow = 12.338(CFS)
'      ' flow top width = 142.151(Ft.)
'      ' velocity= 1.221(Ft/s)
'      ' area = 10.103(Sq.Ft)
'      ' Froude number = 0.807

```

```

Upstream point elevation = 591.500(Ft.)
Downstream point elevation = 578.700(Ft.)
Flow length = 1395.000(Ft.)
Travel time = 19.04 min.
Time of concentration = 37.50 min.
Depth of flow = 0.142(Ft.)
Average velocity = 1.221(Ft/s)
Total irregular channel flow = 12.338(CFS)
Irregular channel normal depth above invert elev. = 0.142(Ft.)

```

Average velocity of channel(s) = 1.221(Ft/s)
 Adding area flow to channel
 UNDEVELOPED (average cover) subarea
 Decimal fraction soil group A = 0.000
 Decimal fraction soil group B = 1.000
 Decimal fraction soil group C = 0.000
 Decimal fraction soil group D = 0.000
 SCS curve number for soil(AMC 2) = 69.00
 Adjusted SCS curve number for AMC 3 = 86.20
 Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.262(In/Hr)
 Rainfall intensity = 1.856(In/Hr) for a 100.0 year storm
 Effective runoff coefficient used for area, (total area with modified
 rational method) (Q=KCIA) is C = 0.773
 Subarea runoff = 20.503(CFS) for 14.830(Ac.)
 Total runoff = 22.545(CFS)
 Effective area this stream = 15.71(Ac.)
 Total Study Area (Main Stream No. 2) = 34.18(Ac.)
 Area averaged Fm value = 0.262(In/Hr)
 Depth of flow = 0.178(Ft.), Average velocity = 1.420(Ft/s)

++++++
 Process from Point/Station 34.000 to Point/Station 32.000
 **** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:

In Main Stream number: 2
 Stream flow area = 15.710(Ac.)
 Runoff from this stream = 22.545(CFS)
 Time of concentration = 37.50 min.
 Rainfall intensity = 1.856(In/Hr)
 Area averaged loss rate (Fm) = 0.2615(In/Hr)
 Area averaged Pervious ratio (Ap) = 1.0000
 Summary of stream data:

Stream No.	Flow rate (CFS)	Area (Ac.)	TC (min)	Fm (In/Hr)	Rainfall Intensity (In/Hr)
1	29.57	18.470	32.03	0.262	2.040
2	22.54	15.710	37.50	0.262	1.856
Qmax(1) =					
	1.000 *	1.000 *	29.568)	+	
	1.116 *	0.854 *	22.545)	+	51.048
Qmax(2) =					
	0.896 *	1.000 *	29.568)	+	
	1.000 *	1.000 *	22.545)	+	49.050

Total of 2 main streams to confluence:

Flow rates before confluence point:

30.568 23.545

Maximum flow rates at confluence using above data:

51.048 49.050

Area of streams before confluence:

18.470 15.710

Effective area values after confluence:

31.887 34.180

Results of confluence:

Total flow rate = 51.048(CFS)
Time of concentration = 32.029 min.
Effective stream area after confluence = 31.887(Ac.)
Study area average Pervious fraction(Ap) = 1.000
Study area average soil loss rate(Fm) = 0.262(In/Hr)
Study area total = 34.18(Ac.)

+++++
Process from Point/Station 32.000 to Point/Station 35.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

Estimated mean flow rate at midpoint of channel = 0.000(CFS)
Depth of flow = 0.309(Ft.), Average velocity = 2.776(Ft/s)
***** Irregular Channel Data *****

Information entered for subchannel number 1 :
Point number 'X' coordinate 'Y' coordinate
1 0.00 1.00
2 62.00 0.00
3 112.00 0.00
4 164.00 1.00

Manning's 'N' friction factor = 0.025

Sub-Channel flow = 57.978(CFS)
' ' flow top width = 85.219(Ft.)
' ' velocity= 2.776(Ft/s)
' ' area = 20.888(Sq.Ft)
' ' Froude number = 0.988

Upstream point elevation = 578.700(Ft.)
Downstream point elevation = 566.700(Ft.)
Flow length = 844.000(Ft.)
Travel time = 5.07 min.
Time of concentration = 37.10 min.
Depth of flow = 0.309(Ft.)
Average velocity = 2.776(Ft/s)
Total irregular channel flow = 57.978(CFS)
Irregular channel normal depth above invert elev. = 0.309(Ft.)
Average velocity of channel(s) = 2.776(Ft/s)
Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Adjusted SCS curve number for AMC 3 = 86.20
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.262(In/Hr)
Rainfall intensity = 1.868(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified
rational method) (Q=KCIA) is C = 0.774
Subarea runoff = 13.800(CFS) for 12.960(Ac.)
Total runoff = 64.848(CFS)
Effective area this stream = 44.85(Ac.)
Total Study Area (Main Stream No. 1) = 47.14(Ac.)
Area averaged Fm value = 0.262(In/Hr)
Depth of flow = 0.328(Ft.), Average velocity = 2.873(Ft/s)

+++++
Process from Point/Station 32.000 to Point/Station 35.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:

In Main Stream number: 1
Stream flow area = 44.847 (Ac.)
Runoff from this stream = 64.848 (CFS)
Time of concentration = 37.10 min.
Rainfall intensity = 1.868 (In/Hr)
Area averaged loss rate (Fm) = 0.2615 (In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Program is now starting with Main Stream No. 2

+++++
Process from Point/Station 36.000 to Point/Station 37.000
**** INITIAL AREA EVALUATION ****

RESIDENTIAL(2.5 acre lot)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.9000 Max loss rate(Fm)= 0.396 (In/Hr)
Initial subarea data:
Initial area flow distance = 420.000 (Ft.)
Top (of initial area) elevation = 588.400 (Ft.)
Bottom (of initial area) elevation = 578.000 (Ft.)
Difference in elevation = 10.400 (Ft.)
Slope = 0.02476 s(%)= 2.48
TC = $k(0.487) * [(length^3)/(elevation\ change)]^{0.2}$
Initial area time of concentration = 11.431 min.
Rainfall intensity = 3.786 (In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.806
Subarea runoff = 5.949 (CFS)
Total initial stream area = 1.950 (Ac.)
Pervious area fraction = 0.900
Initial area Fm value = 0.396 (In/Hr)

+++++
Process from Point/Station 37.000 to Point/Station 35.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

Depth of flow = 0.240 (Ft.), Average velocity = 3.003 (Ft/s)
***** Irregular Channel Data *****

Information entered for subchannel number 1 :

Point number	'X' coordinate	'Y' coordinate
1	0.00	2.00
2	2.00	0.00
3	10.00	0.00
4	12.00	2.00

Manning's 'N' friction factor = 0.020

Sub-Channel flow = 5.950 (CFS)
' ' flow top width = 8.481 (Ft.)

' velocity= 3.003(Ft/s)
' area = 1.981(Sq.Ft)
' Froude number = 1.095

Upstream point elevation = 578.000(Ft.)
Downstream point elevation = 566.700(Ft.)
Flow length = 965.000(Ft.)
Travel time = 5.36 min.
Time of concentration = 16.79 min.
Depth of flow = 0.240(Ft.)
Average velocity = 3.003(Ft/s)
Total irregular channel flow = 5.949(CFS)
Irregular channel normal depth above invert elev. = 0.240(Ft.)
Average velocity of channel(s) = 3.003(Ft/s)

++++
Process from Point/Station 37.000 to Point/Station 35.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:

In Main Stream number: 2
Stream flow area = 1.950(Ac.)
Runoff from this stream = 5.949(CFS)
Time of concentration = 16.79 min.
Rainfall intensity = 3.006(In/Hr)
Area averaged loss rate (Fm) = 0.3959(In/Hr)
Area averaged Pervious ratio (Ap) = 0.9000
Program is now starting with Main Stream No. 3

++++
Process from Point/Station 38.000 to Point/Station 39.000
**** INITIAL AREA EVALUATION ****

RESIDENTIAL(3 - 4 dwl/acre)

Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.6000 Max loss rate(Fm)= 0.264(In/Hr)
Initial subarea data:
Initial area flow distance = 427.000(Ft.)
Top (of initial area) elevation = 586.000(Ft.)
Bottom (of initial area) elevation = 580.800(Ft.)
Difference in elevation = 5.200(Ft.)
Slope = 0.01218 s(%)= 1.22
TC = $k(0.412) * [(length^3)/(elevation\ change)]^{0.2}$
Initial area time of concentration = 11.219 min.
Rainfall intensity = 3.829(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.838
Subarea runoff = 8.758(CFS)
Total initial stream area = 2.730(Ac.)
Pervious area fraction = 0.600
Initial area Fm value = 0.264(In/Hr)

++++

Process from Point/Station 39.000 to Point/Station 35.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

Estimated mean flow rate at midpoint of channel = 0.000 (CFS)
Depth of flow = 0.567 (Ft.), Average velocity = 4.880 (Ft/s)
***** Irregular Channel Data *****

Information entered for subchannel number 1 :

Point number	'X' coordinate	'Y' coordinate
1	0.00	2.00
2	2.00	0.00
3	10.00	0.00
4	12.00	2.00

Manning's 'N' friction factor = 0.020

Sub-Channel flow = 23.686 (CFS)
' ' flow top width = 9.133 (Ft.)
' ' velocity = 4.880 (Ft/s)
' ' area = 4.854 (Sq.Ft)
' ' Froude number = 1.180

Upstream point elevation = 580.800 (Ft.)
Downstream point elevation = 566.700 (Ft.)
Flow length = 1316.000 (Ft.)
Travel time = 4.49 min.
Time of concentration = 15.71 min.
Depth of flow = 0.567 (Ft.)
Average velocity = 4.880 (Ft/s)
Total irregular channel flow = 23.686 (CFS)
Irregular channel normal depth above invert elev. = 0.567 (Ft.)
Average velocity of channel(s) = 4.880 (Ft/s)

Adding area flow to channel

RESIDENTIAL(3 - 4 dwl/acre)

Decimal fraction soil group A = 0.000

Decimal fraction soil group B = 1.000

Decimal fraction soil group C = 0.000

Decimal fraction soil group D = 0.000

SCS curve number for soil(AMC 2) = 56.00

Adjusted SCS curve number for AMC 3 = 75.80

Pervious ratio(Ap) = 0.6000 Max loss rate(Fm) = 0.264 (In/Hr)

Rainfall intensity = 3.128 (In/Hr) for a 100.0 year storm

Effective runoff coefficient used for area, (total area with modified rational method) (Q=KCIA) is C = 0.824

Subarea runoff = 29.802 (CFS) for 12.230 (Ac.)

Total runoff = 38.560 (CFS)

Effective area this stream = 14.96 (Ac.)

Total Study Area (Main Stream No. 3) = 64.05 (Ac.)

Area averaged Fm value = 0.264 (In/Hr)

Depth of flow = 0.759 (Ft.), Average velocity = 5.801 (Ft/s)

+++++
Process from Point/Station 39.000 to Point/Station 35.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:

In Main Stream number: 3

Stream flow area = 14.960 (Ac.)

Runoff from this stream = 38.560 (CFS)

Time of concentration = 15.71 min.

Rainfall intensity = 3.128(In/Hr)
 Area averaged loss rate (Fm) = 0.2640(In/Hr)
 Area averaged Pervious ratio (Ap) = 0.6000
 Summary of stream data:

Stream No.	Flow rate (CFS)	Area (Ac.)	TC (min)	Fm (In/Hr)	Rainfall Intensity (In/Hr)
------------	-----------------	------------	----------	------------	----------------------------

1	64.85	44.847	37.10	0.262	1.868
2	5.95	1.950	16.79	0.396	3.006
3	38.56	14.960	15.71	0.264	3.128

Qmax(1) =
 1.000 * 1.000 * 64.848) +
 0.564 * 1.000 * 5.949) +
 0.560 * 1.000 * 38.560) + = 89.803

Qmax(2) =
 1.708 * 0.453 * 64.848) +
 1.000 * 1.000 * 5.949) +
 0.958 * 1.000 * 38.560) + = 93.006

Qmax(3) =
 1.784 * 0.424 * 64.848) +
 1.047 * 0.936 * 5.949) +
 1.000 * 1.000 * 38.560) + = 93.395

Total of 3 main streams to confluence:

Flow rates before confluence point:

65.848 6.949 39.560

Maximum flow rates at confluence using above data:

89.803 93.006 93.395

Area of streams before confluence:

44.847 1.950 14.960

Effective area values after confluence:

61.757 37.204 35.782

Results of confluence:

Total flow rate = 93.395(CFS)

Time of concentration = 15.713 min.

Effective stream area after confluence = 35.782(Ac.)

Study area average Pervious fraction(Ap) = 0.900

Study area average soil loss rate(Fm) = 0.266(In/Hr)

Study area total = 61.76(Ac.)

End of computations, Total Study Area = 64.05 (Ac.)

The following figures may

be used for a unit hydrograph study of the same area.

Note: These figures do not consider reduced effective area effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.904

Area averaged SCS curve number = 65.6

***100-Year Rational Method Calculations
(Interim Condition)***

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

BASIN A
INTERIM
100 YR

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2005 Version 7.1
Rational Hydrology Study Date: 02/15/17

Tract 19756
Kimball
Interim Condition
Basin A

Program License Serial Number 6094

***** Hydrology Study Control Information *****

Rational hydrology study storm event year is 100.0
10 Year storm 1 hour rainfall = 0.883(In.)
100 Year storm 1 hour rainfall = 1.390(In.)
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.390 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 3

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Process from Point/Station 100.000 to Point/Station 101.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.044(In/Hr)
Initial subarea data:
Initial area flow distance = 165.000(Ft.)
Top (of initial area) elevation = 605.600(Ft.)
Bottom (of initial area) elevation = 604.100(Ft.)
Difference in elevation = 1.500(Ft.)
Slope = 0.00909 s(%)= 0.91
TC = $k(0.304)*[(length^3)/(elevation\ change)]^{0.2}$
Initial area time of concentration = 6.000 min.
Rainfall intensity = 5.534(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.893
Subarea runoff = 6.769(CFS)
Total initial stream area = 1.370(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.044(In/Hr)

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Process from Point/Station 101.000 to Point/Station 102.000

**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 594.000(Ft.)
Downstream point/station elevation = 590.000(Ft.)
Pipe length = 1075.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 6.769(CFS)
Nearest computed pipe diameter = 21.00(In.)
Calculated individual pipe flow = 6.769(CFS)
Normal flow depth in pipe = 12.95(In.)
Flow top width inside pipe = 20.42(In.)
Critical Depth = 11.53(In.)
Pipe flow velocity = 4.35(Ft/s)
Travel time through pipe = 4.12 min.
Time of concentration (TC) = 10.12 min.

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Process from Point/Station 101.000 to Point/Station 102.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.044(In/Hr)
Time of concentration = 10.12 min.
Rainfall intensity = 4.044(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified
rational method)(Q=KCIA) is C = 0.890
Subarea runoff = 29.157(CFS) for 8.610(Ac.)
Total runoff = 35.926(CFS)
Effective area this stream = 9.98(Ac.)
Total Study Area (Main Stream No. 1) = 9.98(Ac.)
Area averaged Fm value = 0.044(In/Hr)

+++++
Process from Point/Station 102.000 to Point/Station 103.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 590.000(Ft.)
Downstream point/station elevation = 588.000(Ft.)
Pipe length = 435.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 35.926(CFS)
Nearest computed pipe diameter = 36.00(In.)
Calculated individual pipe flow = 35.926(CFS)
Normal flow depth in pipe = 24.23(In.)
Flow top width inside pipe = 33.77(In.)
Critical Depth = 23.37(In.)
Pipe flow velocity = 7.10(Ft/s)
Travel time through pipe = 1.02 min.
Time of concentration (TC) = 11.14 min.

+++++
Process from Point/Station 102.000 to Point/Station 103.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type

Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.044(In/Hr)
Time of concentration = 11.14 min.
Rainfall intensity = 3.817(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified
rational method) (Q=KCIA) is C = 0.890
Subarea runoff = 21.463(CFS) for 6.920(Ac.)
Total runoff = 57.389(CFS)
Effective area this stream = 16.90(Ac.)
Total Study Area (Main Stream No. 1) = 16.90(Ac.)
Area averaged Fm value = 0.044(In/Hr)

+++++
Process from Point/Station 103.000 to Point/Station 104.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 588.000(Ft.)
Downstream point/station elevation = 584.500(Ft.)
Pipe length = 767.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 57.389(CFS)
Nearest computed pipe diameter = 42.00(In.)
Calculated individual pipe flow = 57.389(CFS)
Normal flow depth in pipe = 29.58(In.)
Flow top width inside pipe = 38.34(In.)
Critical Depth = 28.45(In.)
Pipe flow velocity = 7.92(Ft/s)
Travel time through pipe = 1.61 min.
Time of concentration (TC) = 12.76 min.

+++++
Process from Point/Station 103.000 to Point/Station 104.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type

Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.044(In/Hr)
Time of concentration = 12.76 min.
Rainfall intensity = 3.520(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified
rational method) (Q=KCIA) is C = 0.889
Subarea runoff = 12.834(CFS) for 5.550(Ac.)
Total runoff = 70.223(CFS)
Effective area this stream = 22.45(Ac.)
Total Study Area (Main Stream No. 1) = 22.45(Ac.)
Area averaged Fm value = 0.044(In/Hr)

+++++
Process from Point/Station 103.000 to Point/Station 104.000
**** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 1 in normal stream number 1
Stream flow area = 22.450(Ac.)
Runoff from this stream = 70.223(CFS)
Time of concentration = 12.76 min.
Rainfall intensity = 3.520(In/Hr)
Area averaged loss rate (Fm) = 0.0440(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000

+++++
Process from Point/Station 105.000 to Point/Station 106.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.044(In/Hr)
Initial subarea data:
Initial area flow distance = 248.000(Ft.)
Top (of initial area) elevation = 603.000(Ft.)
Bottom (of initial area) elevation = 600.300(Ft.)
Difference in elevation = 2.700(Ft.)
Slope = 0.01089 s(%)= 1.09
TC = $k(0.304)*[(length^3)/(elevation\ change)]^{0.2}$
Initial area time of concentration = 6.812 min.
Rainfall intensity = 5.128(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.892
Subarea runoff = 4.072(CFS)
Total initial stream area = 0.890(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.044(In/Hr)

+++++
Process from Point/Station 106.000 to Point/Station 107.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 594.000(Ft.)
Downstream point/station elevation = 590.000(Ft.)
Pipe length = 296.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 4.072(CFS)
Nearest computed pipe diameter = 12.00(In.)
Calculated individual pipe flow = 4.072(CFS)
Normal flow depth in pipe = 9.66(In.)
Flow top width inside pipe = 9.51(In.)
Critical Depth = 10.25(In.)
Pipe flow velocity = 6.01(Ft/s)
Travel time through pipe = 0.82 min.
Time of concentration (TC) = 7.63 min.

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Process from Point/Station 106.000 to Point/Station 107.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type

Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.044(In/Hr)
Time of concentration = 7.63 min.
Rainfall intensity = 4.790(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified
rational method) (Q=KCIA) is C = 0.892
Subarea runoff = 16.044(CFS) for 3.820(Ac.)
Total runoff = 20.117(CFS)
Effective area this stream = 4.71(Ac.)
Total Study Area (Main Stream No. 1) = 27.16(Ac.)
Area averaged Fm value = 0.044(In/Hr)

+++++
Process from Point/Station 107.000 to Point/Station 108.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 590.000(Ft.)
Downstream point/station elevation = 585.000(Ft.)
Pipe length = 895.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 20.117(CFS)
Nearest computed pipe diameter = 27.00(In.)
Calculated individual pipe flow = 20.117(CFS)
Normal flow depth in pipe = 19.45(In.)
Flow top width inside pipe = 24.23(In.)
Critical Depth = 18.84(In.)
Pipe flow velocity = 6.56(Ft/s)
Travel time through pipe = 2.27 min.
Time of concentration (TC) = 9.91 min.

+++++
Process from Point/Station 107.000 to Point/Station 108.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type

Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.044(In/Hr)
Time of concentration = 9.91 min.
Rainfall intensity = 4.096(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified
rational method) (Q=KCIA) is C = 0.890
Subarea runoff = 29.439(CFS) for 8.880(Ac.)
Total runoff = 49.556(CFS)
Effective area this stream = 13.59(Ac.)

Total Study Area (Main Stream No. 1) = 36.04 (Ac.)
Area averaged Fm value = 0.044 (In/Hr)

+++++
Process from Point/Station 108.000 to Point/Station 110.000
**** IMPROVED CHANNEL TRAVEL TIME ****

Upstream point elevation = 585.000 (Ft.)
Downstream point elevation = 584.000 (Ft.)
Channel length thru subarea = 500.000 (Ft.)
Channel base width = 50.000 (Ft.)
Slope or 'Z' of left channel bank = 2.000
Slope or 'Z' of right channel bank = 2.000
Estimated mean flow rate at midpoint of channel = 49.597 (CFS)
Manning's 'N' = 0.020
Maximum depth of channel = 5.000 (Ft.)
Flow (q) thru subarea = 49.597 (CFS)
Depth of flow = 0.483 (Ft.), Average velocity = 2.014 (Ft/s)
Channel flow top width = 51.932 (Ft.)
Flow Velocity = 2.01 (Ft/s)
Travel time = 4.14 min.
Time of concentration = 14.04 min.
Critical depth = 0.313 (Ft.)
Adding area flow to channel
PARK subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil (AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio (Ap) = 0.8500 Max loss rate (Fm) = 0.374 (In/Hr)
The area added to the existing stream causes a
a lower flow rate of Q = 43.914 (CFS)
therefore the upstream flow rate of Q = 49.556 (CFS) is being used
Rainfall intensity = 3.322 (In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified
rational method) (Q=KCIA) is C = 0.880
Subarea runoff = 0.000 (CFS) for 1.440 (Ac.)
Total runoff = 49.556 (CFS)
Effective area this stream = 15.03 (Ac.)
Total Study Area (Main Stream No. 1) = 37.48 (Ac.)
Area averaged Fm value = 0.076 (In/Hr)
Depth of flow = 0.483 (Ft.), Average velocity = 2.014 (Ft/s)
Critical depth = 0.313 (Ft.)

+++++
Process from Point/Station 108.000 to Point/Station 110.000
**** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 1 in normal stream number 2
Stream flow area = 15.030 (Ac.)
Runoff from this stream = 49.556 (CFS)
Time of concentration = 14.04 min.
Rainfall intensity = 3.322 (In/Hr)
Area averaged loss rate (Fm) = 0.0756 (In/Hr)
Area averaged Pervious ratio (Ap) = 0.1719
Summary of stream data:

Stream No.	Flow rate (CFS)	Area (Ac.)	TC (min)	Fm (In/Hr)	Rainfall Intensity (In/Hr)
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1	70.22	22.450	12.76	0.044	3.520
2	49.56	15.030	14.04	0.076	3.322

Qmax(1) =

1.000 *	1.000 *	70.223) +	
1.061 *	0.908 *	49.556) + =	117.969

Qmax(2) =

0.943 *	1.000 *	70.223) +	
1.000 *	1.000 *	49.556) + =	115.788

Total of 2 streams to confluence:

Flow rates before confluence point:

70.223	49.556
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Maximum flow rates at confluence using above data:

117.969	115.788
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Area of streams before confluence:

22.450	15.030
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Effective area values after confluence:

36.101	37.480
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Results of confluence:

Total flow rate = 117.969(CFS)

Time of concentration = 12.756 min.

Effective stream area after confluence = 36.101(Ac.)

Study area average Pervious fraction(Ap) = 0.129

Study area average soil loss rate(Fm) = 0.057(In/Hr)

Study area total (this main stream) = 37.48(Ac.)

End of computations, Total Study Area = 37.48 (Ac.)

The following figures may

be used for a unit hydrograph study of the same area.

Note: These figures do not consider reduced effective area effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.129

Area averaged SCS curve number = 56.0

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2005 Version 7.1
Rational Hydrology Study Date: 03/13/19

Tract 19756
Kimball
Interim Condition
Basin B

Program License Serial Number 6094

***** Hydrology Study Control Information *****

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.400 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 3

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Process from Point/Station 200.000 to Point/Station 201.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type

Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil (AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio (Ap) = 0.1000 Max loss rate (Fm) = 0.044 (In/Hr)
Initial subarea data:
Initial area flow distance = 335.000 (Ft.)
Top (of initial area) elevation = 596.000 (Ft.)
Bottom (of initial area) elevation = 592.600 (Ft.)
Difference in elevation = 3.400 (Ft.)
Slope = 0.01015 s(%) = 1.01
 $TC = k(0.304) * [(length^3) / (elevation\ change)]^{0.2}$
Initial area time of concentration = 7.791 min.
Rainfall intensity = 4.765 (In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.892
Subarea runoff = 4.546 (CFS)
Total initial stream area = 1.070 (Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.044 (In/Hr)

+++++
Process from Point/Station 201.000 to Point/Station 202.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 586.000(Ft.)
Downstream point/station elevation = 582.000(Ft.)
Pipe length = 857.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 4.546(CFS)
Nearest computed pipe diameter = 18.00(In.)
Calculated individual pipe flow = 4.546(CFS)
Normal flow depth in pipe = 10.39(In.)
Flow top width inside pipe = 17.78(In.)
Critical Depth = 9.83(In.)
Pipe flow velocity = 4.30(Ft/s)
Travel time through pipe = 3.32 min.
Time of concentration (TC) = 11.11 min.

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Process from Point/Station 201.000 to Point/Station 202.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.044(In/Hr)
Time of concentration = 11.11 min.
Rainfall intensity = 3.850(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified
rational method) (Q=KCIA) is C = 0.890
Subarea runoff = 30.737(CFS) for 9.230(Ac.)
Total runoff = 35.283(CFS)
Effective area this stream = 10.30(Ac.)
Total Study Area (Main Stream No. 1) = 10.30(Ac.)
Area averaged Fm value = 0.044(In/Hr)

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Process from Point/Station 201.000 to Point/Station 202.000
**** SUBAREA FLOW ADDITION ****

UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Adjusted SCS curve number for AMC 3 = 86.20
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.262(In/Hr)
Time of concentration = 11.11 min.
Rainfall intensity = 3.850(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified
rational method) (Q=KCIA) is C = 0.866
Subarea runoff = 28.874(CFS) for 8.940(Ac.)
Total runoff = 64.158(CFS)
Effective area this stream = 19.24(Ac.)
Total Study Area (Main Stream No. 1) = 19.24(Ac.)
Area averaged Fm value = 0.145(In/Hr)

+++++
Process from Point/Station 202.000 to Point/Station 203.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 582.000(Ft.)
Downstream point/station elevation = 576.000(Ft.)
Pipe length = 211.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 64.158(CFS)
Nearest computed pipe diameter = 30.00(In.)
Calculated individual pipe flow = 64.158(CFS)
Normal flow depth in pipe = 22.83(In.)
Flow top width inside pipe = 25.59(In.)
Critical depth could not be calculated.
Pipe flow velocity = 16.00(Ft/s)
Travel time through pipe = 0.22 min.
Time of concentration (TC) = 11.33 min.

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Process from Point/Station 202.000 to Point/Station 203.000
**** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 1 in normal stream number 1
Stream flow area = 19.240(Ac.)
Runoff from this stream = 64.158(CFS)
Time of concentration = 11.33 min.
Rainfall intensity = 3.805(In/Hr)
Area averaged loss rate (Fm) = 0.1451(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5182

+++++
Process from Point/Station 204.000 to Point/Station 205.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.044(In/Hr)
Initial subarea data:
Initial area flow distance = 79.000(Ft.)
Top (of initial area) elevation = 584.400(Ft.)
Bottom (of initial area) elevation = 582.600(Ft.)
Difference in elevation = 1.800(Ft.)
Slope = 0.02278 s(%)= 2.28
TC = $k(0.304)*[(length^3)/(elevation\ change)]^{0.2}$
Initial area time of concentration = 3.719 min.
Rainfall intensity = 7.426(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.895
Subarea runoff = 6.777(CFS)
Total initial stream area = 1.020(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.044(In/Hr)

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Process from Point/Station 205.000 to Point/Station 206.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 578.000(Ft.)
Downstream point/station elevation = 576.000(Ft.)
Pipe length = 764.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 6.777(CFS)
Nearest computed pipe diameter = 21.00(In.)
Calculated individual pipe flow = 6.777(CFS)
Normal flow depth in pipe = 14.67(In.)
Flow top width inside pipe = 19.27(In.)
Critical Depth = 11.53(In.)
Pipe flow velocity = 3.77(Ft/s)
Travel time through pipe = 3.38 min.
Time of concentration (TC) = 7.09 min.

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Process from Point/Station 205.000 to Point/Station 206.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.044(In/Hr)
Time of concentration = 7.09 min.
Rainfall intensity = 5.041(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified
rational method) (Q=KCIA) is C = 0.892
Subarea runoff = 43.320(CFS) for 10.120(Ac.)
Total runoff = 50.097(CFS)
Effective area this stream = 11.14(Ac.)
Total Study Area (Main Stream No. 1) = 30.38(Ac.)
Area averaged Fm value = 0.044(In/Hr)

+++++
Process from Point/Station 205.000 to Point/Station 206.000
**** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 1 in normal stream number 2
Stream flow area = 11.140(Ac.)
Runoff from this stream = 50.097(CFS)
Time of concentration = 7.09 min.
Rainfall intensity = 5.041(In/Hr)
Area averaged loss rate (Fm) = 0.0440(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream No.	Flow rate (CFS)	Area (Ac.)	TC (min)	Fm (In/Hr)	Rainfall Intensity (In/Hr)
1	64.16	19.240	11.33	0.145	3.805
2	50.10	11.140	7.09	0.044	5.041

Qmax(1) =

	1.000 *	1.000 *	64.158) +	
	0.753 *	1.000 *	50.097) + =	101.867
Qmax(2) =				
	1.338 *	0.626 *	64.158) +	
	1.000 *	1.000 *	50.097) + =	103.805

Total of 2 streams to confluence:

Flow rates before confluence point:

64.158 50.097

Maximum flow rates at confluence using above data:

101.867 103.805

Area of streams before confluence:

19.240 11.140

Effective area values after confluence:

30.380 23.182

Results of confluence:

Total flow rate = 103.805(CFS)

Time of concentration = 7.094 min.

Effective stream area after confluence = 23.182(Ac.)

Study area average Pervious fraction(Ap) = 0.365

Study area average soil loss rate(Fm) = 0.108(In/Hr)

Study area total (this main stream) = 30.38(Ac.)

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 Process from Point/Station 205.000 to Point/Station 206.000
 ***** SUBAREA FLOW ADDITION *****

PARK subarea

Decimal fraction soil group A = 0.000

Decimal fraction soil group B = 1.000

Decimal fraction soil group C = 0.000

Decimal fraction soil group D = 0.000

SCS curve number for soil(AMC 2) = 56.00

Adjusted SCS curve number for AMC 3 = 75.80

Pervious ratio(Ap) = 0.8500 Max loss rate(Fm)= 0.374(In/Hr)

Time of concentration = 7.09 min.

Rainfall intensity = 5.041(In/Hr) for a 100.0 year storm

Effective runoff coefficient used for area, (total area with modified rational method) (Q=KCIA) is C = 0.877

Subarea runoff = 6.584(CFS) for 1.780(Ac.)

Total runoff = 110.389(CFS)

Effective area this stream = 24.96(Ac.)

Total Study Area (Main Stream No. 1) = 32.16(Ac.)

Area averaged Fm value = 0.127(In/Hr)

End of computations, Total Study Area = 32.16 (Ac.)

The following figures may

be used for a unit hydrograph study of the same area.

Note: These figures do not consider reduced effective area effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.392

Area averaged SCS curve number = 59.6

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2005 Version 7.1
Rational Hydrology Study Date: 03/13/19

Tract 19756
Kimball
Interim Condition
Basin C

Program License Serial Number 6094

***** Hydrology Study Control Information *****

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.400 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 3

+++++
Process from Point/Station 301.000 to Point/Station 302.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type

Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil (AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio (Ap) = 0.1000 Max loss rate (Fm) = 0.044 (In/Hr)
Initial subarea data:
Initial area flow distance = 998.000 (Ft.)
Top (of initial area) elevation = 586.300 (Ft.)
Bottom (of initial area) elevation = 575.800 (Ft.)
Difference in elevation = 10.500 (Ft.)
Slope = 0.01052 s(%) = 1.05
 $TC = k(0.304) * [(length^3) / (elevation\ change)]^{0.2}$
Initial area time of concentration = 11.971 min.
Rainfall intensity = 3.683 (In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.889
Subarea runoff = 19.452 (CFS)
Total initial stream area = 5.940 (Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.044 (In/Hr)
End of computations, Total Study Area = 5.94 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(A_p) = 0.100

Area averaged SCS curve number = 56.0

San Bernardino County Rational Hydrology Program

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Rational Hydrology Study Date: 03/13/19

tract 19756
Kimball
Interim Condition
Basin CC

Program License Serial Number 6094

***** Hydrology Study Control Information *****

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.400 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 3

+++++
Process from Point/Station 310.000 to Point/Station 311.000
**** INITIAL AREA EVALUATION ****

RESIDENTIAL(8 - 10 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.4000 Max loss rate(Fm)= 0.176(In/Hr)
Initial subarea data:
Initial area flow distance = 90.000(Ft.)
Top (of initial area) elevation = 588.000(Ft.)
Bottom (of initial area) elevation = 585.600(Ft.)
Difference in elevation = 2.400(Ft.)
Slope = 0.02667 s(%)= 2.67
 $TC = k(0.374)*[(length^3)/(elevation\ change)]^{0.2}$
Initial area time of concentration = 4.671 min.
Rainfall intensity = 6.477(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.876
Subarea runoff = 3.573(CFS)
Total initial stream area = 0.630(Ac.)
Pervious area fraction = 0.400
Initial area Fm value = 0.176(In/Hr)

+++++
Process from Point/Station 311.000 to Point/Station 312.000
**** IMPROVED CHANNEL TRAVEL TIME ****

Upstream point elevation = 585.600(Ft.)
 Downstream point elevation = 578.000(Ft.)
 Channel length thru subarea = 591.000(Ft.)
 Channel base width = 2.000(Ft.)
 Slope or 'Z' of left channel bank = 2.000
 Slope or 'Z' of right channel bank = 2.000
 Estimated mean flow rate at midpoint of channel = 11.875(CFS)
 Manning's 'N' = 0.018
 Maximum depth of channel = 3.000(Ft.)
 Flow(q) thru subarea = 11.875(CFS)
 Depth of flow = 0.659(Ft.), Average velocity = 5.432(Ft/s)
 Channel flow top width = 4.636(Ft.)
 Flow Velocity = 5.43(Ft/s)
 Travel time = 1.81 min.
 Time of concentration = 6.48 min.
 Critical depth = 0.789(Ft.)
 Adding area flow to channel
 RESIDENTIAL(8 - 10 dwl/acre)
 Decimal fraction soil group A = 0.000
 Decimal fraction soil group B = 1.000
 Decimal fraction soil group C = 0.000
 Decimal fraction soil group D = 0.000
 SCS curve number for soil(AMC 2) = 56.00
 Adjusted SCS curve number for AMC 3 = 75.80
 Pervious ratio(Ap) = 0.4000 Max loss rate(Fm)= 0.176(In/Hr)
 Rainfall intensity = 5.320(In/Hr) for a 100.0 year storm
 Effective runoff coefficient used for area, (total area with modified
 rational method) (Q=KCIA) is C = 0.870
 Subarea runoff = 16.520(CFS) for 3.710(Ac.)
 Total runoff = 20.093(CFS)
 Effective area this stream = 4.34(Ac.)
 Total Study Area (Main Stream No. 1) = 4.34(Ac.)
 Area averaged Fm value = 0.176(In/Hr)
 Depth of flow = 0.861(Ft.), Average velocity = 6.268(Ft/s)
 Critical depth = 1.047(Ft.)

++++++
 Process from Point/Station 312.000 to Point/Station 313.000
 **** IMPROVED CHANNEL TRAVEL TIME ****

Upstream point elevation = 578.000(Ft.)
 Downstream point elevation = 570.000(Ft.)
 Channel length thru subarea = 443.000(Ft.)
 Channel base width = 2.000(Ft.)
 Slope or 'Z' of left channel bank = 2.000
 Slope or 'Z' of right channel bank = 2.000
 Estimated mean flow rate at midpoint of channel = 39.261(CFS)
 Manning's 'N' = 0.018
 Maximum depth of channel = 3.000(Ft.)
 Flow(q) thru subarea = 39.261(CFS)
 Depth of flow = 1.101(Ft.), Average velocity = 8.481(Ft/s)
 Channel flow top width = 6.406(Ft.)
 Flow Velocity = 8.48(Ft/s)
 Travel time = 0.87 min.
 Time of concentration = 7.35 min.
 Critical depth = 1.469(Ft.)
 Adding area flow to channel
 RESIDENTIAL(8 - 10 dwl/acre)
 Decimal fraction soil group A = 0.000

Decimal fraction soil group B = 1.000
 Decimal fraction soil group C = 0.000
 Decimal fraction soil group D = 0.000
 SCS curve number for soil(AMC 2) = 56.00
 Adjusted SCS curve number for AMC 3 = 75.80
 Pervious ratio(Ap) = 0.4000 Max loss rate(Fm)= 0.176(In/Hr)
 Rainfall intensity = 4.933(In/Hr) for a 100.0 year storm
 Effective runoff coefficient used for area, (total area with modified
 rational method) (Q=KCIA) is C = 0.868
 Subarea runoff = 38.258(CFS) for 9.290(Ac.)
 Total runoff = 58.351(CFS)
 Effective area this stream = 13.63(Ac.)
 Total Study Area (Main Stream No. 1) = 13.63(Ac.)
 Area averaged Fm value = 0.176(In/Hr)
 Depth of flow = 1.331(Ft.), Average velocity = 9.403(Ft/s)
 Critical depth = 1.781(Ft.)

++++++
 Process from Point/Station 313.000 to Point/Station 314.000
 **** IMPROVED CHANNEL TRAVEL TIME ****

Upstream point elevation = 570.000(Ft.)
 Downstream point elevation = 568.000(Ft.)
 Channel length thru subarea = 400.000(Ft.)
 Channel base width = 2.000(Ft.)
 Slope or 'Z' of left channel bank = 2.000
 Slope or 'Z' of right channel bank = 2.000
 Estimated mean flow rate at midpoint of channel = 61.991(CFS)
 Manning's 'N' = 0.018
 Maximum depth of channel = 3.000(Ft.)
 Flow(q) thru subarea = 61.991(CFS)
 Depth of flow = 1.841(Ft.), Average velocity = 5.924(Ft/s)
 Channel flow top width = 9.365(Ft.)
 Flow Velocity = 5.92(Ft/s)
 Travel time = 1.13 min.
 Time of concentration = 8.48 min.
 Critical depth = 1.828(Ft.)

Adding area flow to channel
 RESIDENTIAL(8 - 10 dwl/acre)
 Decimal fraction soil group A = 0.000
 Decimal fraction soil group B = 1.000
 Decimal fraction soil group C = 0.000
 Decimal fraction soil group D = 0.000
 SCS curve number for soil(AMC 2) = 56.00
 Adjusted SCS curve number for AMC 3 = 75.80
 Pervious ratio(Ap) = 0.4000 Max loss rate(Fm)= 0.176(In/Hr)
 Rainfall intensity = 4.529(In/Hr) for a 100.0 year storm
 Effective runoff coefficient used for area, (total area with modified
 rational method) (Q=KCIA) is C = 0.865
 Subarea runoff = 7.229(CFS) for 3.110(Ac.)
 Total runoff = 65.580(CFS)
 Effective area this stream = 16.74(Ac.)
 Total Study Area (Main Stream No. 1) = 16.74(Ac.)
 Area averaged Fm value = 0.176(In/Hr)
 Depth of flow = 1.889(Ft.), Average velocity = 6.010(Ft/s)
 Critical depth = 1.875(Ft.)
 End of computations, Total Study Area = 16.74 (Ac.)
 The following figures may
 be used for a unit hydrograph study of the same area.

Note: These figures do not consider reduced effective area effects caused by confluences in the rational equation.

Area averaged pervious area fraction(A_p) = 0.400

Area averaged SCS curve number = 56.0

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2005 Version 7.1
Rational Hydrology Study Date: 03/13/19

Tract 19756
Kimball
Interim Condition
Basin CX

Program License Serial Number 6094

***** Hydrology Study Control Information *****

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.400 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 3

+++++
Process from Point/Station 400.000 to Point/Station 401.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type

Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil (AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio (Ap) = 0.1000 Max loss rate (Fm) = 0.044 (In/Hr)
Initial subarea data:
Initial area flow distance = 587.000 (Ft.)
Top (of initial area) elevation = 576.500 (Ft.)
Bottom (of initial area) elevation = 573.500 (Ft.)
Difference in elevation = 3.000 (Ft.)
Slope = 0.00511 s(%) = 0.51
 $TC = k(0.304) * [(length^3) / (elevation\ change)]^{0.2}$
Initial area time of concentration = 11.185 min.
Rainfall intensity = 3.836 (In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.890
Subarea runoff = 19.690 (CFS)
Total initial stream area = 5.770 (Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.044 (In/Hr)
End of computations, Total Study Area = 5.77 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(A_p) = 0.100

Area averaged SCS curve number = 56.0

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2005 Version 7.1
Rational Hydrology Study Date: 03/13/19

TRACT NO 20008
100-YR STORM
DEVELOPED CONDITION
AREAS B1-B31

Program License Serial Number 6094

***** Hydrology Study Control Information *****

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.400 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 3

+++++
Process from Point/Station 1.000 to Point/Station 2.000
**** INITIAL AREA EVALUATION ****

RESIDENTIAL(8 - 10 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.4000 Max loss rate(Fm)= 0.176(In/Hr)
Initial subarea data:
Initial area flow distance = 262.000(Ft.)
Top (of initial area) elevation = 592.300(Ft.)
Bottom (of initial area) elevation = 588.400(Ft.)
Difference in elevation = 3.900(Ft.)
Slope = 0.01489 s(%)= 1.49
 $TC = k(0.374)*[(length^3)/(elevation\ change)]^{0.2}$
Initial area time of concentration = 8.047 min.
Rainfall intensity = 4.673(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.866
Subarea runoff = 3.279(CFS)
Total initial stream area = 0.810(Ac.)
Pervious area fraction = 0.400
Initial area Fm value = 0.176(In/Hr)

+++++
Process from Point/Station 2.000 to Point/Station 3.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 584.700(Ft.)
Downstream point/station elevation = 578.500(Ft.)
Pipe length = 90.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 3.279(CFS)
Nearest computed pipe diameter = 9.00(In.)
Calculated individual pipe flow = 3.279(CFS)
Normal flow depth in pipe = 5.84(In.)
Flow top width inside pipe = 8.59(In.)
Critical depth could not be calculated.
Pipe flow velocity = 10.80(Ft/s)
Travel time through pipe = 0.14 min.
Time of concentration (TC) = 8.19 min.

+++++
Process from Point/Station 2.000 to Point/Station 3.000
**** SUBAREA FLOW ADDITION ****

PARK subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.8500 Max loss rate(Fm)= 0.374(In/Hr)
Time of concentration = 8.19 min.
Rainfall intensity = 4.626(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified
rational method) (Q=KCIA) is C = 0.862
Subarea runoff = 0.348(CFS) for 0.100(Ac.)
Total runoff = 3.626(CFS)
Effective area this stream = 0.91(Ac.)
Total Study Area (Main Stream No. 1) = 0.91(Ac.)
Area averaged Fm value = 0.198(In/Hr)

+++++
Process from Point/Station 3.000 to Point/Station 4.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 578.500(Ft.)
Downstream point/station elevation = 578.200(Ft.)
Pipe length = 63.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 3.626(CFS)
Nearest computed pipe diameter = 15.00(In.)
Calculated individual pipe flow = 3.626(CFS)
Normal flow depth in pipe = 10.28(In.)
Flow top width inside pipe = 13.93(In.)
Critical Depth = 9.22(In.)
Pipe flow velocity = 4.05(Ft/s)
Travel time through pipe = 0.26 min.
Time of concentration (TC) = 8.45 min.

+++++
Process from Point/Station 3.000 to Point/Station 4.000
**** SUBAREA FLOW ADDITION ****

RESIDENTIAL(8 - 10 dwl/acre)

Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.4000 Max loss rate(Fm)= 0.176(In/Hr)
Time of concentration = 8.45 min.
Rainfall intensity = 4.540(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified
rational method) (Q=KCIA) is C = 0.862
Subarea runoff = 2.208(CFS) for 0.580(Ac.)
Total runoff = 5.834(CFS)
Effective area this stream = 1.49(Ac.)
Total Study Area (Main Stream No. 1) = 1.49(Ac.)
Area averaged Fm value = 0.189(In/Hr)

+++++
Process from Point/Station 3.000 to Point/Station 4.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:

In Main Stream number: 1
Stream flow area = 1.490(Ac.)
Runoff from this stream = 5.834(CFS)
Time of concentration = 8.45 min.
Rainfall intensity = 4.540(In/Hr)
Area averaged loss rate (Fm) = 0.1893(In/Hr)
Area averaged Pervious ratio (Ap) = 0.4302
Program is now starting with Main Stream No. 2

+++++
Process from Point/Station 5.000 to Point/Station 6.000
**** INITIAL AREA EVALUATION ****

RESIDENTIAL(8 - 10 dwl/acre)

Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.4000 Max loss rate(Fm)= 0.176(In/Hr)
Initial subarea data:
Initial area flow distance = 230.000(Ft.)
Top (of initial area) elevation = 589.600(Ft.)
Bottom (of initial area) elevation = 588.500(Ft.)
Difference in elevation = 1.100(Ft.)
Slope = 0.00478 s(%)= 0.48
TC = $k(0.374)*[(length^3)/(elevation\ change)]^{0.2}$
Initial area time of concentration = 9.586 min.
Rainfall intensity = 4.208(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.862
Subarea runoff = 2.213(CFS)
Total initial stream area = 0.610(Ac.)
Pervious area fraction = 0.400
Initial area Fm value = 0.176(In/Hr)

+++++
Process from Point/Station 6.000 to Point/Station 7.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 581.900(Ft.)
Downstream point/station elevation = 580.900(Ft.)
Pipe length = 51.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 2.213(CFS)
Nearest computed pipe diameter = 9.00(In.)
Calculated individual pipe flow = 2.213(CFS)
Normal flow depth in pipe = 7.04(In.)
Flow top width inside pipe = 7.43(In.)
Critical Depth = 8.01(In.)
Pipe flow velocity = 5.97(Ft/s)
Travel time through pipe = 0.14 min.
Time of concentration (TC) = 9.73 min.

+++++
Process from Point/Station 6.000 to Point/Station 7.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.044(In/Hr)
Time of concentration = 9.73 min.
Rainfall intensity = 4.171(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified
rational method) (Q=KCIA) is C = 0.864
Subarea runoff = 0.128(CFS) for 0.040(Ac.)
Total runoff = 2.342(CFS)
Effective area this stream = 0.65(Ac.)
Total Study Area (Main Stream No. 2) = 2.14(Ac.)
Area averaged Fm value = 0.168(In/Hr)

+++++
Process from Point/Station 6.000 to Point/Station 7.000
**** SUBAREA FLOW ADDITION ****

RESIDENTIAL(8 - 10 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.4000 Max loss rate(Fm)= 0.176(In/Hr)
Time of concentration = 9.73 min.
Rainfall intensity = 4.171(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified
rational method) (Q=KCIA) is C = 0.863
Subarea runoff = 2.229(CFS) for 0.620(Ac.)
Total runoff = 4.571(CFS)

Effective area this stream = 1.27(Ac.)
Total Study Area (Main Stream No. 2) = 2.76(Ac.)
Area averaged Fm value = 0.172(In/Hr)

+++++
Process from Point/Station 7.000 to Point/Station 8.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 580.900(Ft.)
Downstream point/station elevation = 580.500(Ft.)
Pipe length = 115.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 4.571(CFS)
Nearest computed pipe diameter = 18.00(In.)
Calculated individual pipe flow = 4.571(CFS)
Normal flow depth in pipe = 11.50(In.)
Flow top width inside pipe = 17.29(In.)
Critical Depth = 9.86(In.)
Pipe flow velocity = 3.83(Ft/s)
Travel time through pipe = 0.50 min.
Time of concentration (TC) = 10.23 min.

+++++
Process from Point/Station 7.000 to Point/Station 8.000
**** SUBAREA FLOW ADDITION ****

RESIDENTIAL(8 - 10 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.4000 Max loss rate(Fm)= 0.176(In/Hr)
Time of concentration = 10.23 min.
Rainfall intensity = 4.047(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified
rational method) (Q=KCIA) is C = 0.862
Subarea runoff = 1.880(CFS) for 0.580(Ac.)
Total runoff = 6.450(CFS)
Effective area this stream = 1.85(Ac.)
Total Study Area (Main Stream No. 2) = 3.34(Ac.)
Area averaged Fm value = 0.173(In/Hr)

+++++
Process from Point/Station 8.000 to Point/Station 9.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 580.500(Ft.)
Downstream point/station elevation = 580.300(Ft.)
Pipe length = 32.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 6.450(CFS)
Nearest computed pipe diameter = 18.00(In.)
Calculated individual pipe flow = 6.450(CFS)
Normal flow depth in pipe = 11.93(In.)
Flow top width inside pipe = 17.02(In.)
Critical Depth = 11.78(In.)
Pipe flow velocity = 5.19(Ft/s)

Travel time through pipe = 0.10 min.
Time of concentration (TC) = 10.33 min.

+++++
Process from Point/Station 8.000 to Point/Station 9.000
**** SUBAREA FLOW ADDITION ****

RESIDENTIAL(8 - 10 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.4000 Max loss rate(Fm)= 0.176(In/Hr)
Time of concentration = 10.33 min.
Rainfall intensity = 4.023(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified
rational method) (Q=KCIA) is C = 0.861
Subarea runoff = 1.968(CFS) for 0.580(Ac.)
Total runoff = 8.418(CFS)
Effective area this stream = 2.43(Ac.)
Total Study Area (Main Stream No. 2) = 3.92(Ac.)
Area averaged Fm value = 0.174(In/Hr)

+++++
Process from Point/Station 9.000 to Point/Station 10.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 580.300(Ft.)
Downstream point/station elevation = 579.900(Ft.)
Pipe length = 102.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 8.418(CFS)
Nearest computed pipe diameter = 21.00(In.)
Calculated individual pipe flow = 8.418(CFS)
Normal flow depth in pipe = 14.86(In.)
Flow top width inside pipe = 19.10(In.)
Critical Depth = 12.93(In.)
Pipe flow velocity = 4.63(Ft/s)
Travel time through pipe = 0.37 min.
Time of concentration (TC) = 10.70 min.

+++++
Process from Point/Station 9.000 to Point/Station 10.000
**** SUBAREA FLOW ADDITION ****

RESIDENTIAL(8 - 10 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.4000 Max loss rate(Fm)= 0.176(In/Hr)
Time of concentration = 10.70 min.
Rainfall intensity = 3.939(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified

rational method) (Q=KCIA) is C = 0.860
Subarea runoff = 1.782(CFS) for 0.580(Ac.)
Total runoff = 10.200(CFS)
Effective area this stream = 3.01(Ac.)
Total Study Area (Main Stream No. 2) = 4.50(Ac.)
Area averaged Fm value = 0.174(In/Hr)

+++++
Process from Point/Station 10.000 to Point/Station 11.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 579.900(Ft.)
Downstream point/station elevation = 579.500(Ft.)
Pipe length = 113.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 10.200(CFS)
Nearest computed pipe diameter = 24.00(In.)
Calculated individual pipe flow = 10.200(CFS)
Normal flow depth in pipe = 15.62(In.)
Flow top width inside pipe = 22.88(In.)
Critical Depth = 13.71(In.)
Pipe flow velocity = 4.71(Ft/s)
Travel time through pipe = 0.40 min.
Time of concentration (TC) = 11.10 min.

+++++
Process from Point/Station 10.000 to Point/Station 11.000
**** SUBAREA FLOW ADDITION ****

RESIDENTIAL(8 - 10 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.4000 Max loss rate(Fm)= 0.176(In/Hr)
Time of concentration = 11.10 min.
Rainfall intensity = 3.854(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified
rational method) (Q=KCIA) is C = 0.859
Subarea runoff = 1.687(CFS) for 0.580(Ac.)
Total runoff = 11.888(CFS)
Effective area this stream = 3.59(Ac.)
Total Study Area (Main Stream No. 2) = 5.08(Ac.)
Area averaged Fm value = 0.175(In/Hr)

+++++
Process from Point/Station 10.000 to Point/Station 11.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80

Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.044(In/Hr)
Time of concentration = 11.10 min.
Rainfall intensity = 3.854(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified
rational method) (Q=KCIA) is C = 0.861
Subarea runoff = 0.789(CFS) for 0.230(Ac.)
Total runoff = 12.676(CFS)
Effective area this stream = 3.82(Ac.)
Total Study Area (Main Stream No. 2) = 5.31(Ac.)
Area averaged Fm value = 0.167(In/Hr)

+++++
Process from Point/Station 10.000 to Point/Station 11.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.044(In/Hr)
Time of concentration = 11.10 min.
Rainfall intensity = 3.854(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified
rational method) (Q=KCIA) is C = 0.862
Subarea runoff = 0.583(CFS) for 0.170(Ac.)
Total runoff = 13.259(CFS)
Effective area this stream = 3.99(Ac.)
Total Study Area (Main Stream No. 2) = 5.48(Ac.)
Area averaged Fm value = 0.161(In/Hr)

+++++
Process from Point/Station 11.000 to Point/Station 4.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 579.500(Ft.)
Downstream point/station elevation = 578.200(Ft.)
Pipe length = 87.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 13.259(CFS)
Nearest computed pipe diameter = 21.00(In.)
Calculated individual pipe flow = 13.259(CFS)
Normal flow depth in pipe = 12.75(In.)
Flow top width inside pipe = 20.51(In.)
Critical Depth = 16.26(In.)
Pipe flow velocity = 8.67(Ft/s)
Travel time through pipe = 0.17 min.
Time of concentration (TC) = 11.26 min.

+++++
Process from Point/Station 11.000 to Point/Station 4.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area = 3.990(Ac.)

Runoff from this stream = 13.259(CFS)
 Time of concentration = 11.26 min.
 Rainfall intensity = 3.819(In/Hr)
 Area averaged loss rate (Fm) = 0.1614(In/Hr)
 Area averaged Pervious ratio (Ap) = 0.3669
 Summary of stream data:

Stream No.	Flow rate (CFS)	Area (Ac.)	TC (min)	Fm (In/Hr)	Rainfall Intensity (In/Hr)
------------	-----------------	------------	----------	------------	----------------------------

1	5.83	1.490	8.45	0.189	4.540
2	13.26	3.990	11.26	0.161	3.819

Qmax(1) =
 1.000 * 1.000 * 5.834) +
 1.197 * 0.750 * 13.259) + = 17.733

Qmax(2) =
 0.834 * 1.000 * 5.834) +
 1.000 * 1.000 * 13.259) + = 18.127

Total of 2 main streams to confluence:

Flow rates before confluence point:

6.834 14.259

Maximum flow rates at confluence using above data:

17.733 18.127

Area of streams before confluence:

1.490 3.990

Effective area values after confluence:

4.481 5.480

Results of confluence:

Total flow rate = 18.127(CFS)

Time of concentration = 11.265 min.

Effective stream area after confluence = 5.480(Ac.)

Study area average Pervious fraction(Ap) = 0.384

Study area average soil loss rate(Fm) = 0.169(In/Hr)

Study area total = 5.48(Ac.)

++++++
 Process from Point/Station 4.000 to Point/Station 12.000
 **** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 578.200(Ft.)
 Downstream point/station elevation = 577.100(Ft.)
 Pipe length = 115.00(Ft.) Manning's N = 0.013
 No. of pipes = 1 Required pipe flow = 18.127(CFS)
 Nearest computed pipe diameter = 24.00(In.)
 Calculated individual pipe flow = 18.127(CFS)
 Normal flow depth in pipe = 16.52(In.)
 Flow top width inside pipe = 22.23(In.)
 Critical Depth = 18.39(In.)
 Pipe flow velocity = 7.86(Ft/s)
 Travel time through pipe = 0.24 min.
 Time of concentration (TC) = 11.51 min.

++++++
 Process from Point/Station 4.000 to Point/Station 12.000

**** SUBAREA FLOW ADDITION ****

RESIDENTIAL(8 - 10 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.4000 Max loss rate(Fm)= 0.176(In/Hr)
Time of concentration = 11.51 min.
Rainfall intensity = 3.771(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified
rational method) (Q=KCIA) is C = 0.860
Subarea runoff = 1.544(CFS) for 0.590(Ac.)
Total runoff = 19.671(CFS)
Effective area this stream = 6.07(Ac.)
Total Study Area (Main Stream No. 1) = 6.07(Ac.)
Area averaged Fm value = 0.170(In/Hr)

+++++
Process from Point/Station 4.000 to Point/Station 12.000
**** SUBAREA FLOW ADDITION ****

RESIDENTIAL(8 - 10 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.4000 Max loss rate(Fm)= 0.176(In/Hr)
Time of concentration = 11.51 min.
Rainfall intensity = 3.771(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified
rational method) (Q=KCIA) is C = 0.859
Subarea runoff = 0.971(CFS) for 0.300(Ac.)
Total runoff = 20.642(CFS)
Effective area this stream = 6.37(Ac.)
Total Study Area (Main Stream No. 1) = 6.37(Ac.)
Area averaged Fm value = 0.170(In/Hr)

+++++
Process from Point/Station 12.000 to Point/Station 13.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 577.100(Ft.)
Downstream point/station elevation = 575.900(Ft.)
Pipe length = 129.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 20.642(CFS)
Nearest computed pipe diameter = 24.00(In.)
Calculated individual pipe flow = 20.642(CFS)
Normal flow depth in pipe = 18.61(In.)
Flow top width inside pipe = 20.03(In.)
Critical Depth = 19.56(In.)
Pipe flow velocity = 7.90(Ft/s)
Travel time through pipe = 0.27 min.
Time of concentration (TC) = 11.78 min.

+++++
Process from Point/Station 12.000 to Point/Station 13.000
**** SUBAREA FLOW ADDITION ****

RESIDENTIAL(8 - 10 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.4000 Max loss rate(Fm)= 0.176(In/Hr)
Time of concentration = 11.78 min.
Rainfall intensity = 3.718(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.859
Subarea runoff = 1.548(CFS) for 0.580(Ac.)
Total runoff = 22.190(CFS)
Effective area this stream = 6.95(Ac.)
Total Study Area (Main Stream No. 1) = 6.95(Ac.)
Area averaged Fm value = 0.170(In/Hr)

+++++
Process from Point/Station 13.000 to Point/Station 14.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 575.900(Ft.)
Downstream point/station elevation = 575.000(Ft.)
Pipe length = 147.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 22.190(CFS)
Nearest computed pipe diameter = 27.00(In.)
Calculated individual pipe flow = 22.190(CFS)
Normal flow depth in pipe = 20.32(In.)
Flow top width inside pipe = 23.30(In.)
Critical Depth = 19.79(In.)
Pipe flow velocity = 6.91(Ft/s)
Travel time through pipe = 0.35 min.
Time of concentration (TC) = 12.14 min.

+++++
Process from Point/Station 13.000 to Point/Station 14.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:

In Main Stream number: 1
Stream flow area = 6.950(Ac.)
Runoff from this stream = 22.190(CFS)
Time of concentration = 12.14 min.
Rainfall intensity = 3.652(In/Hr)
Area averaged loss rate (Fm) = 0.1705(In/Hr)
Area averaged Pervious ratio (Ap) = 0.3875
Program is now starting with Main Stream No. 2

+++++
Process from Point/Station 15.000 to Point/Station 16.000

**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
 Decimal fraction soil group A = 0.000
 Decimal fraction soil group B = 1.000
 Decimal fraction soil group C = 0.000
 Decimal fraction soil group D = 0.000
 SCS curve number for soil(AMC 2) = 56.00
 Adjusted SCS curve number for AMC 3 = 75.80
 Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.044(In/Hr)
 Initial subarea data:
 Initial area flow distance = 27.000(Ft.)
 Top (of initial area) elevation = 586.100(Ft.)
 Bottom (of initial area) elevation = 578.800(Ft.)
 Difference in elevation = 7.300(Ft.)
 Slope = 0.27037 s(%)= 27.04
 $TC = k(0.304)*[(length^3)/(elevation\ change)]^{0.2}$
 Initial area time of concentration = 1.476 min.
 Rainfall intensity = 12.930(In/Hr) for a 100.0 year storm
 Effective runoff coefficient used for area (Q=KCIA) is C = 0.897
 Subarea runoff = 0.116(CFS)
 Total initial stream area = 0.010(Ac.)
 Pervious area fraction = 0.100
 Initial area Fm value = 0.044(In/Hr)

++++++
 Process from Point/Station 15.000 to Point/Station 16.000
 **** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type
 Decimal fraction soil group A = 0.000
 Decimal fraction soil group B = 1.000
 Decimal fraction soil group C = 0.000
 Decimal fraction soil group D = 0.000
 SCS curve number for soil(AMC 2) = 56.00
 Adjusted SCS curve number for AMC 3 = 75.80
 Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.044(In/Hr)
 Time of concentration = 1.48 min.
 Rainfall intensity = 12.930(In/Hr) for a 100.0 year storm
 Effective runoff coefficient used for area, (total area with modified
 rational method) (Q=KCIA) is C = 0.897
 Subarea runoff = 0.116(CFS) for 0.010(Ac.)
 Total runoff = 0.232(CFS)
 Effective area this stream = 0.02(Ac.)
 Total Study Area (Main Stream No. 2) = 6.97(Ac.)
 Area averaged Fm value = 0.044(In/Hr)

++++++
 Process from Point/Station 16.000 to Point/Station 14.000
 **** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 578.800(Ft.)
 Downstream point/station elevation = 575.000(Ft.)
 Pipe length = 209.00(Ft.) Manning's N = 0.013
 No. of pipes = 1 Required pipe flow = 0.232(CFS)
 Nearest computed pipe diameter = 6.00(In.)
 Calculated individual pipe flow = 0.232(CFS)
 Normal flow depth in pipe = 2.28(In.)

Flow top width inside pipe = 5.82(In.)
Critical Depth = 2.90(In.)
Pipe flow velocity = 3.39(Ft/s)
Travel time through pipe = 1.03 min.
Time of concentration (TC) = 2.50 min.

+++++
Process from Point/Station 16.000 to Point/Station 14.000
**** SUBAREA FLOW ADDITION ****

RESIDENTIAL(8 - 10 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.4000 Max loss rate(Fm)= 0.176(In/Hr)
Time of concentration = 2.50 min.
Rainfall intensity = 9.415(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified
rational method) (Q=KCIA) is C = 0.884
Subarea runoff = 2.431(CFS) for 0.300(Ac.)
Total runoff = 2.663(CFS)
Effective area this stream = 0.32(Ac.)
Total Study Area (Main Stream No. 2) = 7.27(Ac.)
Area averaged Fm value = 0.168(In/Hr)

+++++
Process from Point/Station 16.000 to Point/Station 14.000
**** SUBAREA FLOW ADDITION ****

RESIDENTIAL(8 - 10 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.4000 Max loss rate(Fm)= 0.176(In/Hr)
Time of concentration = 2.50 min.
Rainfall intensity = 9.415(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified
rational method) (Q=KCIA) is C = 0.884
Subarea runoff = 2.578(CFS) for 0.310(Ac.)
Total runoff = 5.241(CFS)
Effective area this stream = 0.63(Ac.)
Total Study Area (Main Stream No. 2) = 7.58(Ac.)
Area averaged Fm value = 0.172(In/Hr)

+++++
Process from Point/Station 16.000 to Point/Station 14.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area = 0.630(Ac.)

Runoff from this stream = 5.241(CFS)
 Time of concentration = 2.50 min.
 Rainfall intensity = 9.415(In/Hr)
 Area averaged loss rate (Fm) = 0.1718(In/Hr)
 Area averaged Pervious ratio (Ap) = 0.3905
 Summary of stream data:

Stream No.	Flow rate (CFS)	Area (Ac.)	TC (min)	Fm (In/Hr)	Rainfall Intensity (In/Hr)
------------	-----------------	------------	----------	------------	----------------------------

1	22.19	6.950	12.14	0.170	3.652
2	5.24	0.630	2.50	0.172	9.415

Qmax(1) =
 1.000 * 1.000 * 22.190) +
 0.377 * 1.000 * 5.241) + = 24.163

Qmax(2) =
 2.655 * 0.206 * 22.190) +
 1.000 * 1.000 * 5.241) + = 17.398

Total of 2 main streams to confluence:

Flow rates before confluence point:

23.190 6.241

Maximum flow rates at confluence using above data:

24.163 17.398

Area of streams before confluence:

6.950 0.630

Effective area values after confluence:

7.580 2.064

Results of confluence:

Total flow rate = 24.163(CFS)

Time of concentration = 12.135 min.

Effective stream area after confluence = 7.580(Ac.)

Study area average Pervious fraction(Ap) = 0.388

Study area average soil loss rate(Fm) = 0.171(In/Hr)

Study area total = 7.58(Ac.)

++++++
 Process from Point/Station 14.000 to Point/Station 17.000
 **** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 575.000(Ft.)
 Downstream point/station elevation = 573.500(Ft.)
 Pipe length = 90.00(Ft.) Manning's N = 0.013
 No. of pipes = 1 Required pipe flow = 24.163(CFS)
 Nearest computed pipe diameter = 24.00(In.)
 Calculated individual pipe flow = 24.163(CFS)
 Normal flow depth in pipe = 16.64(In.)
 Flow top width inside pipe = 22.13(In.)
 Critical Depth = 20.87(In.)
 Pipe flow velocity = 10.39(Ft/s)
 Travel time through pipe = 0.14 min.
 Time of concentration (TC) = 12.28 min.

++++++
 Process from Point/Station 14.000 to Point/Station 17.000

**** SUBAREA FLOW ADDITION ****

RESIDENTIAL(8 - 10 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.4000 Max loss rate(Fm)= 0.176(In/Hr)
Time of concentration = 12.28 min.
Rainfall intensity = 3.627(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified
rational method) (Q=KCIA) is C = 0.858
Subarea runoff = 0.594(CFS) for 0.380(Ac.)
Total runoff = 24.757(CFS)
Effective area this stream = 7.96(Ac.)
Total Study Area (Main Stream No. 1) = 7.96(Ac.)
Area averaged Fm value = 0.171(In/Hr)

+++++
Process from Point/Station 14.000 to Point/Station 17.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.044(In/Hr)
Time of concentration = 12.28 min.
Rainfall intensity = 3.627(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified
rational method) (Q=KCIA) is C = 0.860
Subarea runoff = 1.677(CFS) for 0.520(Ac.)
Total runoff = 26.434(CFS)
Effective area this stream = 8.48(Ac.)
Total Study Area (Main Stream No. 1) = 8.48(Ac.)
Area averaged Fm value = 0.163(In/Hr)

+++++
Process from Point/Station 17.000 to Point/Station 18.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 573.500(Ft.)
Downstream point/station elevation = 573.200(Ft.)
Pipe length = 355.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 26.434(CFS)
Nearest computed pipe diameter = 42.00(In.)
Calculated individual pipe flow = 26.434(CFS)
Normal flow depth in pipe = 31.27(In.)
Flow top width inside pipe = 36.64(In.)
Critical Depth = 19.00(In.)
Pipe flow velocity = 3.44(Ft/s)
Travel time through pipe = 1.72 min.
Time of concentration (TC) = 14.00 min.

+++++
Process from Point/Station 17.000 to Point/Station 18.000
**** SUBAREA FLOW ADDITION ****

PARK subarea

Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.8500 Max loss rate(Fm)= 0.374(In/Hr)
The area added to the existing stream causes a
a lower flow rate of Q = 26.164(CFS)
therefore the upstream flow rate of Q = 26.434(CFS) is being used
Time of concentration = 14.00 min.
Rainfall intensity = 3.352(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified
rational method) (Q=KCIA) is C = 0.852
Subarea runoff = 0.000(CFS) for 0.680(Ac.)
Total runoff = 26.434(CFS)
Effective area this stream = 9.16(Ac.)
Total Study Area (Main Stream No. 1) = 9.16(Ac.)
Area averaged Fm value = 0.179(In/Hr)

+++++
Process from Point/Station 17.000 to Point/Station 18.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:

In Main Stream number: 1
Stream flow area = 9.160(Ac.)
Runoff from this stream = 26.434(CFS)
Time of concentration = 14.00 min.
Rainfall intensity = 3.352(In/Hr)
Area averaged loss rate (Fm) = 0.1787(In/Hr)
Area averaged Pervious ratio (Ap) = 0.4062
Program is now starting with Main Stream No. 2

+++++
Process from Point/Station 19.000 to Point/Station 20.000
**** INITIAL AREA EVALUATION ****

RESIDENTIAL(8 - 10 dwl/acre)

Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.4000 Max loss rate(Fm)= 0.176(In/Hr)
Initial subarea data:
Initial area flow distance = 210.000(Ft.)
Top (of initial area) elevation = 586.900(Ft.)
Bottom (of initial area) elevation = 585.200(Ft.)
Difference in elevation = 1.700(Ft.)

Slope = 0.00810 s(%)= 0.81
TC = $k(0.374) * [(length^3) / (elevation\ change)]^{0.2}$
Initial area time of concentration = 8.320 min.
Rainfall intensity = 4.581(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.865
Subarea runoff = 2.260(CFS)
Total initial stream area = 0.570(Ac.)
Pervious area fraction = 0.400
Initial area Fm value = 0.176(In/Hr)

+++++
Process from Point/Station 20.000 to Point/Station 18.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 579.800(Ft.)
Downstream point/station elevation = 573.200(Ft.)
Pipe length = 370.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 2.260(CFS)
Nearest computed pipe diameter = 12.00(In.)
Calculated individual pipe flow = 2.260(CFS)
Normal flow depth in pipe = 5.82(In.)
Flow top width inside pipe = 11.99(In.)
Critical Depth = 7.72(In.)
Pipe flow velocity = 5.98(Ft/s)
Travel time through pipe = 1.03 min.
Time of concentration (TC) = 9.35 min.

+++++
Process from Point/Station 20.000 to Point/Station 18.000
**** SUBAREA FLOW ADDITION ****

RESIDENTIAL(8 - 10 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.4000 Max loss rate(Fm)= 0.176(In/Hr)
Time of concentration = 9.35 min.
Rainfall intensity = 4.271(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified
rational method) (Q=KCIA) is C = 0.863
Subarea runoff = 1.573(CFS) for 0.470(Ac.)
Total runoff = 3.833(CFS)
Effective area this stream = 1.04(Ac.)
Total Study Area (Main Stream No. 2) = 10.20(Ac.)
Area averaged Fm value = 0.176(In/Hr)

+++++
Process from Point/Station 20.000 to Point/Station 18.000
**** SUBAREA FLOW ADDITION ****

RESIDENTIAL(8 - 10 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000

Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.4000 Max loss rate(Fm)= 0.176(In/Hr)
Time of concentration = 9.35 min.
Rainfall intensity = 4.271(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified
rational method) (Q=KCIA) is C = 0.863
Subarea runoff = 1.511(CFS) for 0.410(Ac.)
Total runoff = 5.344(CFS)
Effective area this stream = 1.45(Ac.)
Total Study Area (Main Stream No. 2) = 10.61(Ac.)
Area averaged Fm value = 0.176(In/Hr)

+++++
Process from Point/Station 20.000 to Point/Station 18.000
**** SUBAREA FLOW ADDITION ****

CONDOMINIUM subarea type

Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.3500 Max loss rate(Fm)= 0.154(In/Hr)
Time of concentration = 9.35 min.
Rainfall intensity = 4.271(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified
rational method) (Q=KCIA) is C = 0.864
Subarea runoff = 2.482(CFS) for 0.670(Ac.)
Total runoff = 7.826(CFS)
Effective area this stream = 2.12(Ac.)
Total Study Area (Main Stream No. 2) = 11.28(Ac.)
Area averaged Fm value = 0.169(In/Hr)

+++++
Process from Point/Station 20.000 to Point/Station 18.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type

Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.044(In/Hr)
Time of concentration = 9.35 min.
Rainfall intensity = 4.271(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified
rational method) (Q=KCIA) is C = 0.867
Subarea runoff = 0.723(CFS) for 0.190(Ac.)
Total runoff = 8.549(CFS)
Effective area this stream = 2.31(Ac.)
Total Study Area (Main Stream No. 2) = 11.47(Ac.)
Area averaged Fm value = 0.159(In/Hr)

+++++
Process from Point/Station 20.000 to Point/Station 18.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.044(In/Hr)
Time of concentration = 9.35 min.
Rainfall intensity = 4.271(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method) (Q=KCIA) is C = 0.868
Subarea runoff = 0.609(CFS) for 0.160(Ac.)
Total runoff = 9.158(CFS)
Effective area this stream = 2.47(Ac.)
Total Study Area (Main Stream No. 2) = 11.63(Ac.)
Area averaged Fm value = 0.151(In/Hr)

+++++
Process from Point/Station 20.000 to Point/Station 18.000
**** SUBAREA FLOW ADDITION ****

CONDOMINIUM subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.3500 Max loss rate(Fm)= 0.154(In/Hr)
Time of concentration = 9.35 min.
Rainfall intensity = 4.271(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method) (Q=KCIA) is C = 0.868
Subarea runoff = 2.334(CFS) for 0.630(Ac.)
Total runoff = 11.492(CFS)
Effective area this stream = 3.10(Ac.)
Total Study Area (Main Stream No. 2) = 12.26(Ac.)
Area averaged Fm value = 0.152(In/Hr)

+++++
Process from Point/Station 20.000 to Point/Station 18.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area = 3.100(Ac.)
Runoff from this stream = 11.492(CFS)
Time of concentration = 9.35 min.
Rainfall intensity = 4.271(In/Hr)
Area averaged loss rate (Fm) = 0.1518(In/Hr)
Area averaged Pervious ratio (Ap) = 0.3452
Summary of stream data:

Stream No.	Flow rate (CFS)	Area (Ac.)	TC (min)	Fm (In/Hr)	Rainfall Intensity (In/Hr)
------------	-----------------	------------	----------	------------	----------------------------

1	26.43	9.160	14.00	0.179	3.352
2	11.49	3.100	9.35	0.152	4.271

Qmax(1) =

1.000 *	1.000 *	26.434) +	
0.777 *	1.000 *	11.492) + =	35.364

Qmax(2) =

1.289 *	0.668 *	26.434) +	
1.000 *	1.000 *	11.492) + =	34.258

Total of 2 main streams to confluence:

Flow rates before confluence point:

27.434	12.492
--------	--------

Maximum flow rates at confluence using above data:

35.364	34.258
--------	--------

Area of streams before confluence:

9.160	3.100
-------	-------

Effective area values after confluence:

12.260	9.219
--------	-------

Results of confluence:

Total flow rate = 35.364(CFS)

Time of concentration = 13.999 min.

Effective stream area after confluence = 12.260(Ac.)

Study area average Pervious fraction(Ap) = 0.391

Study area average soil loss rate(Fm) = 0.172(In/Hr)

Study area total = 12.26(Ac.)

+++++

Process from Point/Station	18.000 to Point/Station	22.000
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**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 573.200(Ft.)

Downstream point/station elevation = 572.300(Ft.)

Pipe length = 164.00(Ft.) Manning's N = 0.013

No. of pipes = 1 Required pipe flow = 35.364(CFS)

Nearest computed pipe diameter = 33.00(In.)

Calculated individual pipe flow = 35.364(CFS)

Normal flow depth in pipe = 24.52(In.)

Flow top width inside pipe = 28.84(In.)

Critical Depth = 23.74(In.)

Pipe flow velocity = 7.47(Ft/s)

Travel time through pipe = 0.37 min.

Time of concentration (TC) = 14.36 min.

+++++

Process from Point/Station	18.000 to Point/Station	22.000
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**** SUBAREA FLOW ADDITION ****

CONDOMINIUM subarea type

Decimal fraction soil group A = 0.000

Decimal fraction soil group B = 1.000

Decimal fraction soil group C = 0.000

Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.3500 Max loss rate(Fm)= 0.154(In/Hr)
Time of concentration = 14.36 min.
Rainfall intensity = 3.301(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified
rational method) (Q=KCIA) is C = 0.853
Subarea runoff = 1.031(CFS) for 0.660(Ac.)
Total runoff = 36.395(CFS)
Effective area this stream = 12.92(Ac.)
Total Study Area (Main Stream No. 1) = 12.92(Ac.)
Area averaged Fm value = 0.171(In/Hr)

+++++
Process from Point/Station 22.000 to Point/Station 23.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 572.300(Ft.)
Downstream point/station elevation = 571.900(Ft.)
Pipe length = 71.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 36.395(CFS)
Nearest computed pipe diameter = 33.00(In.)
Calculated individual pipe flow = 36.395(CFS)
Normal flow depth in pipe = 24.87(In.)
Flow top width inside pipe = 28.44(In.)
Critical Depth = 24.11(In.)
Pipe flow velocity = 7.58(Ft/s)
Travel time through pipe = 0.16 min.
Time of concentration (TC) = 14.52 min.

+++++
Process from Point/Station 22.000 to Point/Station 23.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type

Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.044(In/Hr)
Time of concentration = 14.52 min.
Rainfall intensity = 3.280(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified
rational method) (Q=KCIA) is C = 0.853
Subarea runoff = 0.101(CFS) for 0.120(Ac.)
Total runoff = 36.496(CFS)
Effective area this stream = 13.04(Ac.)
Total Study Area (Main Stream No. 1) = 13.04(Ac.)
Area averaged Fm value = 0.170(In/Hr)

+++++
Process from Point/Station 23.000 to Point/Station 24.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 571.900(Ft.)
Downstream point/station elevation = 571.600(Ft.)
Pipe length = 52.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 36.496(CFS)
Nearest computed pipe diameter = 33.00(In.)
Calculated individual pipe flow = 36.496(CFS)
Normal flow depth in pipe = 24.66(In.)
Flow top width inside pipe = 28.69(In.)
Critical Depth = 24.13(In.)
Pipe flow velocity = 7.66(Ft/s)
Travel time through pipe = 0.11 min.
Time of concentration (TC) = 14.63 min.
End of computations, Total Study Area = 13.04 (Ac.)

The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(A_p) = 0.386
Area averaged SCS curve number = 56.0

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2005 Version 7.1
Rational Hydrology Study Date: 03/14/19

TRACT NO 20008
100-YR STORM
DEVELOPED CONDITION
AREAS B1 - B46

Program License Serial Number 6094

***** Hydrology Study Control Information *****

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.400 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 3

+++++
Process from Point/Station 25.000 to Point/Station 26.000
**** INITIAL AREA EVALUATION ****

RESIDENTIAL(8 - 10 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.4000 Max loss rate(Fm)= 0.176(In/Hr)
Initial subarea data:
Initial area flow distance = 234.000(Ft.)
Top (of initial area) elevation = 586.300(Ft.)
Bottom (of initial area) elevation = 582.800(Ft.)
Difference in elevation = 3.500(Ft.)
Slope = 0.01496 s(%)= 1.50
 $TC = k(0.374) * [(length^3) / (elevation\ change)]^{0.2}$
Initial area time of concentration = 7.684 min.
Rainfall intensity = 4.805(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.867
Subarea runoff = 2.416(CFS)
Total initial stream area = 0.580(Ac.)
Pervious area fraction = 0.400
Initial area Fm value = 0.176(In/Hr)

+++++
Process from Point/Station 26.000 to Point/Station 27.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 577.900(Ft.)
Downstream point/station elevation = 574.800(Ft.)
Pipe length = 166.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 2.416(CFS)
Nearest computed pipe diameter = 12.00(In.)
Calculated individual pipe flow = 2.416(CFS)
Normal flow depth in pipe = 5.98(In.)
Flow top width inside pipe = 12.00(In.)
Critical Depth = 7.99(In.)
Pipe flow velocity = 6.19(Ft/s)
Travel time through pipe = 0.45 min.
Time of concentration (TC) = 8.13 min.

+++++
Process from Point/Station 26.000 to Point/Station 27.000
**** SUBAREA FLOW ADDITION ****

RESIDENTIAL(8 - 10 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.4000 Max loss rate(Fm)= 0.176(In/Hr)
Time of concentration = 8.13 min.
Rainfall intensity = 4.644(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified
rational method) (Q=KCIA) is C = 0.866
Subarea runoff = 2.249(CFS) for 0.580(Ac.)
Total runoff = 4.665(CFS)
Effective area this stream = 1.16(Ac.)
Total Study Area (Main Stream No. 1) = 1.16(Ac.)
Area averaged Fm value = 0.176(In/Hr)

+++++
Process from Point/Station 27.000 to Point/Station 28.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 574.800(Ft.)
Downstream point/station elevation = 573.800(Ft.)
Pipe length = 94.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 4.665(CFS)
Nearest computed pipe diameter = 15.00(In.)
Calculated individual pipe flow = 4.665(CFS)
Normal flow depth in pipe = 9.25(In.)
Flow top width inside pipe = 14.59(In.)
Critical Depth = 10.51(In.)
Pipe flow velocity = 5.87(Ft/s)
Travel time through pipe = 0.27 min.
Time of concentration (TC) = 8.40 min.

+++++
Process from Point/Station 27.000 to Point/Station 28.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type

Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.044(In/Hr)
Time of concentration = 8.40 min.
Rainfall intensity = 4.555(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified
rational method) (Q=KCIA) is C = 0.868
Subarea runoff = 0.475(CFS) for 0.140(Ac.)
Total runoff = 5.140(CFS)
Effective area this stream = 1.30(Ac.)
Total Study Area (Main Stream No. 1) = 1.30(Ac.)
Area averaged Fm value = 0.162(In/Hr)

+++++
Process from Point/Station 28.000 to Point/Station 29.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 573.800(Ft.)
Downstream point/station elevation = 573.100(Ft.)
Pipe length = 63.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 5.140(CFS)
Nearest computed pipe diameter = 15.00(In.)
Calculated individual pipe flow = 5.140(CFS)
Normal flow depth in pipe = 9.74(In.)
Flow top width inside pipe = 14.32(In.)
Critical Depth = 11.03(In.)
Pipe flow velocity = 6.10(Ft/s)
Travel time through pipe = 0.17 min.
Time of concentration (TC) = 8.57 min.

+++++
Process from Point/Station 28.000 to Point/Station 29.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:

In Main Stream number: 1
Stream flow area = 1.300(Ac.)
Runoff from this stream = 5.140(CFS)
Time of concentration = 8.57 min.
Rainfall intensity = 4.500(In/Hr)
Area averaged loss rate (Fm) = 0.1618(In/Hr)
Area averaged Pervious ratio (Ap) = 0.3677
Program is now starting with Main Stream No. 2

+++++
Process from Point/Station 30.000 to Point/Station 31.000
**** INITIAL AREA EVALUATION ****

RESIDENTIAL(8 - 10 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000

SCS curve number for soil(AMC 2) = 56.00
 Adjusted SCS curve number for AMC 3 = 75.80
 Pervious ratio(Ap) = 0.4000 Max loss rate(Fm)= 0.176(In/Hr)
 Initial subarea data:
 Initial area flow distance = 234.000(Ft.)
 Top (of initial area) elevation = 584.700(Ft.)
 Bottom (of initial area) elevation = 581.700(Ft.)
 Difference in elevation = 3.000(Ft.)
 Slope = 0.01282 s(%)= 1.28
 $TC = k(0.374)*[(length^3)/(elevation\ change)]^{0.2}$
 Initial area time of concentration = 7.925 min.
 Rainfall intensity = 4.717(In/Hr) for a 100.0 year storm
 Effective runoff coefficient used for area (Q=KCIA) is C = 0.866
 Subarea runoff = 2.370(CFS)
 Total initial stream area = 0.580(Ac.)
 Pervious area fraction = 0.400
 Initial area Fm value = 0.176(In/Hr)

++++++
 Process from Point/Station 31.000 to Point/Station 29.000
 **** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 576.800(Ft.)
 Downstream point/station elevation = 573.100(Ft.)
 Pipe length = 85.00(Ft.) Manning's N = 0.013
 No. of pipes = 1 Required pipe flow = 2.370(CFS)
 Nearest computed pipe diameter = 9.00(In.)
 Calculated individual pipe flow = 2.370(CFS)
 Normal flow depth in pipe = 5.48(In.)
 Flow top width inside pipe = 8.78(In.)
 Critical Depth = 8.18(In.)
 Pipe flow velocity = 8.42(Ft/s)
 Travel time through pipe = 0.17 min.
 Time of concentration (TC) = 8.09 min.

++++++
 Process from Point/Station 31.000 to Point/Station 29.000
 **** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type
 Decimal fraction soil group A = 0.000
 Decimal fraction soil group B = 1.000
 Decimal fraction soil group C = 0.000
 Decimal fraction soil group D = 0.000
 SCS curve number for soil(AMC 2) = 56.00
 Adjusted SCS curve number for AMC 3 = 75.80
 Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.044(In/Hr)
 Time of concentration = 8.09 min.
 Rainfall intensity = 4.658(In/Hr) for a 100.0 year storm
 Effective runoff coefficient used for area, (total area with modified
 rational method) (Q=KCIA) is C = 0.873
 Subarea runoff = 0.800(CFS) for 0.200(Ac.)
 Total runoff = 3.170(CFS)
 Effective area this stream = 0.78(Ac.)
 Total Study Area (Main Stream No. 2) = 2.08(Ac.)
 Area averaged Fm value = 0.142(In/Hr)

+++++
Process from Point/Station 31.000 to Point/Station 29.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:

In Main Stream number: 2
Stream flow area = 0.780 (Ac.)
Runoff from this stream = 3.170 (CFS)
Time of concentration = 8.09 min.
Rainfall intensity = 4.658 (In/Hr)
Area averaged loss rate (Fm) = 0.1421 (In/Hr)
Area averaged Pervious ratio (Ap) = 0.3231
Program is now starting with Main Stream No. 3

+++++
Process from Point/Station 32.000 to Point/Station 33.000
**** INITIAL AREA EVALUATION ****

RESIDENTIAL(8 - 10 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.4000 Max loss rate(Fm)= 0.176 (In/Hr)
Initial subarea data:
Initial area flow distance = 234.000 (Ft.)
Top (of initial area) elevation = 583.600 (Ft.)
Bottom (of initial area) elevation = 581.900 (Ft.)
Difference in elevation = 1.700 (Ft.)
Slope = 0.00726 s(%)= 0.73
TC = $k(0.374)*[(length^3)/(elevation\ change)]^{0.2}$
Initial area time of concentration = 8.878 min.
Rainfall intensity = 4.406 (In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.864
Subarea runoff = 3.084 (CFS)
Total initial stream area = 0.810 (Ac.)
Pervious area fraction = 0.400
Initial area Fm value = 0.176 (In/Hr)

+++++
Process from Point/Station 33.000 to Point/Station 29.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 576.600 (Ft.)
Downstream point/station elevation = 573.100 (Ft.)
Pipe length = 119.00 (Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 3.084 (CFS)
Nearest computed pipe diameter = 12.00 (In.)
Calculated individual pipe flow = 3.084 (CFS)
Normal flow depth in pipe = 6.04 (In.)
Flow top width inside pipe = 12.00 (In.)
Critical Depth = 9.03 (In.)
Pipe flow velocity = 7.80 (Ft/s)
Travel time through pipe = 0.25 min.
Time of concentration (TC) = 9.13 min.

```

+++++
Process from Point/Station      33.000 to Point/Station      29.000
**** SUBAREA FLOW ADDITION ****

```

COMMERCIAL subarea type
 Decimal fraction soil group A = 0.000
 Decimal fraction soil group B = 1.000
 Decimal fraction soil group C = 0.000
 Decimal fraction soil group D = 0.000
 SCS curve number for soil(AMC 2) = 56.00
 Adjusted SCS curve number for AMC 3 = 75.80
 Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.044(In/Hr)
 Time of concentration = 9.13 min.
 Rainfall intensity = 4.332(In/Hr) for a 100.0 year storm
 Effective runoff coefficient used for area,(total area with modified
 rational method)(Q=KCIA) is C = 0.866
 Subarea runoff = 0.332(CFS) for 0.100(Ac.)
 Total runoff = 3.416(CFS)
 Effective area this stream = 0.91(Ac.)
 Total Study Area (Main Stream No. 3) = 2.99(Ac.)
 Area averaged Fm value = 0.161(In/Hr)

```

+++++
Process from Point/Station      33.000 to Point/Station      29.000
**** CONFLUENCE OF MAIN STREAMS ****

```

The following data inside Main Stream is listed:

In Main Stream number: 3
 Stream flow area = 0.910(Ac.)
 Runoff from this stream = 3.416(CFS)
 Time of concentration = 9.13 min.
 Rainfall intensity = 4.332(In/Hr)
 Area averaged loss rate (Fm) = 0.1615(In/Hr)
 Area averaged Pervious ratio (Ap) = 0.3670
 Summary of stream data:

Stream No.	Flow rate (CFS)	Area (Ac.)	TC (min)	Fm (In/Hr)	Rainfall Intensity (In/Hr)
---------------	--------------------	---------------	-------------	---------------	-------------------------------

1	5.14	1.300	8.57	0.162	4.500
2	3.17	0.780	8.09	0.142	4.658
3	3.42	0.910	9.13	0.161	4.332

Qmax(1) =
 1.000 * 1.000 * 5.140) +
 0.965 * 1.000 * 3.170) +
 1.040 * 0.938 * 3.416) + = 11.534

Qmax(2) =
 1.036 * 0.944 * 5.140) +
 1.000 * 1.000 * 3.170) +
 1.078 * 0.886 * 3.416) + = 11.463

Qmax(3) =
 0.961 * 1.000 * 5.140) +
 0.928 * 1.000 * 3.170) +
 1.000 * 1.000 * 3.416) + = 11.298

Total of 3 main streams to confluence:
 Flow rates before confluence point:

6.140	4.170	4.416
Maximum flow rates at confluence using above data:		
11.534	11.463	11.298
Area of streams before confluence:		
1.300	0.780	0.910
Effective area values after confluence:		
2.934	2.814	2.990

Results of confluence:

Total flow rate = 11.534(CFS)
Time of concentration = 8.570 min.
Effective stream area after confluence = 2.934(Ac.)
Study area average Pervious fraction(Ap) = 0.356
Study area average soil loss rate(Fm) = 0.157(In/Hr)
Study area total = 2.99(Ac.)

+++++
Process from Point/Station 29.000 to Point/Station 34.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 573.100(Ft.)
Downstream point/station elevation = 572.600(Ft.)
Pipe length = 136.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 11.534(CFS)
Nearest computed pipe diameter = 24.00(In.)
Calculated individual pipe flow = 11.534(CFS)
Normal flow depth in pipe = 16.85(In.)
Flow top width inside pipe = 21.95(In.)
Critical Depth = 14.63(In.)
Pipe flow velocity = 4.89(Ft/s)
Travel time through pipe = 0.46 min.
Time of concentration (TC) = 9.03 min.

+++++
Process from Point/Station 29.000 to Point/Station 34.000
**** SUBAREA FLOW ADDITION ****

CONDOMINIUM subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.3500 Max loss rate(Fm)= 0.154(In/Hr)
Time of concentration = 9.03 min.
Rainfall intensity = 4.360(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified rational method) (Q=KCIA) is C = 0.868
Subarea runoff = 2.443(CFS) for 0.760(Ac.)
Total runoff = 13.977(CFS)
Effective area this stream = 3.69(Ac.)
Total Study Area (Main Stream No. 1) = 3.75(Ac.)
Area averaged Fm value = 0.156(In/Hr)

+++++

Process from Point/Station 34.000 to Point/Station 35.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 572.600(Ft.)
Downstream point/station elevation = 572.200(Ft.)
Pipe length = 71.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 13.977(CFS)
Nearest computed pipe diameter = 24.00(In.)
Calculated individual pipe flow = 13.977(CFS)
Normal flow depth in pipe = 16.59(In.)
Flow top width inside pipe = 22.17(In.)
Critical Depth = 16.14(In.)
Pipe flow velocity = 6.04(Ft/s)
Travel time through pipe = 0.20 min.
Time of concentration (TC) = 9.23 min.

+++++
Process from Point/Station 34.000 to Point/Station 35.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:

In Main Stream number: 1
Stream flow area = 3.694(Ac.)
Runoff from this stream = 13.977(CFS)
Time of concentration = 9.23 min.
Rainfall intensity = 4.304(In/Hr)
Area averaged loss rate (Fm) = 0.1560(In/Hr)
Area averaged Pervious ratio (Ap) = 0.3546
Program is now starting with Main Stream No. 2

+++++
Process from Point/Station 36.000 to Point/Station 37.000
**** INITIAL AREA EVALUATION ****

CONDOMINIUM subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.3500 Max loss rate(Fm)= 0.154(In/Hr)
Initial subarea data:
Initial area flow distance = 260.000(Ft.)
Top (of initial area) elevation = 582.400(Ft.)
Bottom (of initial area) elevation = 581.100(Ft.)
Difference in elevation = 1.300(Ft.)
Slope = 0.00500 s(%)= 0.50
 $TC = k(0.360)*[(length^3)/(elevation\ change)]^{0.2}$
Initial area time of concentration = 9.605 min.
Rainfall intensity = 4.203(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.867
Subarea runoff = 4.081(CFS)
Total initial stream area = 1.120(Ac.)
Pervious area fraction = 0.350
Initial area Fm value = 0.154(In/Hr)

+++++
Process from Point/Station 37.000 to Point/Station 35.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 576.200(Ft.)
Downstream point/station elevation = 572.200(Ft.)
Pipe length = 217.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 4.081(CFS)
Nearest computed pipe diameter = 12.00(In.)
Calculated individual pipe flow = 4.081(CFS)
Normal flow depth in pipe = 8.45(In.)
Flow top width inside pipe = 10.95(In.)
Critical Depth = 10.25(In.)
Pipe flow velocity = 6.91(Ft/s)
Travel time through pipe = 0.52 min.
Time of concentration (TC) = 10.13 min.

+++++
Process from Point/Station 37.000 to Point/Station 35.000
**** SUBAREA FLOW ADDITION ****

CONDOMINIUM subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.3500 Max loss rate(Fm)= 0.154(In/Hr)
Time of concentration = 10.13 min.
Rainfall intensity = 4.071(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified
rational method) (Q=KCIA) is C = 0.866
Subarea runoff = 3.110(CFS) for 0.920(Ac.)
Total runoff = 7.191(CFS)
Effective area this stream = 2.04(Ac.)
Total Study Area (Main Stream No. 2) = 5.79(Ac.)
Area averaged Fm value = 0.154(In/Hr)

+++++
Process from Point/Station 37.000 to Point/Station 35.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:

In Main Stream number: 2
Stream flow area = 2.040(Ac.)
Runoff from this stream = 7.191(CFS)
Time of concentration = 10.13 min.
Rainfall intensity = 4.071(In/Hr)
Area averaged loss rate (Fm) = 0.1540(In/Hr)
Area averaged Pervious ratio (Ap) = 0.3500
Summary of stream data:

Stream No.	Flow rate (CFS)	Area (Ac.)	TC (min)	Fm (In/Hr)	Rainfall Intensity (In/Hr)
1	13.98	3.694	9.23	0.156	4.304

2	7.19	2.040	10.13	0.154	4.071
Qmax(1) =					
	1.000 *	1.000 *	13.977)	+	
	1.060 *	0.911 *	7.191)	+	= 20.921
Qmax(2) =					
	0.944 *	1.000 *	13.977)	+	
	1.000 *	1.000 *	7.191)	+	= 20.382

Total of 2 main streams to confluence:

Flow rates before confluence point:

14.977 8.191

Maximum flow rates at confluence using above data:

20.921 20.382

Area of streams before confluence:

3.694 2.040

Effective area values after confluence:

5.553 5.734

Results of confluence:

Total flow rate = 20.921(CFS)

Time of concentration = 9.229 min.

Effective stream area after confluence = 5.553(Ac.)

Study area average Pervious fraction(Ap) = 0.353

Study area average soil loss rate(Fm) = 0.155(In/Hr)

Study area total = 5.73(Ac.)

+++++

Process from Point/Station	35.000 to Point/Station	38.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****		

Upstream point/station elevation = 572.200(Ft.)
Downstream point/station elevation = 571.900(Ft.)
Pipe length = 48.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 20.921(CFS)
Nearest computed pipe diameter = 27.00(In.)
Calculated individual pipe flow = 20.921(CFS)
Normal flow depth in pipe = 19.20(In.)
Flow top width inside pipe = 24.48(In.)
Critical Depth = 19.22(In.)
Pipe flow velocity = 6.92(Ft/s)
Travel time through pipe = 0.12 min.
Time of concentration (TC) = 9.34 min.

+++++

Process from Point/Station	35.000 to Point/Station	38.000
**** SUBAREA FLOW ADDITION ****		

COMMERCIAL subarea type

Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.044(In/Hr)
Time of concentration = 9.34 min.
Rainfall intensity = 4.272(In/Hr) for a 100.0 year storm

Effective runoff coefficient used for area, (total area with modified
rational method) (Q=KCIA) is C = 0.868
Subarea runoff = 0.111(CFS) for 0.120(Ac.)
Total runoff = 21.032(CFS)
Effective area this stream = 5.67(Ac.)
Total Study Area (Main Stream No. 1) = 5.91(Ac.)
Area averaged Fm value = 0.153(In/Hr)

+++++
Process from Point/Station 38.000 to Point/Station 24.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 571.900(Ft.)
Downstream point/station elevation = 571.600(Ft.)
Pipe length = 54.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 21.032(CFS)
Nearest computed pipe diameter = 27.00(In.)
Calculated individual pipe flow = 21.032(CFS)
Normal flow depth in pipe = 20.25(In.)
Flow top width inside pipe = 23.38(In.)
Critical Depth = 19.26(In.)
Pipe flow velocity = 6.58(Ft/s)
Travel time through pipe = 0.14 min.
Time of concentration (TC) = 9.48 min.

+++++
Process from Point/Station 38.000 to Point/Station 24.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:

In Main Stream number: 1
Stream flow area = 5.673(Ac.)
Runoff from this stream = 21.032(CFS)
Time of concentration = 9.48 min.
Rainfall intensity = 4.235(In/Hr)
Area averaged loss rate (Fm) = 0.1529(In/Hr)
Area averaged Pervious ratio (Ap) = 0.3476
Program is now starting with Main Stream No. 2

+++++
Process from Point/Station 38.000 to Point/Station 24.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****

Soil classification AP and SCS values input by user
USER INPUT of soil data for subarea
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.3860 Max loss rate(Fm)= 0.170(In/Hr)
Rainfall intensity = 3.264(In/Hr) for a 100.0 year storm
User specified values are as follows:
TC = 14.64 min. Rain intensity = 3.26(In/Hr)
Total area this stream = 13.04(Ac.)
Total Study Area (Main Stream No. 2) = 18.95(Ac.)
Total runoff = 36.21(CFS)

+++++

Process from Point/Station 38.000 to Point/Station 24.000
 **** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:

In Main Stream number: 2

Stream flow area = 13.040 (Ac.)

Runoff from this stream = 36.210 (CFS)

Time of concentration = 14.64 min.

Rainfall intensity = 3.264 (In/Hr)

Area averaged loss rate (Fm) = 0.1698 (In/Hr)

Area averaged Pervious ratio (Ap) = 0.3860

Summary of stream data:

Stream No.	Flow rate (CFS)	Area (Ac.)	TC (min)	Fm (In/Hr)	Rainfall Intensity (In/Hr)
------------	-----------------	------------	----------	------------	----------------------------

1	21.03	5.673	9.48	0.153	4.235
---	-------	-------	------	-------	-------

2	36.21	13.040	14.64	0.170	3.264
---	-------	--------	-------	-------	-------

Qmax(1) =

1.000 * 1.000 * 21.032) +

1.314 * 0.648 * 36.210) + = 51.850

Qmax(2) =

0.762 * 1.000 * 21.032) +

1.000 * 1.000 * 36.210) + = 52.236

Total of 2 main streams to confluence:

Flow rates before confluence point:

22.032 37.210

Maximum flow rates at confluence using above data:

51.850 52.236

Area of streams before confluence:

5.673 13.040

Effective area values after confluence:

14.118 18.713

Results of confluence:

Total flow rate = 52.236 (CFS)

Time of concentration = 14.640 min.

Effective stream area after confluence = 18.713 (Ac.)

Study area average Pervious fraction (Ap) = 0.374

Study area average soil loss rate (Fm) = 0.165 (In/Hr)

Study area total = 18.71 (Ac.)

+++++
 Process from Point/Station 24.000 to Point/Station 39.000
 **** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 571.600 (Ft.)

Downstream point/station elevation = 571.100 (Ft.)

Pipe length = 105.00 (Ft.) Manning's N = 0.013

No. of pipes = 1 Required pipe flow = 52.236 (CFS)

Nearest computed pipe diameter = 39.00 (In.)

Calculated individual pipe flow = 52.236 (CFS)

Normal flow depth in pipe = 29.39 (In.)

Flow top width inside pipe = 33.61 (In.)

Critical Depth = 27.70 (In.)

Pipe flow velocity = 7.79 (Ft/s)

Travel time through pipe = 0.22 min.
Time of concentration (TC) = 14.86 min.

+++++
Process from Point/Station 24.000 to Point/Station 39.000
**** SUBAREA FLOW ADDITION ****

CONDOMINIUM subarea type

Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.3500 Max loss rate(Fm)= 0.154(In/Hr)
Time of concentration = 14.86 min.
Rainfall intensity = 3.234(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified
rational method) (Q=KCIA) is C = 0.854
Subarea runoff = 1.367(CFS) for 0.690(Ac.)
Total runoff = 53.603(CFS)
Effective area this stream = 19.40(Ac.)
Total Study Area (Main Stream No. 1) = 19.64(Ac.)
Area averaged Fm value = 0.164(In/Hr)

+++++
Process from Point/Station 24.000 to Point/Station 39.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type

Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.044(In/Hr)
Time of concentration = 14.86 min.
Rainfall intensity = 3.234(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified
rational method) (Q=KCIA) is C = 0.855
Subarea runoff = 0.603(CFS) for 0.210(Ac.)
Total runoff = 54.206(CFS)
Effective area this stream = 19.61(Ac.)
Total Study Area (Main Stream No. 1) = 19.85(Ac.)
Area averaged Fm value = 0.163(In/Hr)

+++++
Process from Point/Station 24.000 to Point/Station 39.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type

Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00

Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.044(In/Hr)
Time of concentration = 14.86 min.
Rainfall intensity = 3.234(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified
rational method) (Q=KCIA) is C = 0.855
Subarea runoff = 0.574(CFS) for 0.200(Ac.)
Total runoff = 54.780(CFS)
Effective area this stream = 19.81(Ac.)
Total Study Area (Main Stream No. 1) = 20.05(Ac.)
Area averaged Fm value = 0.162(In/Hr)

+++++
Process from Point/Station 39.000 to Point/Station 40.000
**** IMPROVED CHANNEL TRAVEL TIME ****

Upstream point elevation = 571.100(Ft.)
Downstream point elevation = 570.000(Ft.)
Channel length thru subarea = 90.000(Ft.)
Channel base width = 11.000(Ft.)
Slope or 'Z' of left channel bank = 3.000
Slope or 'Z' of right channel bank = 3.000
Estimated mean flow rate at midpoint of channel = 55.205(CFS)
Manning's 'N' = 0.020
Maximum depth of channel = 10.000(Ft.)
Flow(q) thru subarea = 55.205(CFS)
Depth of flow = 0.715(Ft.), Average velocity = 5.877(Ft/s)
Channel flow top width = 15.288(Ft.)
Flow Velocity = 5.88(Ft/s)
Travel time = 0.26 min.
Time of concentration = 15.12 min.
Critical depth = 0.852(Ft.)

Adding area flow to channel

PARK subarea

Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.8500 Max loss rate(Fm)= 0.374(In/Hr)
Rainfall intensity = 3.201(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified
rational method) (Q=KCIA) is C = 0.853
Subarea runoff = 0.763(CFS) for 0.530(Ac.)
Total runoff = 55.542(CFS)
Effective area this stream = 20.34(Ac.)
Total Study Area (Main Stream No. 1) = 20.58(Ac.)
Area averaged Fm value = 0.167(In/Hr)
Depth of flow = 0.717(Ft.), Average velocity = 5.889(Ft/s)
Critical depth = 0.852(Ft.)
End of computations, Total Study Area = 20.58 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.380
Area averaged SCS curve number = 56.0

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

BASIN E
AREA B1
INTERIM
100 YR

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2005 Version 7.1
Rational Hydrology Study Date: 08/25/16

AREA B1 - AREA B19
100 YR STORM

Program License Serial Number 6094

***** Hydrology Study Control Information *****

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.400 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 3

+++++
Process from Point/Station 10.000 to Point/Station 11.000
**** INITIAL AREA EVALUATION ****

RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.2000 Max loss rate(Fm)= 0.088(In/Hr)
Initial subarea data:
Initial area flow distance = 224.000(Ft.)
Top (of initial area) elevation = 588.000(Ft.)
Bottom (of initial area) elevation = 579.700(Ft.)
Difference in elevation = 8.300(Ft.)
Slope = 0.03705 s(%)= 3.71
 $TC = k(0.324)*[(length^3)/(elevation\ change)]^{0.2}$
Initial area time of concentration = 5.456 min.
Rainfall intensity = 5.901(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.887
Subarea runoff = 6.016(CFS)
Total initial stream area = 1.150(Ac.)
Pervious area fraction = 0.200
Initial area Fm value = 0.088(In/Hr)

+++++
Process from Point/Station 11.000 to Point/Station 12.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 579.700(Ft.)
Downstream point/station elevation = 577.900(Ft.)
Pipe length = 241.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 6.016(CFS)
Nearest computed pipe diameter = 18.00(In.)
Calculated individual pipe flow = 6.016(CFS)
Normal flow depth in pipe = 10.71(In.)
Flow top width inside pipe = 17.67(In.)
Critical Depth = 11.38(In.)
Pipe flow velocity = 5.49(Ft/s)
Travel time through pipe = 0.73 min.
Time of concentration (TC) = 6.19 min.

+++++
Process from Point/Station 11.000 to Point/Station 12.000
**** SUBAREA FLOW ADDITION ****

RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.2000 Max loss rate(Fm)= 0.088(In/Hr)
Time of concentration = 6.19 min.
Rainfall intensity = 5.472(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method) (Q=KCIA) is C = 0.886
Subarea runoff = 1.785(CFS) for 0.460(Ac.)
Total runoff = 7.801(CFS)
Effective area this stream = 1.61(Ac.)
Total Study Area (Main Stream No. 1) = 1.61(Ac.)
Area averaged Fm value = 0.088(In/Hr)

+++++
Process from Point/Station 11.000 to Point/Station 12.000
**** SUBAREA FLOW ADDITION ****

RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.2000 Max loss rate(Fm)= 0.088(In/Hr)
Time of concentration = 6.19 min.
Rainfall intensity = 5.472(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method) (Q=KCIA) is C = 0.886
Subarea runoff = 2.762(CFS) for 0.570(Ac.)
Total runoff = 10.563(CFS)
Effective area this stream = 2.18(Ac.)
Total Study Area (Main Stream No. 1) = 2.18(Ac.)
Area averaged Fm value = 0.088(In/Hr)

+++++
Process from Point/Station 12.000 to Point/Station 13.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 577.900(Ft.)
Downstream point/station elevation = 576.700(Ft.)
Pipe length = 164.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 10.563(CFS)
Nearest computed pipe diameter = 21.00(In.)
Calculated individual pipe flow = 10.563(CFS)
Normal flow depth in pipe = 13.95(In.)
Flow top width inside pipe = 19.84(In.)
Critical Depth = 14.52(In.)
Pipe flow velocity = 6.23(Ft/s)
Travel time through pipe = 0.44 min.
Time of concentration (TC) = 6.63 min.

+++++
Process from Point/Station 12.000 to Point/Station 13.000
**** SUBAREA FLOW ADDITION ****

RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.2000 Max loss rate(Fm)= 0.088(In/Hr)
Time of concentration = 6.63 min.
Rainfall intensity = 5.251(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.885
Subarea runoff = 1.566(CFS) for 0.430(Ac.)
Total runoff = 12.129(CFS)
Effective area this stream = 2.61(Ac.)
Total Study Area (Main Stream No. 1) = 2.61(Ac.)
Area averaged Fm value = 0.088(In/Hr)

+++++
Process from Point/Station 12.000 to Point/Station 13.000
**** SUBAREA FLOW ADDITION ****

RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.2000 Max loss rate(Fm)= 0.088(In/Hr)
Time of concentration = 6.63 min.
Rainfall intensity = 5.251(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.885
Subarea runoff = 2.463(CFS) for 0.530(Ac.)
Total runoff = 14.592(CFS)
Effective area this stream = 3.14(Ac.)

Total Study Area (Main Stream No. 1) = 3.14 (Ac.)
Area averaged Fm value = 0.088 (In/Hr)

+++++
Process from Point/Station 13.000 to Point/Station 14.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 576.700 (Ft.)
Downstream point/station elevation = 575.500 (Ft.)
Pipe length = 158.00 (Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 14.592 (CFS)
Nearest computed pipe diameter = 24.00 (In.)
Calculated individual pipe flow = 14.592 (CFS)
Normal flow depth in pipe = 15.38 (In.)
Flow top width inside pipe = 23.03 (In.)
Critical Depth = 16.52 (In.)
Pipe flow velocity = 6.87 (Ft/s)
Travel time through pipe = 0.38 min.
Time of concentration (TC) = 7.01 min.

+++++
Process from Point/Station 13.000 to Point/Station 14.000
**** SUBAREA FLOW ADDITION ****

RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.2000 Max loss rate(Fm)= 0.088 (In/Hr)
Time of concentration = 7.01 min.
Rainfall intensity = 5.077 (In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified
rational method) (Q=KCIA) is C = 0.884
Subarea runoff = 1.438 (CFS) for 0.430 (Ac.)
Total runoff = 16.030 (CFS)
Effective area this stream = 3.57 (Ac.)
Total Study Area (Main Stream No. 1) = 3.57 (Ac.)
Area averaged Fm value = 0.088 (In/Hr)

+++++
Process from Point/Station 13.000 to Point/Station 14.000
**** SUBAREA FLOW ADDITION ****

RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.2000 Max loss rate(Fm)= 0.088 (In/Hr)
Time of concentration = 7.01 min.
Rainfall intensity = 5.077 (In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified

rational method) (Q=KCIA) is C = 0.884
Subarea runoff = 2.694(CFS) for 0.600(Ac.)
Total runoff = 18.724(CFS)
Effective area this stream = 4.17(Ac.)
Total Study Area (Main Stream No. 1) = 4.17(Ac.)
Area averaged Fm value = 0.088(In/Hr)

+++++
Process from Point/Station 14.000 to Point/Station 15.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 575.500(Ft.)
Downstream point/station elevation = 574.300(Ft.)
Pipe length = 138.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 18.724(CFS)
Nearest computed pipe diameter = 24.00(In.)
Calculated individual pipe flow = 18.724(CFS)
Normal flow depth in pipe = 17.60(In.)
Flow top width inside pipe = 21.22(In.)
Critical Depth = 18.69(In.)
Pipe flow velocity = 7.59(Ft/s)
Travel time through pipe = 0.30 min.
Time of concentration (TC) = 7.31 min.

+++++
Process from Point/Station 14.000 to Point/Station 15.000
**** SUBAREA FLOW ADDITION ****

RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.2000 Max loss rate(Fm)= 0.088(In/Hr)
Time of concentration = 7.31 min.
Rainfall intensity = 4.950(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified
rational method) (Q=KCIA) is C = 0.884
Subarea runoff = 1.447(CFS) for 0.440(Ac.)
Total runoff = 20.172(CFS)
Effective area this stream = 4.61(Ac.)
Total Study Area (Main Stream No. 1) = 4.61(Ac.)
Area averaged Fm value = 0.088(In/Hr)

+++++
Process from Point/Station 14.000 to Point/Station 15.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80

Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.044(In/Hr)
Time of concentration = 7.31 min.
Rainfall intensity = 4.950(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified
rational method) (Q=KCIA) is C = 0.885
Subarea runoff = 2.119(CFS) for 0.480(Ac.)
Total runoff = 22.291(CFS)
Effective area this stream = 5.09(Ac.)
Total Study Area (Main Stream No. 1) = 5.09(Ac.)
Area averaged Fm value = 0.084(In/Hr)

+++++
Process from Point/Station 14.000 to Point/Station 15.000
**** SUBAREA FLOW ADDITION ****

PARK subarea

Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.8500 Max loss rate(Fm)= 0.374(In/Hr)
Time of concentration = 7.31 min.
Rainfall intensity = 4.950(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified
rational method) (Q=KCIA) is C = 0.882
Subarea runoff = 0.947(CFS) for 0.230(Ac.)
Total runoff = 23.238(CFS)
Effective area this stream = 5.32(Ac.)
Total Study Area (Main Stream No. 1) = 5.32(Ac.)
Area averaged Fm value = 0.096(In/Hr)

+++++
Process from Point/Station 15.000 to Point/Station 16.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 574.300(Ft.)
Downstream point/station elevation = 573.200(Ft.)
Pipe length = 139.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 23.238(CFS)
Nearest computed pipe diameter = 27.00(In.)
Calculated individual pipe flow = 23.238(CFS)
Normal flow depth in pipe = 19.01(In.)
Flow top width inside pipe = 24.65(In.)
Critical Depth = 20.23(In.)
Pipe flow velocity = 7.77(Ft/s)
Travel time through pipe = 0.30 min.
Time of concentration (TC) = 7.61 min.

+++++
Process from Point/Station 15.000 to Point/Station 16.000
**** SUBAREA FLOW ADDITION ****

RESIDENTIAL(11+ dwl/acre)

Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000

Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.2000 Max loss rate(Fm)= 0.088(In/Hr)
Time of concentration = 7.61 min.
Rainfall intensity = 4.832(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.882
Subarea runoff = 1.317(CFS) for 0.440(Ac.)
Total runoff = 24.555(CFS)
Effective area this stream = 5.76(Ac.)
Total Study Area (Main Stream No. 1) = 5.76(Ac.)
Area averaged Fm value = 0.096(In/Hr)

+++++
Process from Point/Station 15.000 to Point/Station 16.000
**** SUBAREA FLOW ADDITION ****

RESIDENTIAL(11+ dwl/acre)

Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.2000 Max loss rate(Fm)= 0.088(In/Hr)
Time of concentration = 7.61 min.
Rainfall intensity = 4.832(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.882
Subarea runoff = 2.647(CFS) for 0.620(Ac.)
Total runoff = 27.203(CFS)
Effective area this stream = 6.38(Ac.)
Total Study Area (Main Stream No. 1) = 6.38(Ac.)
Area averaged Fm value = 0.095(In/Hr)

+++++
Process from Point/Station 16.000 to Point/Station 17.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 573.200(Ft.)
Downstream point/station elevation = 572.000(Ft.)
Pipe length = 150.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 27.203(CFS)
Nearest computed pipe diameter = 27.00(In.)
Calculated individual pipe flow = 27.203(CFS)
Normal flow depth in pipe = 21.70(In.)
Flow top width inside pipe = 21.44(In.)
Critical Depth = 21.81(In.)
Pipe flow velocity = 7.94(Ft/s)
Travel time through pipe = 0.31 min.
Time of concentration (TC) = 7.93 min.

+++++
Process from Point/Station 16.000 to Point/Station 17.000
**** SUBAREA FLOW ADDITION ****

RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.2000 Max loss rate(Fm)= 0.088(In/Hr)
Time of concentration = 7.93 min.
Rainfall intensity = 4.716(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.882
Subarea runoff = 1.125(CFS) for 0.430(Ac.)
Total runoff = 28.327(CFS)
Effective area this stream = 6.81(Ac.)
Total Study Area (Main Stream No. 1) = 6.81(Ac.)
Area averaged Fm value = 0.095(In/Hr)

+++++

Process from Point/Station 16.000 to Point/Station 17.000
**** SUBAREA FLOW ADDITION ****

RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.2000 Max loss rate(Fm)= 0.088(In/Hr)
Time of concentration = 7.93 min.
Rainfall intensity = 4.716(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.882
Subarea runoff = 2.791(CFS) for 0.670(Ac.)
Total runoff = 31.118(CFS)
Effective area this stream = 7.48(Ac.)
Total Study Area (Main Stream No. 1) = 7.48(Ac.)
Area averaged Fm value = 0.094(In/Hr)

+++++

Process from Point/Station 17.000 to Point/Station 18.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 572.000(Ft.)
Downstream point/station elevation = 571.600(Ft.)
Pipe length = 50.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 31.118(CFS)
Nearest computed pipe diameter = 30.00(In.)
Calculated individual pipe flow = 31.118(CFS)
Normal flow depth in pipe = 21.21(In.)
Flow top width inside pipe = 27.31(In.)
Critical Depth = 22.80(In.)
Pipe flow velocity = 8.39(Ft/s)
Travel time through pipe = 0.10 min.
Time of concentration (TC) = 8.02 min.

+++++
Process from Point/Station 17.000 to Point/Station 18.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type

Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.044(In/Hr)
Time of concentration = 8.02 min.
Rainfall intensity = 4.681(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method) (Q=KCIA) is C = 0.883
Subarea runoff = 1.934(CFS) for 0.520(Ac.)
Total runoff = 33.052(CFS)
Effective area this stream = 8.00(Ac.)
Total Study Area (Main Stream No. 1) = 8.00(Ac.)
Area averaged Fm value = 0.091(In/Hr)

+++++
Process from Point/Station 17.000 to Point/Station 18.000
**** SUBAREA FLOW ADDITION ****

RESIDENTIAL(11+ dwl/acre)

Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.2000 Max loss rate(Fm)= 0.088(In/Hr)
Time of concentration = 8.02 min.
Rainfall intensity = 4.681(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method) (Q=KCIA) is C = 0.883
Subarea runoff = 2.150(CFS) for 0.520(Ac.)
Total runoff = 35.201(CFS)
Effective area this stream = 8.52(Ac.)
Total Study Area (Main Stream No. 1) = 8.52(Ac.)
Area averaged Fm value = 0.091(In/Hr)

+++++
Process from Point/Station 18.000 to Point/Station 19.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 571.600(Ft.)
Downstream point/station elevation = 571.200(Ft.)
Pipe length = 60.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 35.201(CFS)
Nearest computed pipe diameter = 33.00(In.)
Calculated individual pipe flow = 35.201(CFS)
Normal flow depth in pipe = 22.64(In.)
Flow top width inside pipe = 30.63(In.)
Critical Depth = 23.69(In.)

Pipe flow velocity = 8.10(Ft/s)
Travel time through pipe = 0.12 min.
Time of concentration (TC) = 8.15 min.

+++++
Process from Point/Station 18.000 to Point/Station 19.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.044(In/Hr)
Time of concentration = 8.15 min.
Rainfall intensity = 4.639(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method) (Q=KCIA) is C = 0.883
Subarea runoff = 0.707(CFS) for 0.250(Ac.)
Total runoff = 35.908(CFS)
Effective area this stream = 8.77(Ac.)
Total Study Area (Main Stream No. 1) = 8.77(Ac.)
Area averaged Fm value = 0.089(In/Hr)

+++++
Process from Point/Station 18.000 to Point/Station 19.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.044(In/Hr)
Time of concentration = 8.15 min.
Rainfall intensity = 4.639(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method) (Q=KCIA) is C = 0.883
Subarea runoff = 0.703(CFS) for 0.170(Ac.)
Total runoff = 36.611(CFS)
Effective area this stream = 8.94(Ac.)
Total Study Area (Main Stream No. 1) = 8.94(Ac.)
Area averaged Fm value = 0.088(In/Hr)

+++++
Process from Point/Station 19.000 to Point/Station 20.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 571.200(Ft.)
Downstream point/station elevation = 569.600(Ft.)
Pipe length = 200.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 36.611(CFS)
Nearest computed pipe diameter = 30.00(In.)

Calculated individual pipe flow = 36.611(CFS)
Normal flow depth in pipe = 24.52(In.)
Flow top width inside pipe = 23.19(In.)
Critical Depth = 24.59(In.)
Pipe flow velocity = 8.52(Ft/s)
Travel time through pipe = 0.39 min.
Time of concentration (TC) = 8.54 min.

+++++
Process from Point/Station 19.000 to Point/Station 20.000
**** SUBAREA FLOW ADDITION ****

RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.2000 Max loss rate(Fm)= 0.088(In/Hr)
Time of concentration = 8.54 min.
Rainfall intensity = 4.510(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method) (Q=KCIA) is C = 0.882
Subarea runoff = 1.034(CFS) for 0.520(Ac.)
Total runoff = 37.645(CFS)
Effective area this stream = 9.46(Ac.)
Total Study Area (Main Stream No. 1) = 9.46(Ac.)
Area averaged Fm value = 0.088(In/Hr)

+++++
Process from Point/Station 19.000 to Point/Station 20.000
**** SUBAREA FLOW ADDITION ****

PARK subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.8500 Max loss rate(Fm)= 0.374(In/Hr)
Time of concentration = 8.54 min.
Rainfall intensity = 4.510(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method) (Q=KCIA) is C = 0.881
Subarea runoff = 1.042(CFS) for 0.280(Ac.)
Total runoff = 38.687(CFS)
Effective area this stream = 9.74(Ac.)
Total Study Area (Main Stream No. 1) = 9.74(Ac.)
Area averaged Fm value = 0.097(In/Hr)
End of computations, Total Study Area = 9.74 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.219

Area averaged SCS curve number = 56.0

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

BASIN E
AREA B2
INTERIM
100 YR

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2005 Version 7.1
Rational Hydrology Study Date: 08/25/16

AREA B20 - AREA B38
100 YR STORM

Program License Serial Number 6094

***** Hydrology Study Control Information *****

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.400 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 3

+++++
Process from Point/Station 30.000 to Point/Station 31.000
**** INITIAL AREA EVALUATION ****

RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.2000 Max loss rate(Fm)= 0.088(In/Hr)
Initial subarea data:
Initial area flow distance = 232.000(Ft.)
Top (of initial area) elevation = 588.300(Ft.)
Bottom (of initial area) elevation = 582.300(Ft.)
Difference in elevation = 6.000(Ft.)
Slope = 0.02586 s(%)= 2.59
TC = $k(0.324)*[(\text{length}^3)/(\text{elevation change})]^{0.2}$
Initial area time of concentration = 5.946 min.
Rainfall intensity = 5.604(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.886
Subarea runoff = 5.709(CFS)
Total initial stream area = 1.150(Ac.)
Pervious area fraction = 0.200
Initial area Fm value = 0.088(In/Hr)

+++++
Process from Point/Station 31.000 to Point/Station 32.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 582.300(Ft.)
Downstream point/station elevation = 578.800(Ft.)
Pipe length = 200.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 5.709(CFS)
Nearest computed pipe diameter = 15.00(In.)
Calculated individual pipe flow = 5.709(CFS)
Normal flow depth in pipe = 8.96(In.)
Flow top width inside pipe = 14.71(In.)
Critical Depth = 11.61(In.)
Pipe flow velocity = 7.46(Ft/s)
Travel time through pipe = 0.45 min.
Time of concentration (TC) = 6.39 min.

+++++
Process from Point/Station 31.000 to Point/Station 32.000
**** SUBAREA FLOW ADDITION ****

RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.2000 Max loss rate(Fm)= 0.088(In/Hr)
Time of concentration = 6.39 min.
Rainfall intensity = 5.365(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.885
Subarea runoff = 2.651(CFS) for 0.610(Ac.)
Total runoff = 8.360(CFS)
Effective area this stream = 1.76(Ac.)
Total Study Area (Main Stream No. 1) = 1.76(Ac.)
Area averaged Fm value = 0.088(In/Hr)

+++++
Process from Point/Station 31.000 to Point/Station 32.000
**** SUBAREA FLOW ADDITION ****

RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.2000 Max loss rate(Fm)= 0.088(In/Hr)
Time of concentration = 6.39 min.
Rainfall intensity = 5.365(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.885
Subarea runoff = 2.185(CFS) for 0.460(Ac.)
Total runoff = 10.544(CFS)
Effective area this stream = 2.22(Ac.)
Total Study Area (Main Stream No. 1) = 2.22(Ac.)
Area averaged Fm value = 0.088(In/Hr)

+++++
Process from Point/Station 32.000 to Point/Station 33.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 578.800(Ft.)
Downstream point/station elevation = 577.800(Ft.)
Pipe length = 160.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 10.544(CFS)
Nearest computed pipe diameter = 21.00(In.)
Calculated individual pipe flow = 10.544(CFS)
Normal flow depth in pipe = 14.77(In.)
Flow top width inside pipe = 19.19(In.)
Critical Depth = 14.52(In.)
Pipe flow velocity = 5.84(Ft/s)
Travel time through pipe = 0.46 min.
Time of concentration (TC) = 6.85 min.

+++++
Process from Point/Station 32.000 to Point/Station 33.000
**** SUBAREA FLOW ADDITION ****

RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.2000 Max loss rate(Fm)= 0.088(In/Hr)
Time of concentration = 6.85 min.
Rainfall intensity = 5.148(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified
rational method) (Q=KCIA) is C = 0.885
Subarea runoff = 2.206(CFS) for 0.580(Ac.)
Total runoff = 12.751(CFS)
Effective area this stream = 2.80(Ac.)
Total Study Area (Main Stream No. 1) = 2.80(Ac.)
Area averaged Fm value = 0.088(In/Hr)

+++++
Process from Point/Station 32.000 to Point/Station 33.000
**** SUBAREA FLOW ADDITION ****

RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.2000 Max loss rate(Fm)= 0.088(In/Hr)
Time of concentration = 6.85 min.
Rainfall intensity = 5.148(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified
rational method) (Q=KCIA) is C = 0.885
Subarea runoff = 1.958(CFS) for 0.430(Ac.)
Total runoff = 14.709(CFS)
Effective area this stream = 3.23(Ac.)

Total Study Area (Main Stream No. 1) = 3.23(Ac.)
Area averaged Fm value = 0.088(In/Hr)

+++++
Process from Point/Station 33.000 to Point/Station 34.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 577.800(Ft.)
Downstream point/station elevation = 577.300(Ft.)
Pipe length = 75.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 14.709(CFS)
Nearest computed pipe diameter = 24.00(In.)
Calculated individual pipe flow = 14.709(CFS)
Normal flow depth in pipe = 16.17(In.)
Flow top width inside pipe = 22.50(In.)
Critical Depth = 16.59(In.)
Pipe flow velocity = 6.53(Ft/s)
Travel time through pipe = 0.19 min.
Time of concentration (TC) = 7.04 min.

+++++
Process from Point/Station 33.000 to Point/Station 34.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.044(In/Hr)
Time of concentration = 7.04 min.
Rainfall intensity = 5.063(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.885
Subarea runoff = 0.658(CFS) for 0.200(Ac.)
Total runoff = 15.367(CFS)
Effective area this stream = 3.43(Ac.)
Total Study Area (Main Stream No. 1) = 3.43(Ac.)
Area averaged Fm value = 0.085(In/Hr)

+++++
Process from Point/Station 34.000 to Point/Station 35.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 577.300(Ft.)
Downstream point/station elevation = 576.300(Ft.)
Pipe length = 206.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 15.367(CFS)
Nearest computed pipe diameter = 24.00(In.)
Calculated individual pipe flow = 15.367(CFS)
Normal flow depth in pipe = 19.15(In.)
Flow top width inside pipe = 19.28(In.)
Critical Depth = 16.97(In.)
Pipe flow velocity = 5.72(Ft/s)
Travel time through pipe = 0.60 min.

Time of concentration (TC) = 7.64 min.

+++++
Process from Point/Station 34.000 to Point/Station 35.000
**** SUBAREA FLOW ADDITION ****

PARK subarea

Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.8500 Max loss rate(Fm)= 0.374(In/Hr)
Time of concentration = 7.64 min.
Rainfall intensity = 4.821(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified
rational method) (Q=KCIA) is C = 0.876
Subarea runoff = 1.532(CFS) for 0.570(Ac.)
Total runoff = 16.899(CFS)
Effective area this stream = 4.00(Ac.)
Total Study Area (Main Stream No. 1) = 4.00(Ac.)
Area averaged Fm value = 0.127(In/Hr)

+++++
Process from Point/Station 34.000 to Point/Station 35.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type

Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.044(In/Hr)
Time of concentration = 7.64 min.
Rainfall intensity = 4.821(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified
rational method) (Q=KCIA) is C = 0.878
Subarea runoff = 2.364(CFS) for 0.550(Ac.)
Total runoff = 19.263(CFS)
Effective area this stream = 4.55(Ac.)
Total Study Area (Main Stream No. 1) = 4.55(Ac.)
Area averaged Fm value = 0.117(In/Hr)

+++++
Process from Point/Station 34.000 to Point/Station 35.000
**** SUBAREA FLOW ADDITION ****

RESIDENTIAL(11+ dwl/acre)

Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80

Pervious ratio(Ap) = 0.2000 Max loss rate(Fm)= 0.088(In/Hr)
Time of concentration = 7.64 min.
Rainfall intensity = 4.821(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method) (Q=KCIA) is C = 0.879
Subarea runoff = 1.832(CFS) for 0.430(Ac.)
Total runoff = 21.095(CFS)
Effective area this stream = 4.98(Ac.)
Total Study Area (Main Stream No. 1) = 4.98(Ac.)
Area averaged Fm value = 0.114(In/Hr)

+++++
Process from Point/Station 34.000 to Point/Station 35.000
**** SUBAREA FLOW ADDITION ****

RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.2000 Max loss rate(Fm)= 0.088(In/Hr)
Time of concentration = 7.64 min.
Rainfall intensity = 4.821(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method) (Q=KCIA) is C = 0.879
Subarea runoff = 1.832(CFS) for 0.430(Ac.)
Total runoff = 22.927(CFS)
Effective area this stream = 5.41(Ac.)
Total Study Area (Main Stream No. 1) = 5.41(Ac.)
Area averaged Fm value = 0.112(In/Hr)

+++++
Process from Point/Station 35.000 to Point/Station 36.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 576.300(Ft.)
Downstream point/station elevation = 575.300(Ft.)
Pipe length = 138.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 22.927(CFS)
Nearest computed pipe diameter = 27.00(In.)
Calculated individual pipe flow = 22.927(CFS)
Normal flow depth in pipe = 19.48(In.)
Flow top width inside pipe = 24.21(In.)
Critical Depth = 20.10(In.)
Pipe flow velocity = 7.47(Ft/s)
Travel time through pipe = 0.31 min.
Time of concentration (TC) = 7.95 min.

+++++
Process from Point/Station 35.000 to Point/Station 36.000
**** SUBAREA FLOW ADDITION ****

RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000

Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.2000 Max loss rate(Fm)= 0.088(In/Hr)
Time of concentration = 7.95 min.
Rainfall intensity = 4.708(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method) (Q=KCIA) is C = 0.879
Subarea runoff = 1.487(CFS) for 0.490(Ac.)
Total runoff = 24.414(CFS)
Effective area this stream = 5.90(Ac.)
Total Study Area (Main Stream No. 1) = 5.90(Ac.)
Area averaged Fm value = 0.110(In/Hr)

+++++
Process from Point/Station 35.000 to Point/Station 36.000
**** SUBAREA FLOW ADDITION ****

RESIDENTIAL(11+ dwl/acre)

Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.2000 Max loss rate(Fm)= 0.088(In/Hr)
Time of concentration = 7.95 min.
Rainfall intensity = 4.708(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method) (Q=KCIA) is C = 0.879
Subarea runoff = 1.788(CFS) for 0.430(Ac.)
Total runoff = 26.202(CFS)
Effective area this stream = 6.33(Ac.)
Total Study Area (Main Stream No. 1) = 6.33(Ac.)
Area averaged Fm value = 0.109(In/Hr)

+++++
Process from Point/Station 36.000 to Point/Station 37.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 575.300(Ft.)
Downstream point/station elevation = 574.700(Ft.)
Pipe length = 107.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 26.202(CFS)
Nearest computed pipe diameter = 30.00(In.)
Calculated individual pipe flow = 26.202(CFS)
Normal flow depth in pipe = 21.30(In.)
Flow top width inside pipe = 27.22(In.)
Critical Depth = 20.93(In.)
Pipe flow velocity = 7.03(Ft/s)
Travel time through pipe = 0.25 min.
Time of concentration (TC) = 8.20 min.

+++++
Process from Point/Station 36.000 to Point/Station 37.000
**** SUBAREA FLOW ADDITION ****

RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.2000 Max loss rate(Fm)= 0.088(In/Hr)
Time of concentration = 8.20 min.
Rainfall intensity = 4.620(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.879
Subarea runoff = 1.579(CFS) for 0.510(Ac.)
Total runoff = 27.781(CFS)
Effective area this stream = 6.84(Ac.)
Total Study Area (Main Stream No. 1) = 6.84(Ac.)
Area averaged Fm value = 0.107(In/Hr)

+++++
Process from Point/Station 37.000 to Point/Station 38.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 574.700(Ft.)
Downstream point/station elevation = 574.100(Ft.)
Pipe length = 104.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 27.781(CFS)
Nearest computed pipe diameter = 30.00(In.)
Calculated individual pipe flow = 27.781(CFS)
Normal flow depth in pipe = 22.08(In.)
Flow top width inside pipe = 26.45(In.)
Critical Depth = 21.56(In.)
Pipe flow velocity = 7.17(Ft/s)
Travel time through pipe = 0.24 min.
Time of concentration (TC) = 8.44 min.

+++++
Process from Point/Station 37.000 to Point/Station 38.000
**** SUBAREA FLOW ADDITION ****

RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.2000 Max loss rate(Fm)= 0.088(In/Hr)
Time of concentration = 8.44 min.
Rainfall intensity = 4.540(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.879
Subarea runoff = 1.232(CFS) for 0.430(Ac.)
Total runoff = 29.013(CFS)
Effective area this stream = 7.27(Ac.)
Total Study Area (Main Stream No. 1) = 7.27(Ac.)
Area averaged Fm value = 0.106(In/Hr)

+++++
Process from Point/Station 37.000 to Point/Station 38.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type

Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.044(In/Hr)
Time of concentration = 8.44 min.
Rainfall intensity = 4.540(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.879
Subarea runoff = 0.728(CFS) for 0.180(Ac.)
Total runoff = 29.741(CFS)
Effective area this stream = 7.45(Ac.)
Total Study Area (Main Stream No. 1) = 7.45(Ac.)
Area averaged Fm value = 0.104(In/Hr)

+++++
Process from Point/Station 37.000 to Point/Station 38.000
**** SUBAREA FLOW ADDITION ****

RESIDENTIAL(11+ dwl/acre)

Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.2000 Max loss rate(Fm)= 0.088(In/Hr)
Time of concentration = 8.44 min.
Rainfall intensity = 4.540(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.880
Subarea runoff = 2.084(CFS) for 0.520(Ac.)
Total runoff = 31.825(CFS)
Effective area this stream = 7.97(Ac.)
Total Study Area (Main Stream No. 1) = 7.97(Ac.)
Area averaged Fm value = 0.103(In/Hr)

+++++
Process from Point/Station 37.000 to Point/Station 38.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type

Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.044(In/Hr)
Time of concentration = 8.44 min.

Rainfall intensity = 4.540(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified
rational method) (Q=KCIA) is C = 0.880
Subarea runoff = 0.607(CFS) for 0.150(Ac.)
Total runoff = 32.432(CFS)
Effective area this stream = 8.12(Ac.)
Total Study Area (Main Stream No. 1) = 8.12(Ac.)
Area averaged Fm value = 0.102(In/Hr)

+++++
Process from Point/Station 37.000 to Point/Station 38.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type

Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.044(In/Hr)
Time of concentration = 8.44 min.
Rainfall intensity = 4.540(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified
rational method) (Q=KCIA) is C = 0.880
Subarea runoff = 1.335(CFS) for 0.330(Ac.)
Total runoff = 33.767(CFS)
Effective area this stream = 8.45(Ac.)
Total Study Area (Main Stream No. 1) = 8.45(Ac.)
Area averaged Fm value = 0.100(In/Hr)

+++++
Process from Point/Station 38.000 to Point/Station 39.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 574.100(Ft.)
Downstream point/station elevation = 573.500(Ft.)
Pipe length = 115.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 33.767(CFS)
Nearest computed pipe diameter = 33.00(In.)
Calculated individual pipe flow = 33.767(CFS)
Normal flow depth in pipe = 24.09(In.)
Flow top width inside pipe = 29.30(In.)
Critical Depth = 23.23(In.)
Pipe flow velocity = 7.26(Ft/s)
Travel time through pipe = 0.26 min.
Time of concentration (TC) = 8.71 min.

+++++
Process from Point/Station 38.000 to Point/Station 39.000
**** SUBAREA FLOW ADDITION ****

PARK subarea

Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000

SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(A_p) = 0.8500 Max loss rate(F_m)= 0.374(In/Hr)
Time of concentration = 8.71 min.
Rainfall intensity = 4.457(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area, (total area with modified
rational method) ($Q=KCIA$) is $C = 0.878$
Subarea runoff = 0.581(CFS) for 0.330(Ac.)
Total runoff = 34.348(CFS)
Effective area this stream = 8.78(Ac.)
Total Study Area (Main Stream No. 1) = 8.78(Ac.)
Area averaged F_m value = 0.110(In/Hr)
End of computations, Total Study Area = 8.78 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(A_p) = 0.251
Area averaged SCS curve number = 56.0

APPENDIX D

UNIT HYDROGRAPH CALCULATIONS

***100-Year Unit Hydrograph Calculations
(Existing Condition)***

Basin A & D

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2004, Version 7.0

Study date 03/12/19

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San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6094

BASIN A D
EXISTING CONDITIONS
100 YR STORM 24HR

Storm Event Year = 100

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 100		
40.15	1	1.40

Rainfall data for year 100
40.15 6 3.48

Rainfall data for year 100
40.15 24 6.36

+++++

***** Area-averaged max loss rate, Fm *****

SCS curve No. (AMCII)	SCS curve NO. (AMC 3)	Area (Ac.)	Area Fraction	Fp (Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
68.4	85.7	40.15	1.000	0.270	0.982	0.265

Area-averaged adjusted loss rate Fm (In/Hr) = 0.265

***** Area-Averaged low loss rate fraction, Yb *****

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
39.43	0.982	68.4	85.7	1.67	0.742
0.72	0.018	98.0	98.0	0.20	0.962

Area-averaged catchment yield fraction, Y = 0.746

Area-averaged low loss fraction, Yb = 0.254

User entry of time of concentration = 0.460 (hours)

+++++

Watershed area = 40.15(Ac.)

Catchment Lag time = 0.368 hours

Unit interval = 5.000 minutes

Unit interval percentage of lag time = 22.6449

Hydrograph baseflow = 0.00(CFS)

Average maximum watershed loss rate(Fm) = 0.265(In/Hr)

Average low loss rate fraction (Yb) = 0.254 (decimal)

VALLEY UNDEVELOPED S-Graph Selected

Computed peak 5-minute rainfall = 0.518(In)

Computed peak 30-minute rainfall = 1.061(In)

Specified peak 1-hour rainfall = 1.400(In)

Computed peak 3-hour rainfall = 2.447(In)

Specified peak 6-hour rainfall = 3.480(In)

Specified peak 24-hour rainfall = 6.360(In)

Rainfall depth area reduction factors:

Using a total area of 40.15(Ac.) (Ref: fig. E-4)

5-minute factor = 0.998 Adjusted rainfall = 0.517(In)

30-minute factor = 0.998 Adjusted rainfall = 1.059(In)

1-hour factor = 0.998 Adjusted rainfall = 1.397(In)

3-hour factor = 1.000 Adjusted rainfall = 2.446(In)

6-hour factor = 1.000 Adjusted rainfall = 3.480(In)

24-hour factor = 1.000 Adjusted rainfall = 6.360(In)

U n i t H y d r o g r a p h

+++++

Interval	'S' Graph	Unit Hydrograph
----------	-----------	-----------------

Number	Mean values	((CFS))
--------	-------------	---------

(K = 485.56 (CFS))

1	2.049	9.947
2	8.477	31.213
3	19.785	54.911
4	35.087	74.300
5	50.623	75.436
6	61.571	53.162
7	68.622	34.233
8	73.370	23.055
9	76.878	17.036
10	79.814	14.256
11	82.277	11.959
12	84.416	10.388
13	86.277	9.033
14	87.834	7.562
15	89.201	6.638

16	90.506	6.337
17	91.540	5.021
18	92.521	4.764
19	93.306	3.809
20	94.030	3.517
21	94.727	3.382
22	95.406	3.299
23	96.009	2.926
24	96.507	2.422
25	96.983	2.308
26	97.394	1.997
27	97.790	1.923
28	98.118	1.593
29	98.431	1.520
30	98.680	1.209
31	98.907	1.100
32	99.133	1.100
33	99.360	1.100
34	99.586	1.100
35	99.812	1.100
36	100.000	0.910

Total soil rain loss = 1.47(In)
Total effective rainfall = 4.89(In)
Peak flow rate in flood hydrograph = 67.10(CFS)

+++++

24 - 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 5 Minute intervals ((CFS))

Time(h+m)	Volume	Ac.Ft	Q(CFS)	0	17.5	35.0	52.5	70.0

0+ 5	0.0005	0.07	Q					
0+10	0.0025	0.30	Q					
0+15	0.0073	0.69	Q					
0+20	0.0157	1.23	Q					
0+25	0.0279	1.77	VQ					
0+30	0.0428	2.16	VQ					
0+35	0.0594	2.41	VQ					
0+40	0.0771	2.58	VQ					
0+45	0.0958	2.71	VQ					
0+50	0.1152	2.82	VQ					
0+55	0.1353	2.92	VQ					
1+ 0	0.1560	3.00	VQ					
1+ 5	0.1771	3.07	VQ					
1+10	0.1988	3.14	VQ					
1+15	0.2208	3.19	VQ					
1+20	0.2431	3.25	VQ					
1+25	0.2658	3.30	VQ					
1+30	0.2888	3.34	VQ					
1+35	0.3121	3.38	VQ					
1+40	0.3356	3.41	VQ					
1+45	0.3594	3.45	VQ					
1+50	0.3834	3.48	VQ					
1+55	0.4076	3.52	V Q					

2+ 0	0.4320	3.55	VQ				
2+ 5	0.4566	3.57	VQ				
2+10	0.4814	3.60	VQ				
2+15	0.5064	3.62	VQ				
2+20	0.5315	3.65	VQ				
2+25	0.5568	3.67	VQ				
2+30	0.5822	3.69	VQ				
2+35	0.6078	3.71	VQ				
2+40	0.6335	3.73	VQ				
2+45	0.6593	3.75	VQ				
2+50	0.6853	3.77	VQ				
2+55	0.7115	3.80	VQ				
3+ 0	0.7377	3.81	VQ				
3+ 5	0.7641	3.83	VQ				
3+10	0.7906	3.84	VQ				
3+15	0.8171	3.86	Q				
3+20	0.8438	3.87	Q				
3+25	0.8705	3.88	Q				
3+30	0.8973	3.90	Q				
3+35	0.9243	3.91	Q				
3+40	0.9513	3.92	Q				
3+45	0.9784	3.94	Q				
3+50	1.0056	3.95	Q				
3+55	1.0330	3.97	Q				
4+ 0	1.0604	3.98	Q				
4+ 5	1.0879	4.00	Q				
4+10	1.1156	4.01	Q				
4+15	1.1433	4.03	Q				
4+20	1.1712	4.04	Q				
4+25	1.1991	4.06	Q				
4+30	1.2272	4.08	QV				
4+35	1.2554	4.09	QV				
4+40	1.2837	4.11	QV				
4+45	1.3121	4.12	QV				
4+50	1.3406	4.14	QV				
4+55	1.3692	4.16	QV				
5+ 0	1.3980	4.17	QV				
5+ 5	1.4268	4.19	QV				
5+10	1.4558	4.21	QV				
5+15	1.4849	4.23	QV				
5+20	1.5141	4.24	QV				
5+25	1.5435	4.26	QV				
5+30	1.5729	4.28	QV				
5+35	1.6025	4.30	QV				
5+40	1.6323	4.32	QV				
5+45	1.6621	4.33	Q V				
5+50	1.6921	4.35	Q V				
5+55	1.7222	4.37	Q V				
6+ 0	1.7524	4.39	Q V				
6+ 5	1.7828	4.41	Q V				
6+10	1.8134	4.43	Q V				
6+15	1.8440	4.45	Q V				
6+20	1.8748	4.47	Q V				
6+25	1.9058	4.49	Q V				
6+30	1.9368	4.51	Q V				
6+35	1.9681	4.53	Q V				
6+40	1.9995	4.56	Q V				
6+45	2.0310	4.58	Q V				
6+50	2.0627	4.60	Q V				
6+55	2.0945	4.62	Q V				

7+ 0	2.1265	4.65		Q	V				
7+ 5	2.1586	4.67		Q	V				
7+10	2.1910	4.69		Q	V				
7+15	2.2234	4.72		Q	V				
7+20	2.2561	4.74		Q	V				
7+25	2.2889	4.76		Q	V				
7+30	2.3218	4.79		Q	V				
7+35	2.3550	4.81		Q	V				
7+40	2.3883	4.84		Q	V				
7+45	2.4218	4.86		Q	V				
7+50	2.4555	4.89		Q	V				
7+55	2.4894	4.92		Q	V				
8+ 0	2.5234	4.94		Q	V				
8+ 5	2.5576	4.97		Q	V				
8+10	2.5921	5.00		Q	V				
8+15	2.6267	5.03		Q	V				
8+20	2.6615	5.06		Q	V				
8+25	2.6965	5.08		Q	V				
8+30	2.7317	5.11		Q	V				
8+35	2.7672	5.14		Q	V				
8+40	2.8028	5.17		Q	V				
8+45	2.8387	5.21		Q	V				
8+50	2.8747	5.24		Q	V				
8+55	2.9110	5.27		Q	V				
9+ 0	2.9476	5.30		Q	V				
9+ 5	2.9843	5.34		Q	V				
9+10	3.0213	5.37		Q	V				
9+15	3.0585	5.40		Q	V				
9+20	3.0960	5.44		Q	V				
9+25	3.1337	5.47		Q	V				
9+30	3.1716	5.51		Q	V				
9+35	3.2098	5.55		Q	V				
9+40	3.2483	5.59		Q	V				
9+45	3.2870	5.62		Q	V				
9+50	3.3260	5.66		Q	V				
9+55	3.3653	5.70		Q	V				
10+ 0	3.4049	5.74		Q	V				
10+ 5	3.4447	5.79		Q	V				
10+10	3.4848	5.83		Q	V				
10+15	3.5253	5.87		Q	V				
10+20	3.5660	5.92		Q	V				
10+25	3.6071	5.96		Q	V				
10+30	3.6484	6.01		Q	V				
10+35	3.6901	6.05		Q	V				
10+40	3.7322	6.10		Q	V				
10+45	3.7745	6.15		Q	V				
10+50	3.8172	6.20		Q	V				
10+55	3.8603	6.25		Q	V				
11+ 0	3.9037	6.31		Q	V				
11+ 5	3.9475	6.36		Q	V				
11+10	3.9917	6.42		Q	V				
11+15	4.0363	6.47		Q	V				
11+20	4.0813	6.53		Q	V				
11+25	4.1267	6.59		Q	V				
11+30	4.1725	6.65		Q	V				
11+35	4.2187	6.71		Q	V				
11+40	4.2654	6.78		Q	V				
11+45	4.3125	6.84		Q	V				
11+50	4.3601	6.91		Q	V				
11+55	4.4082	6.98		Q	V				

12+ 0	4.4568	7.05		Q	V					
12+ 5	4.5061	7.15		Q	V					
12+10	4.5564	7.31		Q	V					
12+15	4.6083	7.54		Q	V					
12+20	4.6622	7.82		Q	V					
12+25	4.7179	8.10		Q	V					
12+30	4.7753	8.33		Q	V					
12+35	4.8339	8.51		Q	V					
12+40	4.8935	8.66		Q	V					
12+45	4.9541	8.80		Q	V					
12+50	5.0157	8.94		Q	V					
12+55	5.0782	9.07		Q	V					
13+ 0	5.1416	9.21		Q	V					
13+ 5	5.2060	9.34		Q	V					
13+10	5.2712	9.48		Q	V					
13+15	5.3375	9.61		Q	V					
13+20	5.4046	9.75		Q	V					
13+25	5.4728	9.90		Q	V					
13+30	5.5420	10.04		Q	V					
13+35	5.6122	10.19		Q	V					
13+40	5.6834	10.35		Q	V					
13+45	5.7558	10.51		Q	V					
13+50	5.8294	10.68		Q	V					
13+55	5.9041	10.85		Q	V					
14+ 0	5.9801	11.04		Q	V					
14+ 5	6.0575	11.23		Q	V					
14+10	6.1362	11.43		Q	V					
14+15	6.2164	11.65		Q	V					
14+20	6.2982	11.87		Q	V					
14+25	6.3816	12.11		Q	V					
14+30	6.4668	12.37		Q	V					
14+35	6.5538	12.63		Q	V					
14+40	6.6427	12.92		Q	V					
14+45	6.7338	13.22		Q	V					
14+50	6.8271	13.55		Q	V					
14+55	6.9229	13.90		Q	V					
15+ 0	7.0213	14.29		Q	V					
15+ 5	7.1225	14.70		Q	V					
15+10	7.2269	15.16		Q	V					
15+15	7.3348	15.66		Q	V					
15+20	7.4466	16.23		Q	V					
15+25	7.5620	16.77		Q	V					
15+30	7.6804	17.19		Q	V					
15+35	7.8010	17.50		Q	V					
15+40	7.9234	17.77		Q	V					
15+45	8.0490	18.24		Q	V					
15+50	8.1813	19.22		Q	V					
15+55	8.3261	21.02			Q	V				
16+ 0	8.4933	24.27			Q	V				
16+ 5	8.7191	32.79				Q V				
16+10	9.0361	46.03					V	Q		
16+15	9.4421	58.95						V		Q
16+20	9.9042	67.10						V		Q
16+25	10.3510	64.89						V		Q
16+30	10.7114	52.32						V	Q	
16+35	10.9963	41.38					Q	V		
16+40	11.2336	34.45				Q		V		
16+45	11.4425	30.33				Q		V		
16+50	11.6337	27.77			Q			V		
16+55	11.8099	25.58			Q			V		

17+ 0	11.9737	23.79				Q		V	
17+ 5	12.1264	22.18				Q		V	
17+10	12.2687	20.66				Q		V	
17+15	12.4028	19.46				Q		V	
17+20	12.5306	18.56				Q		V	
17+25	12.6500	17.34				Q		V	
17+30	12.7642	16.58				Q		V	
17+35	12.8718	15.64				Q		V	
17+40	12.9753	15.02				Q		V	
17+45	13.0753	14.51				Q		V	
17+50	13.1719	14.03				Q		V	
17+55	13.2646	13.45				Q		V	
18+ 0	13.3531	12.86				Q		V	
18+ 5	13.4386	12.41				Q		V	
18+10	13.5203	11.86				Q		V	
18+15	13.5985	11.35				Q		V	
18+20	13.6723	10.72				Q		V	
18+25	13.7425	10.20				Q		V	
18+30	13.8092	9.68				Q		V	
18+35	13.8733	9.31				Q		V	
18+40	13.9354	9.03				Q		V	
18+45	13.9958	8.77				Q		V	
18+50	14.0545	8.52				Q		V	
18+55	14.1112	8.24				Q		V	
19+ 0	14.1655	7.87				Q		V	
19+ 5	14.2155	7.27				Q		V	
19+10	14.2642	7.07				Q		V	
19+15	14.3117	6.90				Q		V	
19+20	14.3582	6.75				Q		V	
19+25	14.4037	6.60				Q		V	
19+30	14.4482	6.46				Q		V	
19+35	14.4918	6.34				Q		V	
19+40	14.5347	6.22				Q		V	
19+45	14.5767	6.11				Q		V	
19+50	14.6181	6.00				Q		V	
19+55	14.6587	5.90				Q		V	
20+ 0	14.6987	5.81				Q		V	
20+ 5	14.7381	5.71				Q		V	
20+10	14.7768	5.63				Q		V	
20+15	14.8150	5.55				Q		V	
20+20	14.8527	5.47				Q		V	
20+25	14.8898	5.39				Q		V	
20+30	14.9264	5.32				Q		V	
20+35	14.9626	5.25				Q		V	
20+40	14.9983	5.18				Q		V	
20+45	15.0335	5.12				Q		V	
20+50	15.0683	5.06				Q		V	
20+55	15.1027	4.99				Q		V	
21+ 0	15.1367	4.94				Q		V	
21+ 5	15.1704	4.88				Q		V	
21+10	15.2036	4.83				Q		V	
21+15	15.2365	4.78				Q		V	
21+20	15.2691	4.73				Q		V	
21+25	15.3014	4.68				Q		V	
21+30	15.3333	4.63				Q		V	
21+35	15.3649	4.59				Q		V	
21+40	15.3962	4.55				Q		V	
21+45	15.4272	4.50				Q		V	
21+50	15.4579	4.46				Q		V	
21+55	15.4884	4.42				Q		V	

22+ 0	15.5185	4.38	Q				V	
22+ 5	15.5484	4.34	Q				V	
22+10	15.5781	4.30	Q				V	
22+15	15.6075	4.27	Q				V	
22+20	15.6366	4.23	Q				V	
22+25	15.6655	4.20	Q				V	
22+30	15.6942	4.16	Q				V	
22+35	15.7226	4.13	Q				V	
22+40	15.7508	4.10	Q				V	
22+45	15.7788	4.06	Q				V	
22+50	15.8066	4.03	Q				V	
22+55	15.8341	4.00	Q				V	
23+ 0	15.8615	3.97	Q				V	
23+ 5	15.8886	3.94	Q				V	
23+10	15.9156	3.91	Q				V	
23+15	15.9423	3.88	Q				V	
23+20	15.9689	3.86	Q				V	
23+25	15.9953	3.83	Q				V	
23+30	16.0215	3.80	Q				V	
23+35	16.0475	3.78	Q				V	
23+40	16.0733	3.75	Q				V	
23+45	16.0990	3.73	Q				V	
23+50	16.1245	3.70	Q				V	
23+55	16.1498	3.68	Q				V	
24+ 0	16.1750	3.65	Q				V	
24+ 5	16.1995	3.56	Q				V	
24+10	16.2223	3.31	Q				V	
24+15	16.2423	2.90	Q				V	
24+20	16.2585	2.35	Q				V	
24+25	16.2708	1.79	Q				V	
24+30	16.2805	1.40	Q				V	
24+35	16.2884	1.15	Q				V	
24+40	16.2951	0.98	Q				V	
24+45	16.3009	0.85	Q				V	
24+50	16.3060	0.74	Q				V	
24+55	16.3105	0.65	Q				V	
25+ 0	16.3144	0.57	Q				V	
25+ 5	16.3179	0.50	Q				V	
25+10	16.3209	0.44	Q				V	
25+15	16.3236	0.39	Q				V	
25+20	16.3260	0.35	Q				V	
25+25	16.3281	0.31	Q				V	
25+30	16.3300	0.27	Q				V	
25+35	16.3317	0.24	Q				V	
25+40	16.3332	0.22	Q				V	
25+45	16.3345	0.19	Q				V	
25+50	16.3356	0.17	Q				V	
25+55	16.3366	0.14	Q				V	
26+ 0	16.3375	0.13	Q				V	
26+ 5	16.3382	0.11	Q				V	
26+10	16.3389	0.09	Q				V	
26+15	16.3394	0.08	Q				V	
26+20	16.3399	0.07	Q				V	
26+25	16.3403	0.06	Q				V	
26+30	16.3406	0.05	Q				V	
26+35	16.3409	0.04	Q				V	
26+40	16.3411	0.03	Q				V	
26+45	16.3412	0.02	Q				V	
26+50	16.3413	0.01	Q				V	
26+55	16.3414	0.01	Q				V	

Basin B & E

Unit Hydrograph Analysis

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Study date 03/12/19

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San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6094

BASIN B E
EXISTING CONDITIONS
100 YR STORM 24HR

Storm Event Year = 100

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 100		
33.39	1	1.40

Rainfall data for year 100
33.39 6 3.48

Rainfall data for year 100
33.39 24 6.36

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***** Area-averaged max loss rate, Fm *****

SCS curve No. (AMCII)	SCS curve NO. (AMC 3)	Area (Ac.)	Area Fraction	Fp (Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	86.2	33.39	1.000	0.262	1.000	0.262

Area-averaged adjusted loss rate Fm (In/Hr) = 0.262

***** Area-Averaged low loss rate fraction, Yb *****

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
33.39	1.000	69.0	86.2	1.60	0.751

Area-averaged catchment yield fraction, Y = 0.751

Area-averaged low loss fraction, Yb = 0.249

User entry of time of concentration = 0.620 (hours)

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Watershed area = 33.39(Ac.)

Catchment Lag time = 0.496 hours

Unit interval = 5.000 minutes

Unit interval percentage of lag time = 16.8011

Hydrograph baseflow = 0.00(CFS)

Average maximum watershed loss rate(Fm) = 0.262(In/Hr)

Average low loss rate fraction (Yb) = 0.249 (decimal)

VALLEY UNDEVELOPED S-Graph Selected

Computed peak 5-minute rainfall = 0.518(In)

Computed peak 30-minute rainfall = 1.061(In)

Specified peak 1-hour rainfall = 1.400(In)

Computed peak 3-hour rainfall = 2.447(In)

Specified peak 6-hour rainfall = 3.480(In)

Specified peak 24-hour rainfall = 6.360(In)

Rainfall depth area reduction factors:

Using a total area of 33.39(Ac.) (Ref: fig. E-4)

5-minute factor = 0.998 Adjusted rainfall = 0.517(In)

30-minute factor = 0.998 Adjusted rainfall = 1.059(In)

1-hour factor = 0.998 Adjusted rainfall = 1.398(In)

3-hour factor = 1.000 Adjusted rainfall = 2.446(In)

6-hour factor = 1.000 Adjusted rainfall = 3.480(In)

24-hour factor = 1.000 Adjusted rainfall = 6.360(In)

U n i t H y d r o g r a p h

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Interval	'S' Graph	Unit Hydrograph
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Number	Mean values	((CFS))
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(K = 403.81 (CFS))

1	1.463	5.906
2	5.313	15.547
3	11.828	26.309
4	21.085	37.383
5	32.472	45.979
6	44.529	48.687
7	54.825	41.580
8	62.176	29.683
9	67.509	21.535
10	71.476	16.019
11	74.477	12.117
12	76.993	10.161
13	79.202	8.918
14	81.156	7.891
15	82.860	6.883
16	84.417	6.286

17	85.841	5.754
18	87.067	4.950
19	88.149	4.369
20	89.157	4.071
21	90.162	4.055
22	90.994	3.361
23	91.733	2.985
24	92.469	2.970
25	93.072	2.437
26	93.610	2.171
27	94.147	2.168
28	94.661	2.077
29	95.165	2.035
30	95.665	2.020
31	96.074	1.649
32	96.443	1.493
33	96.810	1.483
34	97.131	1.295
35	97.433	1.221
36	97.733	1.210
37	97.985	1.019
38	98.221	0.950
39	98.453	0.937
40	98.636	0.743
41	98.804	0.678
42	98.972	0.678
43	99.140	0.678
44	99.308	0.678
45	99.476	0.678
46	99.644	0.678
47	99.812	0.678
48	100.000	0.339

Total soil rain loss = 1.45(In)
Total effective rainfall = 4.91(In)
Peak flow rate in flood hydrograph = 46.66(CFS)

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24 - 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 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	12.5	25.0	37.5	50.0
0+ 5	0.0003	0.04	Q				
0+10	0.0014	0.15	Q				
0+15	0.0037	0.35	Q				
0+20	0.0080	0.62	Q				
0+25	0.0145	0.95	Q				
0+30	0.0235	1.30	VQ				
0+35	0.0346	1.61	VQ				
0+40	0.0471	1.83	VQ				
0+45	0.0608	1.99	VQ				
0+50	0.0754	2.11	VQ				
0+55	0.0905	2.20	VQ				
1+ 0	0.1062	2.28	VQ				

1+ 5	0.1225	2.35	VQ				
1+10	0.1391	2.42	VQ				
1+15	0.1562	2.48	VQ				
1+20	0.1736	2.53	V Q				
1+25	0.1913	2.58	V Q				
1+30	0.2094	2.62	V Q				
1+35	0.2277	2.66	V Q				
1+40	0.2463	2.70	V Q				
1+45	0.2651	2.74	V Q				
1+50	0.2842	2.77	V Q				
1+55	0.3035	2.80	V Q				
2+ 0	0.3230	2.83	V Q				
2+ 5	0.3427	2.86	VQ				
2+10	0.3625	2.88	VQ				
2+15	0.3825	2.91	VQ				
2+20	0.4027	2.93	VQ				
2+25	0.4231	2.96	VQ				
2+30	0.4436	2.98	VQ				
2+35	0.4643	3.00	VQ				
2+40	0.4851	3.02	VQ				
2+45	0.5061	3.04	VQ				
2+50	0.5272	3.06	VQ				
2+55	0.5484	3.08	VQ				
3+ 0	0.5698	3.10	VQ				
3+ 5	0.5912	3.12	VQ				
3+10	0.6129	3.14	VQ				
3+15	0.6346	3.16	VQ				
3+20	0.6564	3.17	VQ				
3+25	0.6784	3.19	VQ				
3+30	0.7005	3.20	Q				
3+35	0.7226	3.22	Q				
3+40	0.7449	3.24	Q				
3+45	0.7673	3.25	Q				
3+50	0.7899	3.27	Q				
3+55	0.8125	3.29	Q				
4+ 0	0.8352	3.30	Q				
4+ 5	0.8581	3.31	Q				
4+10	0.8810	3.33	Q				
4+15	0.9040	3.34	Q				
4+20	0.9271	3.35	Q				
4+25	0.9502	3.36	Q				
4+30	0.9735	3.38	Q				
4+35	0.9968	3.39	Q				
4+40	1.0203	3.40	Q				
4+45	1.0438	3.42	QV				
4+50	1.0674	3.43	QV				
4+55	1.0911	3.44	QV				
5+ 0	1.1150	3.46	QV				
5+ 5	1.1389	3.47	QV				
5+10	1.1629	3.49	QV				
5+15	1.1870	3.50	QV				
5+20	1.2112	3.51	QV				
5+25	1.2355	3.53	QV				
5+30	1.2599	3.54	QV				
5+35	1.2844	3.56	QV				
5+40	1.3090	3.57	QV				
5+45	1.3337	3.59	QV				
5+50	1.3586	3.60	QV				
5+55	1.3835	3.62	Q V				
6+ 0	1.4085	3.64	Q V				

6+ 5	1.4337	3.65	Q V				
6+10	1.4589	3.67	Q V				
6+15	1.4843	3.68	Q V				
6+20	1.5098	3.70	Q V				
6+25	1.5354	3.72	Q V				
6+30	1.5611	3.73	Q V				
6+35	1.5870	3.75	QV				
6+40	1.6129	3.77	QV				
6+45	1.6390	3.79	QV				
6+50	1.6652	3.81	QV				
6+55	1.6916	3.82	QV				
7+ 0	1.7180	3.84	Q V				
7+ 5	1.7446	3.86	Q V				
7+10	1.7713	3.88	Q V				
7+15	1.7982	3.90	Q V				
7+20	1.8252	3.92	Q V				
7+25	1.8523	3.94	Q V				
7+30	1.8795	3.96	Q V				
7+35	1.9069	3.98	Q V				
7+40	1.9345	4.00	Q V				
7+45	1.9622	4.02	Q V				
7+50	1.9900	4.04	Q V				
7+55	2.0180	4.06	Q V				
8+ 0	2.0461	4.08	Q V				
8+ 5	2.0744	4.11	Q V				
8+10	2.1028	4.13	Q V				
8+15	2.1314	4.15	Q V				
8+20	2.1602	4.18	Q V				
8+25	2.1891	4.20	Q V				
8+30	2.2182	4.22	Q V				
8+35	2.2474	4.25	Q V				
8+40	2.2768	4.27	Q V				
8+45	2.3064	4.30	Q V				
8+50	2.3362	4.32	Q V				
8+55	2.3661	4.35	Q V				
9+ 0	2.3963	4.37	Q V				
9+ 5	2.4266	4.40	Q V				
9+10	2.4571	4.43	Q V				
9+15	2.4878	4.46	Q V				
9+20	2.5187	4.48	Q V				
9+25	2.5498	4.51	Q V				
9+30	2.5810	4.54	Q V				
9+35	2.6125	4.57	Q V				
9+40	2.6442	4.60	Q V				
9+45	2.6762	4.63	Q V				
9+50	2.7083	4.67	Q V				
9+55	2.7407	4.70	Q V				
10+ 0	2.7732	4.73	Q V				
10+ 5	2.8060	4.76	Q V				
10+10	2.8391	4.80	Q V				
10+15	2.8724	4.83	Q V				
10+20	2.9059	4.87	Q V				
10+25	2.9397	4.91	Q V				
10+30	2.9737	4.94	Q V				
10+35	3.0080	4.98	Q V				
10+40	3.0426	5.02	Q V				
10+45	3.0774	5.06	Q V				
10+50	3.1125	5.10	Q V				
10+55	3.1479	5.14	Q V				
11+ 0	3.1836	5.18	Q V				

11+ 5	3.2196	5.23		Q	V				
11+10	3.2559	5.27		Q	V				
11+15	3.2925	5.31		Q	V				
11+20	3.3294	5.36		Q	V				
11+25	3.3667	5.41		Q	V				
11+30	3.4043	5.46		Q	V				
11+35	3.4422	5.51		Q	V				
11+40	3.4805	5.56		Q	V				
11+45	3.5191	5.61		Q	V				
11+50	3.5582	5.67		Q	V				
11+55	3.5976	5.72		Q	V				
12+ 0	3.6373	5.78		Q	V				
12+ 5	3.6777	5.85		Q	V				
12+10	3.7187	5.95		Q	V				
12+15	3.7606	6.09		Q	V				
12+20	3.8036	6.25		Q	V				
12+25	3.8480	6.44		Q	V				
12+30	3.8937	6.64		Q	V				
12+35	3.9407	6.82		Q	V				
12+40	3.9887	6.97		Q	V				
12+45	4.0376	7.10		Q	V				
12+50	4.0874	7.23		Q	V				
12+55	4.1379	7.34		Q	V				
13+ 0	4.1892	7.45		Q	V				
13+ 5	4.2413	7.56		Q	V				
13+10	4.2941	7.67		Q	V				
13+15	4.3477	7.78		Q	V				
13+20	4.4021	7.90		Q	V				
13+25	4.4572	8.01		Q	V				
13+30	4.5132	8.13		Q	V				
13+35	4.5701	8.25		Q	V				
13+40	4.6277	8.37		Q	V				
13+45	4.6863	8.50		Q	V				
13+50	4.7458	8.64		Q	V				
13+55	4.8062	8.78		Q	V				
14+ 0	4.8677	8.92		Q	V				
14+ 5	4.9301	9.07		Q	V				
14+10	4.9936	9.23		Q	V				
14+15	5.0583	9.39		Q	V				
14+20	5.1242	9.57		Q	V				
14+25	5.1913	9.75		Q	V				
14+30	5.2598	9.95		Q	V				
14+35	5.3298	10.15		Q	V				
14+40	5.4012	10.37		Q	V				
14+45	5.4742	10.60		Q	V				
14+50	5.5489	10.85		Q	V				
14+55	5.6254	11.11		Q	V				
15+ 0	5.7039	11.40		Q	V				
15+ 5	5.7846	11.71		Q	V				
15+10	5.8676	12.05		Q	V				
15+15	5.9532	12.42		Q	V				
15+20	6.0416	12.84		Q	V				
15+25	6.1327	13.24		Q	V				
15+30	6.2265	13.61		Q	V				
15+35	6.3225	13.95		Q	V				
15+40	6.4208	14.27		Q	V				
15+45	6.5218	14.65		Q	V				
15+50	6.6264	15.19		Q	V				
15+55	6.7377	16.17		Q	V				
16+ 0	6.8618	18.01			Q V				

16+ 5	7.0193	22.87				Q	V				
16+10	7.2226	29.52					V	Q			
16+15	7.4735	36.44					V		Q		
16+20	7.7676	42.69						V		Q	
16+25	8.0888	46.64						V			Q
16+30	8.4101	46.66							V		Q
16+35	8.6978	41.77							V		
16+40	8.9378	34.84							VQ		
16+45	9.1421	29.67						Q	V		
16+50	9.3209	25.95					Q		V		
16+55	9.4807	23.22						Q	V		
17+ 0	9.6283	21.43							V		
17+ 5	9.7664	20.05							V		
17+10	9.8963	18.85								V	
17+15	10.0184	17.74								V	
17+20	10.1345	16.85								V	
17+25	10.2449	16.03								V	
17+30	10.3493	15.16								V	
17+35	10.4488	14.44								V	
17+40	10.5444	13.88								V	
17+45	10.6369	13.43								V	
17+50	10.7247	12.75								V	
17+55	10.8090	12.24								V	
18+ 0	10.8907	11.87								V	
18+ 5	10.9687	11.32									V
18+10	11.0437	10.89									V
18+15	11.1164	10.55									V
18+20	11.1865	10.18									V
18+25	11.2540	9.80									V
18+30	11.3188	9.41									V
18+35	11.3803	8.93									V
18+40	11.4393	8.57									V
18+45	11.4965	8.31									V
18+50	11.5517	8.00									V
18+55	11.6051	7.76									V
19+ 0	11.6571	7.55									V
19+ 5	11.7072	7.28									V
19+10	11.7559	7.07									V
19+15	11.8033	6.88									V
19+20	11.8491	6.65									V
19+25	11.8936	6.47									V
19+30	11.9373	6.34									V
19+35	11.9801	6.21									V
19+40	12.0221	6.09									V
19+45	12.0631	5.96									V
19+50	12.1033	5.83									V
19+55	12.1424	5.67									V
20+ 0	12.1795	5.39									V
20+ 5	12.2148	5.13									V
20+10	12.2493	5.02									V
20+15	12.2833	4.93									V
20+20	12.3167	4.85									V
20+25	12.3495	4.76									V
20+30	12.3818	4.69									V
20+35	12.4136	4.61									V
20+40	12.4449	4.55									V
20+45	12.4757	4.48									V
20+50	12.5062	4.42									V
20+55	12.5362	4.36									V
21+ 0	12.5658	4.30									V

21+ 5	12.5950	4.25	Q				V	
21+10	12.6239	4.19	Q				V	
21+15	12.6525	4.14	Q				V	
21+20	12.6807	4.09	Q				V	
21+25	12.7085	4.05	Q				V	
21+30	12.7361	4.00	Q				V	
21+35	12.7634	3.96	Q				V	
21+40	12.7903	3.92	Q				V	
21+45	12.8170	3.87	Q				V	
21+50	12.8434	3.83	Q				V	
21+55	12.8695	3.79	Q				V	
22+ 0	12.8954	3.76	Q				V	
22+ 5	12.9211	3.72	Q				V	
22+10	12.9465	3.69	Q				V	
22+15	12.9716	3.65	Q				V	
22+20	12.9966	3.62	Q				V	
22+25	13.0213	3.59	Q				V	
22+30	13.0458	3.56	Q				V	
22+35	13.0701	3.53	Q				V	
22+40	13.0942	3.50	Q				V	
22+45	13.1181	3.47	Q				V	
22+50	13.1418	3.44	Q				V	
22+55	13.1653	3.41	Q				V	
23+ 0	13.1887	3.39	Q				V	
23+ 5	13.2118	3.36	Q				V	
23+10	13.2348	3.34	Q				V	
23+15	13.2576	3.31	Q				V	
23+20	13.2802	3.29	Q				V	
23+25	13.3027	3.26	Q				V	
23+30	13.3250	3.24	Q				V	
23+35	13.3472	3.22	Q				V	
23+40	13.3691	3.19	Q				V	
23+45	13.3910	3.17	Q				V	
23+50	13.4127	3.15	Q				V	
23+55	13.4342	3.13	Q				V	
24+ 0	13.4556	3.11	Q				V	
24+ 5	13.4766	3.04	Q				V	
24+10	13.4966	2.91	Q				V	
24+15	13.5152	2.70	Q				V	
24+20	13.5319	2.42	Q				V	
24+25	13.5461	2.07	Q				V	
24+30	13.5579	1.71	Q				V	
24+35	13.5675	1.39	Q				V	
24+40	13.5755	1.17	Q				V	
24+45	13.5825	1.01	Q				V	
24+50	13.5886	0.89	Q				V	
24+55	13.5940	0.79	Q				V	
25+ 0	13.5990	0.71	Q				V	
25+ 5	13.6034	0.65	Q				V	
25+10	13.6074	0.58	Q				V	
25+15	13.6111	0.53	Q				V	
25+20	13.6144	0.48	Q				V	
25+25	13.6174	0.44	Q				V	
25+30	13.6202	0.40	Q				V	
25+35	13.6227	0.37	Q				V	
25+40	13.6250	0.33	Q				V	
25+45	13.6271	0.30	Q				V	
25+50	13.6290	0.28	Q				V	
25+55	13.6307	0.25	Q				V	
26+ 0	13.6323	0.23	Q				V	

26+ 5	13.6337	0.21	Q				V
26+10	13.6351	0.19	Q				V
26+15	13.6363	0.18	Q				V
26+20	13.6374	0.16	Q				V
26+25	13.6384	0.14	Q				V
26+30	13.6393	0.13	Q				V
26+35	13.6401	0.12	Q				V
26+40	13.6408	0.10	Q				V
26+45	13.6414	0.09	Q				V
26+50	13.6420	0.08	Q				V
26+55	13.6425	0.07	Q				V
27+ 0	13.6430	0.07	Q				V
27+ 5	13.6434	0.06	Q				V
27+10	13.6437	0.05	Q				V
27+15	13.6440	0.04	Q				V
27+20	13.6443	0.04	Q				V
27+25	13.6445	0.03	Q				V
27+30	13.6447	0.03	Q				V
27+35	13.6448	0.02	Q				V
27+40	13.6450	0.02	Q				V
27+45	13.6450	0.01	Q				V
27+50	13.6451	0.01	Q				V
27+55	13.6451	0.00	Q				V

Basin C

Unit Hydrograph Analysis

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Study date 03/12/19

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San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6094

BASIN C
EXISTING CONDITIONS
100 YR STORM 24HR

Storm Event Year = 100

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 100		
64.05	1	1.40

Rainfall data for year 100
64.05 6 3.48

Rainfall data for year 100
64.05 24 6.36

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***** Area-averaged max loss rate, Fm *****

SCS curve No. (AMCII)	SCS curve NO. (AMC 3)	Area (Ac.)	Area Fraction	Fp (Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
65.6	83.5	64.05	1.000	0.310	0.904	0.280

Area-averaged adjusted loss rate Fm (In/Hr) = 0.280

***** Area-Averaged low loss rate fraction, Yb *****

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
57.90	0.904	65.6	83.5	1.98	0.704
6.15	0.096	98.0	98.0	0.20	0.962

Area-averaged catchment yield fraction, Y = 0.729

Area-averaged low loss fraction, Yb = 0.271

User entry of time of concentration = 0.260 (hours)

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Watershed area = 64.05(Ac.)

Catchment Lag time = 0.208 hours

Unit interval = 5.000 minutes

Unit interval percentage of lag time = 40.0641

Hydrograph baseflow = 0.00(CFS)

Average maximum watershed loss rate(Fm) = 0.280(In/Hr)

Average low loss rate fraction (Yb) = 0.271 (decimal)

VALLEY UNDEVELOPED S-Graph Selected

Computed peak 5-minute rainfall = 0.518(In)

Computed peak 30-minute rainfall = 1.061(In)

Specified peak 1-hour rainfall = 1.400(In)

Computed peak 3-hour rainfall = 2.447(In)

Specified peak 6-hour rainfall = 3.480(In)

Specified peak 24-hour rainfall = 6.360(In)

Rainfall depth area reduction factors:

Using a total area of 64.05(Ac.) (Ref: fig. E-4)

5-minute factor = 0.997 Adjusted rainfall = 0.517(In)

30-minute factor = 0.997 Adjusted rainfall = 1.058(In)

1-hour factor = 0.997 Adjusted rainfall = 1.396(In)

3-hour factor = 1.000 Adjusted rainfall = 2.446(In)

6-hour factor = 1.000 Adjusted rainfall = 3.479(In)

24-hour factor = 1.000 Adjusted rainfall = 6.359(In)

U n i t H y d r o g r a p h

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Interval	'S' Graph	Unit Hydrograph
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Number	Mean values	((CFS))
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(K = 774.60 (CFS))

1	4.367	33.825
2	22.305	138.949
3	49.092	207.498
4	66.507	134.892
5	75.013	65.888
6	80.383	41.601
7	84.397	31.090
8	87.472	23.817
9	89.910	18.891
10	91.847	14.999
11	93.362	11.734
12	94.620	9.748
13	95.781	8.991
14	96.693	7.068
15	97.457	5.915

16	98.094	4.936
17	98.607	3.971
18	99.011	3.135
19	99.412	3.103
20	100.000	1.552

Total soil rain loss = 1.57(In)
Total effective rainfall = 4.79(In)
Peak flow rate in flood hydrograph = 148.67(CFS)

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24 - 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 5 Minute intervals ((CFS))

Time(h+m)	Volume	Ac.Ft	Q(CFS)	0	50.0	100.0	150.0	200.0

0+ 5	0.0016	0.24	Q					
0+10	0.0100	1.21	Q					
0+15	0.0284	2.67	Q					
0+20	0.0533	3.62	Q					
0+25	0.0815	4.09	Q					
0+30	0.1118	4.40	Q					
0+35	0.1437	4.63	Q					
0+40	0.1768	4.81	Q					
0+45	0.2109	4.96	Q					
0+50	0.2459	5.08	VQ					
0+55	0.2815	5.17	VQ					
1+ 0	0.3177	5.26	VQ					
1+ 5	0.3545	5.34	VQ					
1+10	0.3917	5.40	VQ					
1+15	0.4293	5.46	VQ					
1+20	0.4673	5.51	VQ					
1+25	0.5056	5.56	VQ					
1+30	0.5441	5.60	VQ					
1+35	0.5830	5.64	VQ					
1+40	0.6220	5.67	VQ					
1+45	0.6611	5.69	Q					
1+50	0.7004	5.70	Q					
1+55	0.7398	5.72	Q					
2+ 0	0.7794	5.74	Q					
2+ 5	0.8190	5.76	Q					
2+10	0.8588	5.78	Q					
2+15	0.8988	5.80	Q					
2+20	0.9388	5.82	Q					
2+25	0.9790	5.84	Q					
2+30	1.0194	5.86	Q					
2+35	1.0598	5.88	Q					
2+40	1.1005	5.90	Q					
2+45	1.1412	5.92	Q					
2+50	1.1821	5.94	Q					
2+55	1.2231	5.96	Q					
3+ 0	1.2643	5.98	Q					
3+ 5	1.3056	6.00	QV					
3+10	1.3471	6.02	QV					
3+15	1.3887	6.04	QV					

3+20	1.4305	6.07	QV				
3+25	1.4724	6.09	QV				
3+30	1.5145	6.11	QV				
3+35	1.5567	6.13	QV				
3+40	1.5991	6.15	QV				
3+45	1.6417	6.18	QV				
3+50	1.6844	6.20	QV				
3+55	1.7273	6.22	QV				
4+ 0	1.7703	6.25	QV				
4+ 5	1.8135	6.27	QV				
4+10	1.8568	6.30	QV				
4+15	1.9004	6.32	QV				
4+20	1.9441	6.35	Q V				
4+25	1.9879	6.37	Q V				
4+30	2.0320	6.40	Q V				
4+35	2.0762	6.42	Q V				
4+40	2.1206	6.45	Q V				
4+45	2.1652	6.47	Q V				
4+50	2.2099	6.50	Q V				
4+55	2.2549	6.53	Q V				
5+ 0	2.3000	6.55	Q V				
5+ 5	2.3453	6.58	Q V				
5+10	2.3908	6.61	Q V				
5+15	2.4365	6.64	Q V				
5+20	2.4824	6.66	Q V				
5+25	2.5285	6.69	Q V				
5+30	2.5748	6.72	Q V				
5+35	2.6213	6.75	Q V				
5+40	2.6680	6.78	Q V				
5+45	2.7149	6.81	Q V				
5+50	2.7620	6.84	Q V				
5+55	2.8094	6.87	Q V				
6+ 0	2.8569	6.90	Q V				
6+ 5	2.9047	6.93	Q V				
6+10	2.9526	6.97	Q V				
6+15	3.0008	7.00	Q V				
6+20	3.0493	7.03	Q V				
6+25	3.0979	7.06	Q V				
6+30	3.1468	7.10	Q V				
6+35	3.1959	7.13	Q V				
6+40	3.2453	7.17	Q V				
6+45	3.2949	7.20	Q V				
6+50	3.3447	7.24	Q V				
6+55	3.3948	7.27	Q V				
7+ 0	3.4452	7.31	Q V				
7+ 5	3.4958	7.35	Q V				
7+10	3.5466	7.38	Q V				
7+15	3.5977	7.42	Q V				
7+20	3.6491	7.46	Q V				
7+25	3.7008	7.50	Q V				
7+30	3.7527	7.54	Q V				
7+35	3.8049	7.58	Q V				
7+40	3.8574	7.62	Q V				
7+45	3.9102	7.66	Q V				
7+50	3.9632	7.71	Q V				
7+55	4.0166	7.75	Q V				
8+ 0	4.0703	7.79	Q V				
8+ 5	4.1242	7.84	Q V				
8+10	4.1785	7.88	Q V				
8+15	4.2331	7.93	Q V				

8+20	4.2880	7.97	Q	V				
8+25	4.3432	8.02	Q	V				
8+30	4.3988	8.07	Q	V				
8+35	4.4547	8.12	Q	V				
8+40	4.5109	8.17	Q	V				
8+45	4.5675	8.22	Q	V				
8+50	4.6245	8.27	Q	V				
8+55	4.6818	8.32	Q	V				
9+ 0	4.7394	8.37	Q	V				
9+ 5	4.7975	8.43	Q	V				
9+10	4.8559	8.48	Q	V				
9+15	4.9147	8.54	Q	V				
9+20	4.9739	8.59	Q	V				
9+25	5.0335	8.65	Q	V				
9+30	5.0935	8.71	Q	V				
9+35	5.1539	8.77	Q	V				
9+40	5.2147	8.83	Q	V				
9+45	5.2760	8.90	Q	V				
9+50	5.3377	8.96	Q	V				
9+55	5.3999	9.03	Q	V				
10+ 0	5.4625	9.09	Q	V				
10+ 5	5.5256	9.16	Q	V				
10+10	5.5891	9.23	Q	V				
10+15	5.6532	9.30	Q	V				
10+20	5.7178	9.37	Q	V				
10+25	5.7828	9.45	Q	V				
10+30	5.8484	9.52	Q	V				
10+35	5.9145	9.60	Q	V				
10+40	5.9812	9.68	Q	V				
10+45	6.0484	9.76	Q	V				
10+50	6.1162	9.84	Q	V				
10+55	6.1846	9.93	Q	V				
11+ 0	6.2536	10.02	Q	V				
11+ 5	6.3232	10.11	Q	V				
11+10	6.3934	10.20	Q	V				
11+15	6.4643	10.29	Q	V				
11+20	6.5358	10.39	Q	V				
11+25	6.6080	10.48	Q	V				
11+30	6.6809	10.59	Q	V				
11+35	6.7545	10.69	Q	V				
11+40	6.8289	10.80	Q	V				
11+45	6.9040	10.91	Q	V				
11+50	6.9799	11.02	Q	V				
11+55	7.0566	11.14	Q	V				
12+ 0	7.1341	11.26	Q	V				
12+ 5	7.2131	11.47	Q	V				
12+10	7.2954	11.95	Q	V				
12+15	7.3824	12.62	Q	V				
12+20	7.4727	13.11	Q	V				
12+25	7.5651	13.42	Q	V				
12+30	7.6593	13.67	Q	V				
12+35	7.7550	13.91	Q	V				
12+40	7.8523	14.12	Q	V				
12+45	7.9511	14.34	Q	V				
12+50	8.0512	14.54	Q	V				
12+55	8.1528	14.75	Q	V				
13+ 0	8.2558	14.95	Q	V				
13+ 5	8.3602	15.16	Q	V				
13+10	8.4661	15.38	Q	V				
13+15	8.5735	15.60	Q	V				

13+20	8.6825	15.82		Q		V					
13+25	8.7930	16.05		Q		V					
13+30	8.9052	16.29		Q		V					
13+35	9.0191	16.54		Q		V					
13+40	9.1347	16.79		Q		V					
13+45	9.2522	17.06		Q		V					
13+50	9.3715	17.33		Q		V					
13+55	9.4929	17.62		Q		V					
14+ 0	9.6164	17.93		Q		V					
14+ 5	9.7421	18.26		Q		V					
14+10	9.8702	18.61		Q		V					
14+15	10.0011	19.00		Q		V					
14+20	10.1346	19.39		Q		V					
14+25	10.2710	19.81		Q		V					
14+30	10.4105	20.25		Q		V					
14+35	10.5532	20.72		Q		V					
14+40	10.6994	21.23		Q		V					
14+45	10.8494	21.77		Q		V					
14+50	11.0034	22.36		Q		V					
14+55	11.1618	23.01		Q		V					
15+ 0	11.3251	23.71		Q		V					
15+ 5	11.4937	24.48		Q		V					
15+10	11.6682	25.34		Q		V					
15+15	11.8494	26.30		Q		V					
15+20	12.0379	27.38		Q		V					
15+25	12.2329	28.30		Q		V					
15+30	12.4286	28.42		Q		V					
15+35	12.6225	28.16		Q		V					
15+40	12.8216	28.90		Q		V					
15+45	13.0339	30.82		Q		V					
15+50	13.2665	33.77		Q		V					
15+55	13.5328	38.68		Q		V					
16+ 0	13.8655	48.29		Q		V					
16+ 5	14.3867	75.68				Q		V			
16+10	15.2516	125.59						V	Q		
16+15	16.2755	148.67						V		Q	
16+20	17.0354	110.35						Q	V		
16+25	17.5444	73.90				Q			V		
16+30	17.9465	58.37				Q			V		
16+35	18.2970	50.90				Q			V		
16+40	18.6084	45.21				Q			V		
16+45	18.8877	40.55				Q			V		
16+50	19.1399	36.62				Q			V		
16+55	19.3693	33.32				Q			V		
17+ 0	19.5816	30.82				Q			V		
17+ 5	19.7812	28.97				Q			V		
17+10	19.9659	26.82				Q			V		
17+15	20.1387	25.09				Q			V		
17+20	20.3009	23.56				Q			V		
17+25	20.4535	22.15				Q			V		
17+30	20.5974	20.89				Q			V		
17+35	20.7347	19.93				Q			V		
17+40	20.8618	18.46				Q			V		
17+45	20.9798	17.14				Q			V		
17+50	21.0938	16.55				Q			V		
17+55	21.2044	16.06				Q			V		
18+ 0	21.3119	15.61				Q			V		
18+ 5	21.4159	15.10				Q			V		
18+10	21.5148	14.36				Q			V		
18+15	21.6076	13.47				Q			V		

18+20	21.6958	12.80	Q				V	
18+25	21.7807	12.33	Q				V	
18+30	21.8630	11.95	Q				V	
18+35	21.9429	11.61	Q				V	
18+40	22.0208	11.30	Q				V	
18+45	22.0967	11.02	Q				V	
18+50	22.1708	10.77	Q				V	
18+55	22.2434	10.53	Q				V	
19+ 0	22.3144	10.31	Q				V	
19+ 5	22.3840	10.11	Q				V	
19+10	22.4523	9.91	Q				V	
19+15	22.5194	9.73	Q				V	
19+20	22.5852	9.56	Q				V	
19+25	22.6499	9.40	Q				V	
19+30	22.7136	9.25	Q				V	
19+35	22.7763	9.10	Q				V	
19+40	22.8380	8.96	Q				V	
19+45	22.8989	8.84	Q				V	
19+50	22.9589	8.71	Q				V	
19+55	23.0181	8.59	Q				V	
20+ 0	23.0765	8.48	Q				V	
20+ 5	23.1341	8.37	Q				V	
20+10	23.1911	8.27	Q				V	
20+15	23.2473	8.16	Q				V	
20+20	23.3028	8.07	Q				V	
20+25	23.3577	7.97	Q				V	
20+30	23.4120	7.88	Q				V	
20+35	23.4656	7.79	Q				V	
20+40	23.5187	7.70	Q				V	
20+45	23.5711	7.62	Q				V	
20+50	23.6230	7.54	Q				V	
20+55	23.6744	7.46	Q				V	
21+ 0	23.7252	7.38	Q				V	
21+ 5	23.7755	7.31	Q				V	
21+10	23.8253	7.23	Q				V	
21+15	23.8747	7.16	Q				V	
21+20	23.9235	7.09	Q				V	
21+25	23.9719	7.03	Q				V	
21+30	24.0198	6.96	Q				V	
21+35	24.0674	6.90	Q				V	
21+40	24.1144	6.84	Q				V	
21+45	24.1611	6.78	Q				V	
21+50	24.2074	6.72	Q				V	
21+55	24.2532	6.66	Q				V	
22+ 0	24.2987	6.60	Q				V	
22+ 5	24.3438	6.55	Q				V	
22+10	24.3885	6.49	Q				V	
22+15	24.4329	6.44	Q				V	
22+20	24.4769	6.39	Q				V	
22+25	24.5206	6.34	Q				V	
22+30	24.5639	6.29	Q				V	
22+35	24.6069	6.24	Q				V	
22+40	24.6496	6.20	Q				V	
22+45	24.6919	6.15	Q				V	
22+50	24.7340	6.11	Q				V	
22+55	24.7757	6.06	Q				V	
23+ 0	24.8171	6.02	Q				V	
23+ 5	24.8583	5.97	Q				V	
23+10	24.8992	5.93	Q				V	
23+15	24.9397	5.89	Q				V	

23+20	24.9800	5.85	Q				V
23+25	25.0201	5.81	Q				V
23+30	25.0598	5.77	Q				V
23+35	25.0993	5.74	Q				V
23+40	25.1386	5.70	Q				V
23+45	25.1776	5.66	Q				V
23+50	25.2163	5.63	Q				V
23+55	25.2549	5.59	Q				V
24+ 0	25.2931	5.56	Q				V
24+ 5	25.3295	5.29	Q				V
24+10	25.3590	4.28	Q				V
24+15	25.3783	2.80	Q				V
24+20	25.3910	1.84	Q				V
24+25	25.4005	1.37	Q				V
24+30	25.4078	1.07	Q				V
24+35	25.4137	0.85	Q				V
24+40	25.4183	0.68	Q				V
24+45	25.4221	0.54	Q				V
24+50	25.4250	0.43	Q				V
24+55	25.4274	0.35	Q				V
25+ 0	25.4293	0.28	Q				V
25+ 5	25.4308	0.21	Q				V
25+10	25.4319	0.16	Q				V
25+15	25.4327	0.12	Q				V
25+20	25.4333	0.08	Q				V
25+25	25.4336	0.06	Q				V
25+30	25.4339	0.03	Q				V
25+35	25.4339	0.01	Q				V

***100-Year Unit Hydrograph Calculations
(Interim Condition)***

Basin A - Detention Basin A

Unit Hydrograph Analysis

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Study date 01/09/19

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San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6094

Tract 19756
Kimball
Interim Condition
Basin A

Storm Event Year = 100

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 100		
37.48	1	1.40

Rainfall data for year 100
37.48 6 3.48

Rainfall data for year 100
37.48 24 6.36

+++++

***** Area-averaged max loss rate, Fm *****

SCS curve No. (AMCII)	SCS curve NO. (AMC 3)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
56.0	75.8	37.48	1.000	0.440	0.130	0.057

Area-averaged adjusted loss rate Fm (In/Hr) = 0.057

***** Area-Averaged low loss rate fraction, Yb *****

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
4.87	0.130	56.0	75.8	3.19	0.577
32.61	0.870	98.0	98.0	0.20	0.962

Area-averaged catchment yield fraction, Y = 0.912

Area-averaged low loss fraction, Yb = 0.088

User entry of time of concentration = 0.210 (hours)

+++++

Watershed area = 37.48(Ac.)

Catchment Lag time = 0.168 hours

Unit interval = 5.000 minutes

Unit interval percentage of lag time = 49.6032

Hydrograph baseflow = 0.00(CFS)

Average maximum watershed loss rate(Fm) = 0.057(In/Hr)

Average low loss rate fraction (Yb) = 0.088 (decimal)

VALLEY DEVELOPED S-Graph Selected

Computed peak 5-minute rainfall = 0.518(In)

Computed peak 30-minute rainfall = 1.061(In)

Specified peak 1-hour rainfall = 1.400(In)

Computed peak 3-hour rainfall = 2.447(In)

Specified peak 6-hour rainfall = 3.480(In)

Specified peak 24-hour rainfall = 6.360(In)

Rainfall depth area reduction factors:

Using a total area of 37.48(Ac.) (Ref: fig. E-4)

5-minute factor = 0.998 Adjusted rainfall = 0.517(In)

30-minute factor = 0.998 Adjusted rainfall = 1.059(In)

1-hour factor = 0.998 Adjusted rainfall = 1.398(In)

3-hour factor = 1.000 Adjusted rainfall = 2.446(In)

6-hour factor = 1.000 Adjusted rainfall = 3.480(In)

24-hour factor = 1.000 Adjusted rainfall = 6.360(In)

U n i t H y d r o g r a p h

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Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
--------------------	--------------------------	------------------------------

(K = 453.27 (CFS))

1	4.508	20.435
2	29.352	112.611
3	68.171	175.954
4	89.593	97.101
5	96.887	33.062
6	98.711	8.266
7	99.597	4.018
8	100.000	1.826

Total soil rain loss = 0.49(In)

Total effective rainfall = 5.87(In)

Peak flow rate in flood hydrograph = 122.38(CFS)

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24 - 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 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	50.0	100.0	150.0	200.0
0+ 5	0.0012	0.18	Q				
0+10	0.0093	1.17	Q				
0+15	0.0280	2.71	Q				
0+20	0.0526	3.57	Q				
0+25	0.0793	3.87	Q				
0+30	0.1065	3.96	Q				
0+35	0.1341	4.01	Q				
0+40	0.1619	4.03	Q				
0+45	0.1897	4.05	Q				
0+50	0.2177	4.06	Q				
0+55	0.2457	4.07	Q				
1+ 0	0.2738	4.08	Q				
1+ 5	0.3020	4.10	Q				
1+10	0.3303	4.11	Q				
1+15	0.3587	4.12	Q				
1+20	0.3872	4.13	Q				
1+25	0.4157	4.15	Q				
1+30	0.4444	4.16	Q				
1+35	0.4731	4.17	QV				
1+40	0.5020	4.19	QV				
1+45	0.5309	4.20	QV				
1+50	0.5599	4.21	QV				
1+55	0.5891	4.23	QV				
2+ 0	0.6183	4.24	QV				
2+ 5	0.6476	4.26	QV				
2+10	0.6770	4.27	QV				
2+15	0.7065	4.28	QV				
2+20	0.7361	4.30	QV				
2+25	0.7658	4.31	QV				
2+30	0.7956	4.33	QV				
2+35	0.8256	4.34	QV				
2+40	0.8556	4.36	QV				
2+45	0.8857	4.37	QV				
2+50	0.9159	4.39	QV				
2+55	0.9463	4.40	Q V				
3+ 0	0.9767	4.42	Q V				
3+ 5	1.0073	4.44	Q V				
3+10	1.0379	4.45	Q V				
3+15	1.0687	4.47	Q V				
3+20	1.0996	4.48	Q V				
3+25	1.1306	4.50	Q V				
3+30	1.1617	4.52	Q V				
3+35	1.1929	4.53	Q V				
3+40	1.2243	4.55	Q V				
3+45	1.2557	4.57	Q V				
3+50	1.2873	4.59	Q V				
3+55	1.3190	4.60	Q V				
4+ 0	1.3508	4.62	Q V				

4+ 5	1.3828	4.64	Q	V				
4+10	1.4148	4.66	Q	V				
4+15	1.4470	4.68	Q	V				
4+20	1.4794	4.69	Q	V				
4+25	1.5118	4.71	Q	V				
4+30	1.5444	4.73	Q	V				
4+35	1.5771	4.75	Q	V				
4+40	1.6100	4.77	Q	V				
4+45	1.6429	4.79	Q	V				
4+50	1.6761	4.81	Q	V				
4+55	1.7093	4.83	Q	V				
5+ 0	1.7427	4.85	Q	V				
5+ 5	1.7762	4.87	Q	V				
5+10	1.8099	4.89	Q	V				
5+15	1.8437	4.91	Q	V				
5+20	1.8777	4.93	Q	V				
5+25	1.9118	4.95	Q	V				
5+30	1.9461	4.97	Q	V				
5+35	1.9805	5.00	Q	V				
5+40	2.0151	5.02	IQ	V				
5+45	2.0498	5.04	IQ	V				
5+50	2.0846	5.06	IQ	V				
5+55	2.1197	5.09	IQ	V				
6+ 0	2.1549	5.11	IQ	V				
6+ 5	2.1902	5.13	IQ	V				
6+10	2.2258	5.16	IQ	V				
6+15	2.2615	5.18	IQ	V				
6+20	2.2973	5.21	IQ	V				
6+25	2.3334	5.23	IQ	V				
6+30	2.3696	5.26	IQ	V				
6+35	2.4059	5.28	IQ	V				
6+40	2.4425	5.31	IQ	V				
6+45	2.4792	5.33	IQ	V				
6+50	2.5162	5.36	IQ	V				
6+55	2.5533	5.39	IQ	V				
7+ 0	2.5906	5.42	IQ	V				
7+ 5	2.6281	5.44	IQ	V				
7+10	2.6657	5.47	IQ	V				
7+15	2.7036	5.50	IQ	V				
7+20	2.7417	5.53	IQ	V				
7+25	2.7800	5.56	IQ	V				
7+30	2.8185	5.59	IQ	V				
7+35	2.8572	5.62	IQ	V				
7+40	2.8961	5.65	IQ	V				
7+45	2.9352	5.68	IQ	V				
7+50	2.9746	5.71	IQ	V				
7+55	3.0141	5.75	IQ	V				
8+ 0	3.0539	5.78	IQ	V				
8+ 5	3.0939	5.81	IQ	V				
8+10	3.1342	5.84	IQ	V				
8+15	3.1747	5.88	IQ	V				
8+20	3.2154	5.91	IQ	V				
8+25	3.2564	5.95	IQ	V				
8+30	3.2976	5.99	IQ	V				
8+35	3.3391	6.02	IQ	V				
8+40	3.3808	6.06	IQ	V				
8+45	3.4228	6.10	IQ	V				
8+50	3.4651	6.14	IQ	V				
8+55	3.5076	6.18	IQ	V				

9+ 0	3.5504	6.22	Q	V				
9+ 5	3.5935	6.26	Q	V				
9+10	3.6369	6.30	Q	V				
9+15	3.6805	6.34	Q	V				
9+20	3.7245	6.38	Q	V				
9+25	3.7688	6.43	Q	V				
9+30	3.8133	6.47	Q	V				
9+35	3.8582	6.52	Q	V				
9+40	3.9034	6.56	Q	V				
9+45	3.9490	6.61	Q	V				
9+50	3.9948	6.66	Q	V				
9+55	4.0410	6.71	Q	V				
10+ 0	4.0876	6.76	Q	V				
10+ 5	4.1345	6.81	Q	V				
10+10	4.1818	6.86	Q	V				
10+15	4.2294	6.92	Q	V				
10+20	4.2774	6.97	Q	V				
10+25	4.3258	7.03	Q	V				
10+30	4.3746	7.09	Q	V				
10+35	4.4238	7.15	Q	V				
10+40	4.4735	7.20	Q	V				
10+45	4.5235	7.27	Q	V				
10+50	4.5740	7.33	Q	V				
10+55	4.6249	7.39	Q	V				
11+ 0	4.6763	7.46	Q	V				
11+ 5	4.7281	7.53	Q	V				
11+10	4.7805	7.60	Q	V				
11+15	4.8333	7.67	Q	V				
11+20	4.8866	7.74	Q	V				
11+25	4.9404	7.82	Q	V				
11+30	4.9948	7.89	Q	V				
11+35	5.0497	7.97	Q	V				
11+40	5.1052	8.06	Q	V				
11+45	5.1613	8.14	Q	V				
11+50	5.2179	8.23	Q	V				
11+55	5.2752	8.32	Q	V				
12+ 0	5.3331	8.41	Q	V				
12+ 5	5.3921	8.57	Q	V				
12+10	5.4543	9.03	Q	V				
12+15	5.5211	9.70	Q	V				
12+20	5.5908	10.12	Q	V				
12+25	5.6620	10.34	Q	V				
12+30	5.7341	10.48	Q	V				
12+35	5.8072	10.61	Q	V				
12+40	5.8811	10.73	Q	V				
12+45	5.9559	10.86	Q	V				
12+50	6.0315	10.99	Q	V				
12+55	6.1081	11.12	Q	V				
13+ 0	6.1857	11.26	Q	V				
13+ 5	6.2642	11.41	Q	V				
13+10	6.3438	11.56	Q	V				
13+15	6.4245	11.72	Q	V				
13+20	6.5063	11.88	Q	V				
13+25	6.5893	12.05	Q	V				
13+30	6.6735	12.23	Q	V				
13+35	6.7590	12.42	Q	V				
13+40	6.8459	12.61	Q	V				
13+45	6.9341	12.82	Q	V				
13+50	7.0239	13.03	Q	V				

13+55	7.1152	13.26	Q		V			
14+ 0	7.2082	13.50	Q		V			
14+ 5	7.3029	13.76	Q		V			
14+10	7.3996	14.03	Q		V			
14+15	7.4983	14.33	Q		V			
14+20	7.5991	14.64	Q		V			
14+25	7.7023	14.97	Q		V			
14+30	7.8078	15.32	Q		V			
14+35	7.9159	15.70	Q		V			
14+40	8.0267	16.09	Q		V			
14+45	8.1406	16.53	Q		V			
14+50	8.2577	17.00	Q		V			
14+55	8.3784	17.53	Q		V			
15+ 0	8.5030	18.09	Q		V			
15+ 5	8.6320	18.73	Q		V			
15+10	8.7657	19.42	Q		V			
15+15	8.9050	20.22	Q		V			
15+20	9.0504	21.11	Q		V			
15+25	9.2014	21.93	Q		V			
15+30	9.3517	21.82	Q		V			
15+35	9.4976	21.19	Q		V			
15+40	9.6477	21.80	Q		V			
15+45	9.8111	23.72	Q		V			
15+50	9.9956	26.79	Q		V			
15+55	10.2124	31.48	Q		V			
16+ 0	10.4850	39.59	Q		V			
16+ 5	10.8957	59.63		Q	V			
16+10	11.6022	102.58			Q	V		
16+15	12.4450	122.38				Q	V	
16+20	13.0022	80.90			Q		V	
16+25	13.3158	45.54		Q			V	
16+30	13.5214	29.85	Q				V	
16+35	13.6978	25.62	Q				V	
16+40	13.8548	22.80	Q				V	
16+45	13.9946	20.30	Q				V	
16+50	14.1239	18.78	Q				V	
16+55	14.2450	17.57	Q				V	
17+ 0	14.3591	16.57	Q				V	
17+ 5	14.4674	15.72	Q				V	
17+10	14.5705	14.98	Q				V	
17+15	14.6692	14.33	Q				V	
17+20	14.7640	13.76	Q				V	
17+25	14.8554	13.26	Q				V	
17+30	14.9436	12.82	Q				V	
17+35	15.0291	12.41	Q				V	
17+40	15.1121	12.05	Q				V	
17+45	15.1928	11.71	Q				V	
17+50	15.2713	11.40	Q				V	
17+55	15.3479	11.12	Q				V	
18+ 0	15.4226	10.85	Q				V	
18+ 5	15.4952	10.54	Q				V	
18+10	15.5637	9.95	Q				V	
18+15	15.6268	9.16	Q				V	
18+20	15.6864	8.65	Q				V	
18+25	15.7440	8.36	Q				V	
18+30	15.8001	8.16	Q				V	
18+35	15.8551	7.98	Q				V	
18+40	15.9089	7.81	Q				V	
18+45	15.9617	7.67	Q				V	

18+50	16.0135	7.52	IQ				V	
18+55	16.0644	7.39	IQ				V	
19+ 0	16.1144	7.26	IQ				V	
19+ 5	16.1636	7.14	IQ				V	
19+10	16.2120	7.03	IQ				V	
19+15	16.2596	6.91	IQ				V	
19+20	16.3065	6.81	IQ				V	
19+25	16.3527	6.71	IQ				V	
19+30	16.3982	6.61	IQ				V	
19+35	16.4431	6.51	IQ				V	
19+40	16.4873	6.42	IQ				V	
19+45	16.5309	6.34	IQ				V	
19+50	16.5740	6.25	IQ				V	
19+55	16.6165	6.17	IQ				V	
20+ 0	16.6585	6.09	IQ				V	
20+ 5	16.7000	6.02	IQ				V	
20+10	16.7409	5.95	IQ				V	
20+15	16.7814	5.88	IQ				V	
20+20	16.8214	5.81	IQ				V	
20+25	16.8609	5.74	IQ				V	
20+30	16.9001	5.68	IQ				V	
20+35	16.9387	5.62	IQ				V	
20+40	16.9770	5.56	IQ				V	
20+45	17.0149	5.50	IQ				V	
20+50	17.0523	5.44	IQ				V	
20+55	17.0894	5.39	IQ				V	
21+ 0	17.1262	5.33	IQ				V	
21+ 5	17.1625	5.28	IQ				V	
21+10	17.1986	5.23	IQ				V	
21+15	17.2342	5.18	IQ				V	
21+20	17.2696	5.13	IQ				V	
21+25	17.3046	5.09	IQ				V	
21+30	17.3393	5.04	IQ				V	
21+35	17.3737	4.99	Q				V	
21+40	17.4078	4.95	Q				V	
21+45	17.4416	4.91	Q				V	
21+50	17.4751	4.87	Q				V	
21+55	17.5084	4.83	Q				V	
22+ 0	17.5414	4.79	Q				V	
22+ 5	17.5741	4.75	Q				V	
22+10	17.6065	4.71	Q				V	
22+15	17.6387	4.67	Q				V	
22+20	17.6706	4.64	Q				V	
22+25	17.7023	4.60	Q				V	
22+30	17.7338	4.57	Q				V	
22+35	17.7650	4.53	Q				V	
22+40	17.7960	4.50	Q				V	
22+45	17.8267	4.47	Q				V	
22+50	17.8573	4.43	Q				V	
22+55	17.8876	4.40	Q				V	
23+ 0	17.9177	4.37	Q				V	
23+ 5	17.9476	4.34	Q				V	
23+10	17.9773	4.31	Q				V	
23+15	18.0068	4.28	Q				V	
23+20	18.0361	4.26	Q				V	
23+25	18.0653	4.23	Q				V	
23+30	18.0942	4.20	Q				V	
23+35	18.1229	4.17	Q				V	
23+40	18.1515	4.15	Q				V	

23+45	18.1798	4.12	Q				V
23+50	18.2080	4.09	Q				V
23+55	18.2361	4.07	Q				V
24+ 0	18.2639	4.04	Q				V
24+ 5	18.2904	3.84	Q				V
24+10	18.3099	2.83	Q				V
24+15	18.3186	1.27	Q				V
24+20	18.3215	0.42	Q				V
24+25	18.3224	0.12	Q				V
24+30	18.3227	0.05	Q				V
24+35	18.3228	0.02	Q				V

Basin B - Detention Basin B

Unit Hydrograph Analysis

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Study date 01/12/19

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San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6094

Tract 19756
Kimball
Interim Condition
Basin B

Storm Event Year = 100

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 100		
32.16	1	1.40

Rainfall data for year 100
32.16 6 3.48

Rainfall data for year 100
32.16 24 6.36

+++++

***** Area-averaged max loss rate, Fm *****

SCS curve No. (AMCII)	SCS curve NO. (AMC 3)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
59.6	78.7	32.16	1.000	0.392	0.392	0.154

Area-averaged adjusted loss rate Fm (In/Hr) = 0.154

***** Area-Averaged low loss rate fraction, Yb *****

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
12.61	0.392	59.6	78.7	2.71	0.624
19.55	0.608	98.0	98.0	0.20	0.962

Area-averaged catchment yield fraction, Y = 0.830

Area-averaged low loss fraction, Yb = 0.170

User entry of time of concentration = 0.120 (hours)

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Watershed area = 32.16(Ac.)

Catchment Lag time = 0.096 hours

Unit interval = 5.000 minutes

Unit interval percentage of lag time = 86.8056

Hydrograph baseflow = 0.00(CFS)

Average maximum watershed loss rate(Fm) = 0.154(In/Hr)

Average low loss rate fraction (Yb) = 0.170 (decimal)

VALLEY DEVELOPED S-Graph Selected

Computed peak 5-minute rainfall = 0.518(In)

Computed peak 30-minute rainfall = 1.061(In)

Specified peak 1-hour rainfall = 1.400(In)

Computed peak 3-hour rainfall = 2.447(In)

Specified peak 6-hour rainfall = 3.480(In)

Specified peak 24-hour rainfall = 6.360(In)

Rainfall depth area reduction factors:

Using a total area of 32.16(Ac.) (Ref: fig. E-4)

5-minute factor = 0.998 Adjusted rainfall = 0.517(In)

30-minute factor = 0.998 Adjusted rainfall = 1.059(In)

1-hour factor = 0.998 Adjusted rainfall = 1.398(In)

3-hour factor = 1.000 Adjusted rainfall = 2.446(In)

6-hour factor = 1.000 Adjusted rainfall = 3.480(In)

24-hour factor = 1.000 Adjusted rainfall = 6.360(In)

U n i t H y d r o g r a p h

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Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
--------------------	--------------------------	------------------------------

(K = 388.93 (CFS))

1	13.176	51.247
2	69.924	220.711
3	95.818	100.711
4	99.265	13.408
5	100.000	2.858

Total soil rain loss = 0.98(In)

Total effective rainfall = 5.38(In)

Peak flow rate in flood hydrograph = 132.72(CFS)

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24 - 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 5 Minute intervals ((CFS))

Time(h+m)	Volume	Ac.Ft	Q(CFS)	0	50.0	100.0	150.0	200.0

0+ 5	0.0028		0.41	Q				
0+10	0.0178		2.17	Q				
0+15	0.0383		2.98	Q				
0+20	0.0596		3.10	Q				
0+25	0.0811		3.13	Q				
0+30	0.1028		3.14	Q				
0+35	0.1244		3.15	Q				
0+40	0.1462		3.16	Q				
0+45	0.1680		3.17	Q				
0+50	0.1898		3.18	Q				
0+55	0.2118		3.18	Q				
1+ 0	0.2338		3.20	Q				
1+ 5	0.2558		3.20	Q				
1+10	0.2780		3.22	Q				
1+15	0.3002		3.22	Q				
1+20	0.3225		3.24	Q				
1+25	0.3448		3.25	Q				
1+30	0.3673		3.26	QV				
1+35	0.3898		3.27	QV				
1+40	0.4123		3.28	QV				
1+45	0.4350		3.29	QV				
1+50	0.4577		3.30	QV				
1+55	0.4805		3.31	QV				
2+ 0	0.5034		3.32	QV				
2+ 5	0.5263		3.33	QV				
2+10	0.5493		3.34	QV				
2+15	0.5724		3.35	QV				
2+20	0.5956		3.37	QV				
2+25	0.6189		3.38	QV				
2+30	0.6422		3.39	QV				
2+35	0.6656		3.40	QV				
2+40	0.6891		3.41	QV				
2+45	0.7127		3.42	QV				
2+50	0.7364		3.44	Q V				
2+55	0.7601		3.45	Q V				
3+ 0	0.7840		3.46	Q V				
3+ 5	0.8079		3.47	Q V				
3+10	0.8319		3.49	Q V				
3+15	0.8560		3.50	Q V				
3+20	0.8802		3.51	Q V				
3+25	0.9044		3.52	Q V				
3+30	0.9288		3.54	Q V				
3+35	0.9532		3.55	Q V				
3+40	0.9778		3.56	Q V				
3+45	1.0024		3.58	Q V				
3+50	1.0272		3.59	Q V				
3+55	1.0520		3.60	Q V				
4+ 0	1.0769		3.62	Q V				
4+ 5	1.1019		3.63	Q V				
4+10	1.1270		3.65	Q V				
4+15	1.1523		3.66	Q V				

4+20	1.1776	3.68	Q	V				
4+25	1.2030	3.69	Q	V				
4+30	1.2285	3.71	Q	V				
4+35	1.2541	3.72	Q	V				
4+40	1.2799	3.74	Q	V				
4+45	1.3057	3.75	Q	V				
4+50	1.3316	3.77	Q	V				
4+55	1.3577	3.78	Q	V				
5+ 0	1.3838	3.80	Q	V				
5+ 5	1.4101	3.81	Q	V				
5+10	1.4365	3.83	Q	V				
5+15	1.4630	3.85	Q	V				
5+20	1.4896	3.86	Q	V				
5+25	1.5163	3.88	Q	V				
5+30	1.5432	3.90	Q	V				
5+35	1.5701	3.91	Q	V				
5+40	1.5972	3.93	Q	V				
5+45	1.6244	3.95	Q	V				
5+50	1.6518	3.97	Q	V				
5+55	1.6792	3.99	Q	V				
6+ 0	1.7068	4.01	Q	V				
6+ 5	1.7345	4.02	Q	V				
6+10	1.7624	4.04	Q	V				
6+15	1.7903	4.06	Q	V				
6+20	1.8184	4.08	Q	V				
6+25	1.8467	4.10	Q	V				
6+30	1.8751	4.12	Q	V				
6+35	1.9036	4.14	Q	V				
6+40	1.9322	4.16	Q	V				
6+45	1.9610	4.18	Q	V				
6+50	1.9900	4.20	Q	V				
6+55	2.0191	4.22	Q	V				
7+ 0	2.0483	4.25	Q	V				
7+ 5	2.0777	4.27	Q	V				
7+10	2.1073	4.29	Q	V				
7+15	2.1370	4.31	Q	V				
7+20	2.1668	4.34	Q	V				
7+25	2.1968	4.36	Q	V				
7+30	2.2270	4.38	Q	V				
7+35	2.2574	4.41	Q	V				
7+40	2.2879	4.43	Q	V				
7+45	2.3186	4.46	Q	V				
7+50	2.3495	4.48	Q	V				
7+55	2.3805	4.51	Q	V				
8+ 0	2.4117	4.53	Q	V				
8+ 5	2.4431	4.56	Q	V				
8+10	2.4747	4.59	Q	V				
8+15	2.5064	4.61	Q	V				
8+20	2.5384	4.64	Q	V				
8+25	2.5706	4.67	Q	V				
8+30	2.6029	4.70	Q	V				
8+35	2.6355	4.73	Q	V				
8+40	2.6682	4.76	Q	V				
8+45	2.7012	4.78	Q	V				
8+50	2.7343	4.82	Q	V				
8+55	2.7677	4.85	Q	V				
9+ 0	2.8013	4.88	Q	V				
9+ 5	2.8352	4.91	Q	V				
9+10	2.8692	4.95	Q	V				

9+15	2.9035	4.98	Q	V				
9+20	2.9380	5.01	IQ	V				
9+25	2.9728	5.05	IQ	V				
9+30	3.0078	5.08	IQ	V				
9+35	3.0430	5.12	IQ	V				
9+40	3.0786	5.16	IQ	V				
9+45	3.1143	5.19	IQ	V				
9+50	3.1504	5.23	IQ	V				
9+55	3.1867	5.27	IQ	V				
10+ 0	3.2232	5.31	IQ	V				
10+ 5	3.2601	5.35	IQ	V				
10+10	3.2973	5.40	IQ	V				
10+15	3.3347	5.44	IQ	V				
10+20	3.3724	5.48	IQ	V				
10+25	3.4105	5.52	IQ	V				
10+30	3.4489	5.57	IQ	V				
10+35	3.4876	5.62	IQ	V				
10+40	3.5266	5.67	IQ	V				
10+45	3.5659	5.71	IQ	V				
10+50	3.6057	5.77	IQ	V				
10+55	3.6457	5.82	IQ	V				
11+ 0	3.6861	5.87	IQ	V				
11+ 5	3.7269	5.92	IQ	V				
11+10	3.7681	5.98	IQ	V				
11+15	3.8097	6.03	IQ	V				
11+20	3.8517	6.10	IQ	V				
11+25	3.8940	6.15	IQ	V				
11+30	3.9369	6.22	IQ	V				
11+35	3.9801	6.28	IQ	V				
11+40	4.0238	6.35	IQ	V				
11+45	4.0680	6.41	IQ	V				
11+50	4.1126	6.48	IQ	V				
11+55	4.1578	6.55	IQ	V				
12+ 0	4.2034	6.63	IQ	V				
12+ 5	4.2506	6.85	IQ	V				
12+10	4.3029	7.58	IQ	V				
12+15	4.3577	7.96	IQ	V				
12+20	4.4134	8.09	IQ	V				
12+25	4.4697	8.18	IQ	V				
12+30	4.5267	8.28	IQ	V				
12+35	4.5843	8.36	IQ	V				
12+40	4.6426	8.47	IQ	V				
12+45	4.7015	8.56	IQ	V				
12+50	4.7613	8.67	IQ	V				
12+55	4.8217	8.77	IQ	V				
13+ 0	4.8829	8.89	IQ	V				
13+ 5	4.9449	9.00	IQ	V				
13+10	5.0078	9.13	IQ	V				
13+15	5.0715	9.25	IQ	V				
13+20	5.1362	9.39	IQ	V				
13+25	5.2018	9.52	IQ	V				
13+30	5.2685	9.68	IQ	V				
13+35	5.3361	9.82	IQ	V				
13+40	5.4049	9.99	IQ	V				
13+45	5.4748	10.15	Q	V				
13+50	5.5460	10.33	Q	V				
13+55	5.6183	10.51	Q	V				
14+ 0	5.6921	10.72	Q	V				
14+ 5	5.7673	10.92	Q	V				

14+10	5.8442	11.17	Q		V			
14+15	5.9227	11.39	Q		V			
14+20	6.0030	11.66	Q		V			
14+25	6.0850	11.91	Q		V			
14+30	6.1692	12.22	Q		V			
14+35	6.2553	12.51	Q		V			
14+40	6.3439	12.87	Q		V			
14+45	6.4349	13.21	Q		V			
14+50	6.5288	13.64	Q		V			
14+55	6.6255	14.04	Q		V			
15+ 0	6.7258	14.56	Q		V			
15+ 5	6.8296	15.06	Q		V			
15+10	6.9378	15.71	Q		V			
15+15	7.0504	16.35	Q		V			
15+20	7.1688	17.19	Q		V			
15+25	7.2892	17.50	Q		V			
15+30	7.4016	16.31	Q		V			
15+35	7.5148	16.44	Q		V			
15+40	7.6388	18.02	Q		V			
15+45	7.7763	19.96	Q		V			
15+50	7.9363	23.23	Q		V			
15+55	8.1311	28.29	Q		V			
16+ 0	8.4043	39.67	Q		V			
16+ 5	8.8965	71.46			Q		V	
16+10	9.8106	132.72					QV	
16+15	10.3258	74.82			Q		V	
16+20	10.5352	30.39	Q				V	
16+25	10.6764	20.51	Q				V	
16+30	10.8028	18.36	Q				V	
16+35	10.9216	17.25	Q				V	
16+40	11.0307	15.83	Q				V	
16+45	11.1317	14.67	Q				V	
16+50	11.2262	13.72	Q				V	
16+55	11.3153	12.94	Q				V	
17+ 0	11.3999	12.28	Q				V	
17+ 5	11.4805	11.70	Q				V	
17+10	11.5576	11.20	Q				V	
17+15	11.6317	10.75	Q				V	
17+20	11.7030	10.37	Q				V	
17+25	11.7720	10.02	Q				V	
17+30	11.8388	9.70	Q				V	
17+35	11.9037	9.41	Q				V	
17+40	11.9667	9.15	Q				V	
17+45	12.0281	8.91	Q				V	
17+50	12.0879	8.69	Q				V	
17+55	12.1463	8.48	Q				V	
18+ 0	12.2034	8.29	Q				V	
18+ 5	12.2582	7.96	Q				V	
18+10	12.3074	7.14	Q				V	
18+15	12.3535	6.69	Q				V	
18+20	12.3983	6.50	Q				V	
18+25	12.4421	6.36	Q				V	
18+30	12.4850	6.23	Q				V	
18+35	12.5270	6.11	Q				V	
18+40	12.5682	5.99	Q				V	
18+45	12.6087	5.88	Q				V	
18+50	12.6485	5.77	Q				V	
18+55	12.6876	5.67	Q				V	
19+ 0	12.7260	5.58	Q				V	

19+ 5	12.7638	5.49	IQ				V	
19+10	12.8010	5.40	IQ				V	
19+15	12.8376	5.32	IQ				V	
19+20	12.8737	5.24	IQ				V	
19+25	12.9093	5.16	IQ				V	
19+30	12.9443	5.09	IQ				V	
19+35	12.9789	5.02	IQ				V	
19+40	13.0130	4.95	Q				V	
19+45	13.0466	4.88	Q				V	
19+50	13.0798	4.82	Q				V	
19+55	13.1126	4.76	Q				V	
20+ 0	13.1450	4.70	Q				V	
20+ 5	13.1770	4.65	Q				V	
20+10	13.2086	4.59	Q				V	
20+15	13.2398	4.54	Q				V	
20+20	13.2707	4.49	Q				V	
20+25	13.3013	4.44	Q				V	
20+30	13.3315	4.39	Q				V	
20+35	13.3614	4.34	Q				V	
20+40	13.3910	4.29	Q				V	
20+45	13.4202	4.25	Q				V	
20+50	13.4492	4.21	Q				V	
20+55	13.4779	4.16	Q				V	
21+ 0	13.5063	4.12	Q				V	
21+ 5	13.5344	4.08	Q				V	
21+10	13.5623	4.05	Q				V	
21+15	13.5899	4.01	Q				V	
21+20	13.6172	3.97	Q				V	
21+25	13.6443	3.94	Q				V	
21+30	13.6712	3.90	Q				V	
21+35	13.6978	3.87	Q				V	
21+40	13.7242	3.83	Q				V	
21+45	13.7504	3.80	Q				V	
21+50	13.7764	3.77	Q				V	
21+55	13.8021	3.74	Q				V	
22+ 0	13.8276	3.71	Q				V	
22+ 5	13.8530	3.68	Q				V	
22+10	13.8781	3.65	Q				V	
22+15	13.9030	3.62	Q				V	
22+20	13.9278	3.59	Q				V	
22+25	13.9524	3.57	Q				V	
22+30	13.9767	3.54	Q				V	
22+35	14.0009	3.51	Q				V	
22+40	14.0249	3.49	Q				V	
22+45	14.0488	3.46	Q				V	
22+50	14.0725	3.44	Q				V	
22+55	14.0960	3.41	Q				V	
23+ 0	14.1193	3.39	Q				V	
23+ 5	14.1425	3.37	Q				V	
23+10	14.1656	3.34	Q				V	
23+15	14.1884	3.32	Q				V	
23+20	14.2112	3.30	Q				V	
23+25	14.2338	3.28	Q				V	
23+30	14.2562	3.26	Q				V	
23+35	14.2785	3.24	Q				V	
23+40	14.3006	3.22	Q				V	
23+45	14.3227	3.20	Q				V	
23+50	14.3445	3.18	Q				V	
23+55	14.3663	3.16	Q				V	

24+ 0	14.3879	3.14	Q				V
24+ 5	14.4066	2.71	Q				V
24+10	14.4130	0.94	Q				V
24+15	14.4139	0.13	Q				V
24+20	14.4141	0.02	Q				V

Basin C

Unit Hydrograph Analysis

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Study date 01/09/19

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San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6094

Tract 19756
Kimball
Interim Condition
Basin C

Storm Event Year = 100

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 100		
5.94	1	1.40

Rainfall data for year 100
5.94 6 3.48

Rainfall data for year 100
5.94 24 6.34

+++++

***** Area-averaged max loss rate, Fm *****

SCS curve No. (AMCII)	SCS curve NO. (AMC 3)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
56.0	75.8	5.94	1.000	0.440	0.100	0.044

Area-averaged adjusted loss rate Fm (In/Hr) = 0.044

***** Area-Averaged low loss rate fraction, Yb *****

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
0.59	0.100	56.0	75.8	3.19	0.576
5.35	0.900	98.0	98.0	0.20	0.962

Area-averaged catchment yield fraction, Y = 0.924

Area-averaged low loss fraction, Yb = 0.076

User entry of time of concentration = 0.200 (hours)

+++++

Watershed area = 5.94 (Ac.)

Catchment Lag time = 0.160 hours

Unit interval = 5.000 minutes

Unit interval percentage of lag time = 52.0833

Hydrograph baseflow = 0.00 (CFS)

Average maximum watershed loss rate (Fm) = 0.044 (In/Hr)

Average low loss rate fraction (Yb) = 0.076 (decimal)

VALLEY DEVELOPED S-Graph Selected

Computed peak 5-minute rainfall = 0.518 (In)

Computed peak 30-minute rainfall = 1.061 (In)

Specified peak 1-hour rainfall = 1.400 (In)

Computed peak 3-hour rainfall = 2.447 (In)

Specified peak 6-hour rainfall = 3.480 (In)

Specified peak 24-hour rainfall = 6.340 (In)

Rainfall depth area reduction factors:

Using a total area of 5.94 (Ac.) (Ref: fig. E-4)

5-minute factor = 1.000	Adjusted rainfall = 0.518 (In)
30-minute factor = 1.000	Adjusted rainfall = 1.061 (In)
1-hour factor = 1.000	Adjusted rainfall = 1.400 (In)
3-hour factor = 1.000	Adjusted rainfall = 2.447 (In)
6-hour factor = 1.000	Adjusted rainfall = 3.480 (In)
24-hour factor = 1.000	Adjusted rainfall = 6.340 (In)

U n i t H y d r o g r a p h

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Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
--------------------	--------------------------	------------------------------

(K = 71.84 (CFS))

1	4.951	3.556
2	32.173	19.556
3	71.993	28.606
4	91.514	14.023
5	97.565	4.346
6	98.956	1.000
7	100.000	0.750

Total soil rain loss = 0.42 (In)

Total effective rainfall = 5.92 (In)

Peak flow rate in flood hydrograph = 19.70 (CFS)

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24 - 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 5 Minute intervals ((CFS))

Time (h+m)	Volume	Ac.Ft	Q(CFS)	0	5.0	10.0	15.0	20.0
0+ 5	0.0002		0.03	Q				
0+10	0.0016		0.20	Q				
0+15	0.0048		0.46	Q				
0+20	0.0088		0.58	VQ				
0+25	0.0130		0.62	VQ				
0+30	0.0174		0.63	VQ				
0+35	0.0218		0.64	VQ				
0+40	0.0262		0.64	VQ				
0+45	0.0306		0.64	VQ				
0+50	0.0351		0.65	VQ				
0+55	0.0396		0.65	VQ				
1+ 0	0.0440		0.65	VQ				
1+ 5	0.0485		0.65	VQ				
1+10	0.0530		0.65	VQ				
1+15	0.0575		0.66	VQ				
1+20	0.0621		0.66	VQ				
1+25	0.0666		0.66	VQ				
1+30	0.0712		0.66	VQ				
1+35	0.0758		0.66	IQ				
1+40	0.0804		0.67	IQ				
1+45	0.0850		0.67	IQ				
1+50	0.0896		0.67	IQ				
1+55	0.0942		0.67	IQ				
2+ 0	0.0989		0.68	IQ				
2+ 5	0.1035		0.68	IQ				
2+10	0.1082		0.68	IQ				
2+15	0.1129		0.68	IQ				
2+20	0.1176		0.68	IQ				
2+25	0.1224		0.69	IQ				
2+30	0.1271		0.69	IQ				
2+35	0.1319		0.69	IQ				
2+40	0.1366		0.69	IQ				
2+45	0.1414		0.70	IQ				
2+50	0.1463		0.70	IQ				
2+55	0.1511		0.70	IQV				
3+ 0	0.1559		0.70	IQV				
3+ 5	0.1608		0.71	IQV				
3+10	0.1657		0.71	IQV				
3+15	0.1706		0.71	IQV				
3+20	0.1755		0.71	IQV				
3+25	0.1804		0.72	IQV				
3+30	0.1854		0.72	IQV				
3+35	0.1904		0.72	IQV				
3+40	0.1954		0.72	IQV				
3+45	0.2004		0.73	IQV				
3+50	0.2054		0.73	IQV				
3+55	0.2104		0.73	IQV				
4+ 0	0.2155		0.74	IQV				
4+ 5	0.2206		0.74	IQ V				

4+10	0.2257	0.74	IQ	V				
4+15	0.2308	0.74	IQ	V				
4+20	0.2360	0.75	IQ	V				
4+25	0.2412	0.75	IQ	V				
4+30	0.2463	0.75	IQ	V				
4+35	0.2516	0.76	IQ	V				
4+40	0.2568	0.76	IQ	V				
4+45	0.2620	0.76	IQ	V				
4+50	0.2673	0.77	IQ	V				
4+55	0.2726	0.77	IQ	V				
5+ 0	0.2779	0.77	IQ	V				
5+ 5	0.2833	0.78	IQ	V				
5+10	0.2886	0.78	IQ	V				
5+15	0.2940	0.78	IQ	V				
5+20	0.2994	0.79	IQ	V				
5+25	0.3049	0.79	IQ	V				
5+30	0.3103	0.79	IQ	V				
5+35	0.3158	0.80	IQ	V				
5+40	0.3213	0.80	IQ	V				
5+45	0.3269	0.80	IQ	V				
5+50	0.3324	0.81	IQ	V				
5+55	0.3380	0.81	IQ	V				
6+ 0	0.3436	0.81	IQ	V				
6+ 5	0.3492	0.82	IQ	V				
6+10	0.3549	0.82	IQ	V				
6+15	0.3606	0.83	IQ	V				
6+20	0.3663	0.83	IQ	V				
6+25	0.3720	0.83	IQ	V				
6+30	0.3778	0.84	IQ	V				
6+35	0.3836	0.84	IQ	V				
6+40	0.3894	0.85	IQ	V				
6+45	0.3953	0.85	IQ	V				
6+50	0.4012	0.85	IQ	V				
6+55	0.4071	0.86	IQ	V				
7+ 0	0.4130	0.86	IQ	V				
7+ 5	0.4190	0.87	IQ	V				
7+10	0.4250	0.87	IQ	V				
7+15	0.4311	0.88	IQ	V				
7+20	0.4371	0.88	IQ	V				
7+25	0.4432	0.89	IQ	V				
7+30	0.4494	0.89	IQ	V				
7+35	0.4555	0.90	IQ	V				
7+40	0.4618	0.90	IQ	V				
7+45	0.4680	0.91	IQ	V				
7+50	0.4743	0.91	IQ	V				
7+55	0.4806	0.92	IQ	V				
8+ 0	0.4869	0.92	IQ	V				
8+ 5	0.4933	0.93	IQ	V				
8+10	0.4997	0.93	IQ	V				
8+15	0.5062	0.94	IQ	V				
8+20	0.5127	0.94	IQ	V				
8+25	0.5192	0.95	IQ	V				
8+30	0.5258	0.95	IQ	V				
8+35	0.5324	0.96	IQ	V				
8+40	0.5390	0.97	IQ	V				
8+45	0.5457	0.97	IQ	V				
8+50	0.5525	0.98	IQ	V				
8+55	0.5593	0.99	IQ	V				
9+ 0	0.5661	0.99	IQ	V				

9+ 5	0.5730	1.00	Q	V				
9+10	0.5799	1.00	Q	V				
9+15	0.5869	1.01	Q	V				
9+20	0.5939	1.02	Q	V				
9+25	0.6009	1.03	Q	V				
9+30	0.6080	1.03	Q	V				
9+35	0.6152	1.04	Q	V				
9+40	0.6224	1.05	Q	V				
9+45	0.6297	1.05	Q	V				
9+50	0.6370	1.06	Q	V				
9+55	0.6444	1.07	Q	V				
10+ 0	0.6518	1.08	Q	V				
10+ 5	0.6593	1.09	Q	V				
10+10	0.6668	1.10	Q	V				
10+15	0.6744	1.10	Q	V				
10+20	0.6821	1.11	Q	V				
10+25	0.6898	1.12	Q	V				
10+30	0.6976	1.13	Q	V				
10+35	0.7055	1.14	Q	V				
10+40	0.7134	1.15	Q	V				
10+45	0.7214	1.16	Q	V				
10+50	0.7294	1.17	Q	V				
10+55	0.7376	1.18	Q	V				
11+ 0	0.7458	1.19	Q	V				
11+ 5	0.7540	1.20	Q	V				
11+10	0.7624	1.21	Q	V				
11+15	0.7708	1.22	Q	V				
11+20	0.7794	1.24	Q	V				
11+25	0.7879	1.25	Q	V				
11+30	0.7966	1.26	Q	V				
11+35	0.8054	1.27	Q	V				
11+40	0.8143	1.29	Q	V				
11+45	0.8232	1.30	Q	V				
11+50	0.8323	1.31	Q	V				
11+55	0.8414	1.33	Q	V				
12+ 0	0.8507	1.34	Q	V				
12+ 5	0.8601	1.37	Q	V				
12+10	0.8701	1.45	Q	V				
12+15	0.8809	1.57	Q	V				
12+20	0.8921	1.63	Q	V				
12+25	0.9036	1.66	Q	V				
12+30	0.9151	1.68	Q	V				
12+35	0.9269	1.70	Q	V				
12+40	0.9388	1.72	Q	V				
12+45	0.9508	1.74	Q	V				
12+50	0.9629	1.76	Q	V				
12+55	0.9752	1.79	Q	V				
13+ 0	0.9877	1.81	Q	V				
13+ 5	1.0003	1.83	Q	V				
13+10	1.0131	1.86	Q	V				
13+15	1.0261	1.88	Q	V				
13+20	1.0392	1.91	Q	V				
13+25	1.0525	1.94	Q	V				
13+30	1.0661	1.96	Q	V				
13+35	1.0798	2.00	Q	V				
13+40	1.0938	2.03	Q	V				
13+45	1.1079	2.06	Q	V				
13+50	1.1224	2.09	Q	V				
13+55	1.1371	2.13	Q	V				

14+ 0	1.1520	2.17		Q		V					
14+ 5	1.1672	2.21		Q		V					
14+10	1.1828	2.25		Q		V					
14+15	1.1986	2.30		Q		V					
14+20	1.2148	2.35		Q		V					
14+25	1.2313	2.40		Q		V					
14+30	1.2483	2.46		Q		V					
14+35	1.2656	2.52		Q		V					
14+40	1.2834	2.58		Q		V					
14+45	1.3017	2.66		Q		V					
14+50	1.3205	2.73		Q		V					
14+55	1.3399	2.82		Q		V					
15+ 0	1.3599	2.91		Q		V					
15+ 5	1.3807	3.01		Q		V					
15+10	1.4022	3.13		Q		V					
15+15	1.4247	3.26		Q		V					
15+20	1.4482	3.42		Q		V					
15+25	1.4727	3.55		Q		V					
15+30	1.4969	3.52		Q		V					
15+35	1.5204	3.41		Q		V					
15+40	1.5447	3.53		Q		V					
15+45	1.5713	3.87		Q		V					
15+50	1.6015	4.38		Q		V					
15+55	1.6370	5.15			Q	V					
16+ 0	1.6817	6.50			Q	V					
16+ 5	1.7497	9.87				Q	V				
16+10	1.8676	17.12					V			Q	
16+15	2.0033	19.70						V			Q
16+20	2.0874	12.22					Q	V			
16+25	2.1343	6.81			Q			V			
16+30	2.1660	4.61			Q			V			
16+35	2.1944	4.13			Q			V			
16+40	2.2187	3.52			Q			V			
16+45	2.2409	3.22			Q			V			
16+50	2.2614	2.98		Q				V			
16+55	2.2807	2.80		Q				V			
17+ 0	2.2989	2.64		Q				V			
17+ 5	2.3161	2.50		Q				V			
17+10	2.3326	2.39		Q				V			
17+15	2.3483	2.29		Q				V			
17+20	2.3634	2.20		Q				V			
17+25	2.3780	2.12		Q				V			
17+30	2.3922	2.05		Q				V			
17+35	2.4058	1.98		Q				V			
17+40	2.4191	1.93		Q				V			
17+45	2.4320	1.87		Q				V			
17+50	2.4446	1.82		Q				V			
17+55	2.4568	1.78		Q				V			
18+ 0	2.4688	1.74		Q				V			
18+ 5	2.4804	1.69		Q				V			
18+10	2.4913	1.58		Q				V			
18+15	2.5013	1.45		Q				V			
18+20	2.5108	1.37		Q				V			
18+25	2.5199	1.33		Q				V			
18+30	2.5289	1.30		Q				V			
18+35	2.5376	1.27		Q				V			
18+40	2.5462	1.24		Q				V			
18+45	2.5546	1.22		Q				V			
18+50	2.5628	1.20		Q				V			

18+55	2.5709	1.18	Q				V	
19+ 0	2.5789	1.16	Q				V	
19+ 5	2.5867	1.14	Q				V	
19+10	2.5944	1.12	Q				V	
19+15	2.6020	1.10	Q				V	
19+20	2.6095	1.08	Q				V	
19+25	2.6168	1.07	Q				V	
19+30	2.6241	1.05	Q				V	
19+35	2.6312	1.04	Q				V	
19+40	2.6382	1.02	Q				V	
19+45	2.6452	1.01	Q				V	
19+50	2.6520	1.00	Q				V	
19+55	2.6588	0.98	Q				V	
20+ 0	2.6655	0.97	Q				V	
20+ 5	2.6721	0.96	Q				V	
20+10	2.6786	0.95	Q				V	
20+15	2.6851	0.94	Q				V	
20+20	2.6914	0.92	Q				V	
20+25	2.6977	0.91	Q				V	
20+30	2.7039	0.90	Q				V	
20+35	2.7101	0.89	Q				V	
20+40	2.7162	0.88	Q				V	
20+45	2.7222	0.88	Q				V	
20+50	2.7282	0.87	Q				V	
20+55	2.7341	0.86	Q				V	
21+ 0	2.7399	0.85	Q				V	
21+ 5	2.7457	0.84	Q				V	
21+10	2.7514	0.83	Q				V	
21+15	2.7571	0.82	Q				V	
21+20	2.7627	0.82	Q				V	
21+25	2.7683	0.81	Q				V	
21+30	2.7738	0.80	Q				V	
21+35	2.7793	0.79	Q				V	
21+40	2.7847	0.79	Q				V	
21+45	2.7901	0.78	Q				V	
21+50	2.7955	0.77	Q				V	
21+55	2.8007	0.77	Q				V	
22+ 0	2.8060	0.76	Q				V	
22+ 5	2.8112	0.76	Q				V	
22+10	2.8164	0.75	Q				V	
22+15	2.8215	0.74	Q				V	
22+20	2.8266	0.74	Q				V	
22+25	2.8316	0.73	Q				V	
22+30	2.8366	0.73	Q				V	
22+35	2.8416	0.72	Q				V	
22+40	2.8465	0.72	Q				V	
22+45	2.8514	0.71	Q				V	
22+50	2.8562	0.71	Q				V	
22+55	2.8611	0.70	Q				V	
23+ 0	2.8659	0.70	Q				V	
23+ 5	2.8706	0.69	Q				V	
23+10	2.8753	0.69	Q				V	
23+15	2.8800	0.68	Q				V	
23+20	2.8847	0.68	Q				V	
23+25	2.8893	0.67	Q				V	
23+30	2.8939	0.67	Q				V	
23+35	2.8985	0.66	Q				V	
23+40	2.9030	0.66	Q				V	
23+45	2.9075	0.66	Q				V	

23+50	2.9120	0.65	IQ				V
23+55	2.9165	0.65	IQ				V
24+ 0	2.9209	0.64	IQ				V
24+ 5	2.9251	0.61	IQ				V
24+10	2.9281	0.43	Q				V
24+15	2.9293	0.18	Q				V
24+20	2.9297	0.05	Q				V
24+25	2.9298	0.02	Q				V
24+30	2.9298	0.01	Q				V

Basin CX

Unit Hydrograph Analysis

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Study date 01/09/19

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San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6094

Tract 19756
Kimball
Interim Condition
Basin CX

Storm Event Year = 100

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 100		
5.77	1	1.40

Rainfall data for year 100
5.77 6 3.48

Rainfall data for year 100
5.77 24 6.34

+++++

***** Area-averaged max loss rate, Fm *****

SCS curve No. (AMCII)	SCS curve NO. (AMC 3)	Area (Ac.)	Area Fraction	Fp (Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
56.0	75.8	5.77	1.000	0.440	0.100	0.044

Area-averaged adjusted loss rate Fm (In/Hr) = 0.044

***** Area-Averaged low loss rate fraction, Yb *****

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
0.58	0.100	56.0	75.8	3.19	0.576
5.19	0.900	98.0	98.0	0.20	0.962

Area-averaged catchment yield fraction, Y = 0.924

Area-averaged low loss fraction, Yb = 0.076

User entry of time of concentration = 0.190 (hours)

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Watershed area = 5.77 (Ac.)

Catchment Lag time = 0.152 hours

Unit interval = 5.000 minutes

Unit interval percentage of lag time = 54.8246

Hydrograph baseflow = 0.00 (CFS)

Average maximum watershed loss rate (Fm) = 0.044 (In/Hr)

Average low loss rate fraction (Yb) = 0.076 (decimal)

VALLEY DEVELOPED S-Graph Selected

Computed peak 5-minute rainfall = 0.518 (In)

Computed peak 30-minute rainfall = 1.061 (In)

Specified peak 1-hour rainfall = 1.400 (In)

Computed peak 3-hour rainfall = 2.447 (In)

Specified peak 6-hour rainfall = 3.480 (In)

Specified peak 24-hour rainfall = 6.340 (In)

Rainfall depth area reduction factors:

Using a total area of 5.77 (Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.518 (In)

30-minute factor = 1.000 Adjusted rainfall = 1.061 (In)

1-hour factor = 1.000 Adjusted rainfall = 1.400 (In)

3-hour factor = 1.000 Adjusted rainfall = 2.447 (In)

6-hour factor = 1.000 Adjusted rainfall = 3.480 (In)

24-hour factor = 1.000 Adjusted rainfall = 6.340 (In)

U n i t H y d r o g r a p h

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Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
--------------------	--------------------------	------------------------------

(K = 69.78 (CFS))

1	5.469	3.816
2	35.337	20.842
3	75.925	28.323
4	93.130	12.006
5	98.077	3.452
6	99.228	0.803
7	100.000	0.539

Total soil rain loss = 0.42 (In)

Total effective rainfall = 5.92 (In)

Peak flow rate in flood hydrograph = 19.23 (CFS)

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24 - 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 5 Minute intervals ((CFS))

Time (h+m)	Volume	Ac.Ft	Q(CFS)	0	5.0	10.0	15.0	20.0
0+ 5	0.0002		0.03	Q				
0+10	0.0017		0.22	Q				
0+15	0.0049		0.47	Q				
0+20	0.0089		0.57	VQ				
0+25	0.0131		0.61	VQ				
0+30	0.0173		0.62	VQ				
0+35	0.0216		0.62	VQ				
0+40	0.0259		0.62	VQ				
0+45	0.0302		0.63	VQ				
0+50	0.0345		0.63	VQ				
0+55	0.0389		0.63	VQ				
1+ 0	0.0432		0.63	VQ				
1+ 5	0.0476		0.63	VQ				
1+10	0.0519		0.64	VQ				
1+15	0.0563		0.64	VQ				
1+20	0.0607		0.64	VQ				
1+25	0.0652		0.64	VQ				
1+30	0.0696		0.64	VQ				
1+35	0.0740		0.65	IQ				
1+40	0.0785		0.65	IQ				
1+45	0.0830		0.65	IQ				
1+50	0.0875		0.65	IQ				
1+55	0.0920		0.65	IQ				
2+ 0	0.0965		0.66	IQ				
2+ 5	0.1010		0.66	IQ				
2+10	0.1056		0.66	IQ				
2+15	0.1101		0.66	IQ				
2+20	0.1147		0.67	IQ				
2+25	0.1193		0.67	IQ				
2+30	0.1239		0.67	IQ				
2+35	0.1286		0.67	IQ				
2+40	0.1332		0.67	IQ				
2+45	0.1379		0.68	IQ				
2+50	0.1425		0.68	IQV				
2+55	0.1472		0.68	IQV				
3+ 0	0.1519		0.68	IQV				
3+ 5	0.1567		0.69	IQV				
3+10	0.1614		0.69	IQV				
3+15	0.1662		0.69	IQV				
3+20	0.1710		0.69	IQV				
3+25	0.1758		0.70	IQV				
3+30	0.1806		0.70	IQV				
3+35	0.1854		0.70	IQV				
3+40	0.1903		0.70	IQV				
3+45	0.1951		0.71	IQV				
3+50	0.2000		0.71	IQV				
3+55	0.2049		0.71	IQV				
4+ 0	0.2098		0.72	IQV				
4+ 5	0.2148		0.72	IQ V				

4+10	0.2197	0.72	IQ	V				
4+15	0.2247	0.72	IQ	V				
4+20	0.2297	0.73	IQ	V				
4+25	0.2348	0.73	IQ	V				
4+30	0.2398	0.73	IQ	V				
4+35	0.2449	0.74	IQ	V				
4+40	0.2500	0.74	IQ	V				
4+45	0.2551	0.74	IQ	V				
4+50	0.2602	0.74	IQ	V				
4+55	0.2653	0.75	IQ	V				
5+ 0	0.2705	0.75	IQ	V				
5+ 5	0.2757	0.75	IQ	V				
5+10	0.2809	0.76	IQ	V				
5+15	0.2861	0.76	IQ	V				
5+20	0.2914	0.76	IQ	V				
5+25	0.2967	0.77	IQ	V				
5+30	0.3020	0.77	IQ	V				
5+35	0.3073	0.77	IQ	V				
5+40	0.3127	0.78	IQ	V				
5+45	0.3180	0.78	IQ	V				
5+50	0.3234	0.78	IQ	V				
5+55	0.3289	0.79	IQ	V				
6+ 0	0.3343	0.79	IQ	V				
6+ 5	0.3398	0.80	IQ	V				
6+10	0.3453	0.80	IQ	V				
6+15	0.3508	0.80	IQ	V				
6+20	0.3564	0.81	IQ	V				
6+25	0.3620	0.81	IQ	V				
6+30	0.3676	0.81	IQ	V				
6+35	0.3732	0.82	IQ	V				
6+40	0.3789	0.82	IQ	V				
6+45	0.3846	0.83	IQ	V				
6+50	0.3903	0.83	IQ	V				
6+55	0.3960	0.83	IQ	V				
7+ 0	0.4018	0.84	IQ	V				
7+ 5	0.4076	0.84	IQ	V				
7+10	0.4134	0.85	IQ	V				
7+15	0.4193	0.85	IQ	V				
7+20	0.4252	0.86	IQ	V				
7+25	0.4312	0.86	IQ	V				
7+30	0.4371	0.87	IQ	V				
7+35	0.4431	0.87	IQ	V				
7+40	0.4491	0.88	IQ	V				
7+45	0.4552	0.88	IQ	V				
7+50	0.4613	0.89	IQ	V				
7+55	0.4674	0.89	IQ	V				
8+ 0	0.4736	0.90	IQ	V				
8+ 5	0.4798	0.90	IQ	V				
8+10	0.4860	0.91	IQ	V				
8+15	0.4923	0.91	IQ	V				
8+20	0.4986	0.92	IQ	V				
8+25	0.5050	0.92	IQ	V				
8+30	0.5114	0.93	IQ	V				
8+35	0.5178	0.93	IQ	V				
8+40	0.5243	0.94	IQ	V				
8+45	0.5308	0.95	IQ	V				
8+50	0.5373	0.95	IQ	V				
8+55	0.5439	0.96	IQ	V				
9+ 0	0.5506	0.96	IQ	V				

9+ 5	0.5572	0.97	Q	V				
9+10	0.5640	0.98	Q	V				
9+15	0.5707	0.98	Q	V				
9+20	0.5776	0.99	Q	V				
9+25	0.5844	1.00	Q	V				
9+30	0.5913	1.00	Q	V				
9+35	0.5983	1.01	Q	V				
9+40	0.6053	1.02	Q	V				
9+45	0.6124	1.03	Q	V				
9+50	0.6195	1.03	Q	V				
9+55	0.6266	1.04	Q	V				
10+ 0	0.6339	1.05	Q	V				
10+ 5	0.6411	1.06	Q	V				
10+10	0.6485	1.06	Q	V				
10+15	0.6559	1.07	Q	V				
10+20	0.6633	1.08	Q	V				
10+25	0.6708	1.09	Q	V				
10+30	0.6784	1.10	Q	V				
10+35	0.6860	1.11	Q	V				
10+40	0.6937	1.12	Q	V				
10+45	0.7015	1.13	Q	V				
10+50	0.7093	1.14	Q	V				
10+55	0.7172	1.15	Q	V				
11+ 0	0.7252	1.16	Q	V				
11+ 5	0.7333	1.17	Q	V				
11+10	0.7414	1.18	Q	V				
11+15	0.7496	1.19	Q	V				
11+20	0.7579	1.20	Q	V				
11+25	0.7662	1.21	Q	V				
11+30	0.7747	1.23	Q	V				
11+35	0.7832	1.24	Q	V				
11+40	0.7918	1.25	Q	V				
11+45	0.8005	1.26	Q	V				
11+50	0.8093	1.28	Q	V				
11+55	0.8182	1.29	Q	V				
12+ 0	0.8272	1.31	Q	V				
12+ 5	0.8364	1.33	Q	V				
12+10	0.8462	1.42	Q	V				
12+15	0.8567	1.53	Q	V				
12+20	0.8677	1.59	Q	V				
12+25	0.8788	1.62	Q	V				
12+30	0.8901	1.64	Q	V				
12+35	0.9015	1.66	Q	V				
12+40	0.9130	1.68	Q	V				
12+45	0.9247	1.70	Q	V				
12+50	0.9366	1.72	Q	V				
12+55	0.9485	1.74	Q	V				
13+ 0	0.9606	1.76	Q	V				
13+ 5	0.9729	1.78	Q	V				
13+10	0.9853	1.81	Q	V				
13+15	0.9980	1.83	Q	V				
13+20	1.0107	1.86	Q	V				
13+25	1.0237	1.88	Q	V				
13+30	1.0369	1.91	Q	V				
13+35	1.0502	1.94	Q	V				
13+40	1.0638	1.97	Q	V				
13+45	1.0776	2.00	Q	V				
13+50	1.0917	2.04	Q	V				
13+55	1.1059	2.07	Q	V				

14+ 0	1.1205	2.11		Q		V					
14+ 5	1.1353	2.15		Q		V					
14+10	1.1504	2.19		Q		V					
14+15	1.1658	2.24		Q		V					
14+20	1.1816	2.29		Q		V					
14+25	1.1977	2.34		Q		V					
14+30	1.2142	2.39		Q		V					
14+35	1.2311	2.45		Q		V					
14+40	1.2484	2.52		Q		V					
14+45	1.2662	2.59		Q		V					
14+50	1.2846	2.66		Q		V					
14+55	1.3035	2.74		Q		V					
15+ 0	1.3230	2.83		Q		V					
15+ 5	1.3432	2.94		Q		V					
15+10	1.3642	3.05		Q		V					
15+15	1.3861	3.18		Q		V					
15+20	1.4091	3.33		Q		V					
15+25	1.4329	3.47		Q		V					
15+30	1.4564	3.41		Q		V					
15+35	1.4791	3.30		Q		V					
15+40	1.5029	3.45		Q		V					
15+45	1.5290	3.79		Q		V					
15+50	1.5586	4.31		Q		V					
15+55	1.5936	5.08			Q	V					
16+ 0	1.6381	6.45			Q	V					
16+ 5	1.7064	9.93				Q	V				
16+10	1.8265	17.43					V			Q	
16+15	1.9589	19.23					V			Q	
16+20	2.0351	11.06				Q	V				
16+25	2.0775	6.16			Q		V				
16+30	2.1073	4.33			Q		V				
16+35	2.1342	3.90			Q		V				
16+40	2.1575	3.39			Q		V				
16+45	2.1789	3.11			Q		V				
16+50	2.1987	2.88			Q		V				
16+55	2.2173	2.70			Q		V				
17+ 0	2.2348	2.55			Q		V				
17+ 5	2.2515	2.42			Q		V				
17+10	2.2674	2.31			Q		V				
17+15	2.2826	2.21			Q		V				
17+20	2.2973	2.13			Q		V				
17+25	2.3114	2.05			Q		V				
17+30	2.3251	1.98			Q		V				
17+35	2.3383	1.92			Q		V				
17+40	2.3512	1.87			Q		V				
17+45	2.3636	1.81			Q		V				
17+50	2.3758	1.77			Q		V				
17+55	2.3877	1.72			Q		V				
18+ 0	2.3993	1.68			Q		V				
18+ 5	2.4105	1.63			Q		V				
18+10	2.4210	1.53			Q		V				
18+15	2.4307	1.40			Q		V				
18+20	2.4398	1.33			Q		V				
18+25	2.4487	1.29			Q		V				
18+30	2.4573	1.26			Q		V				
18+35	2.4658	1.23			Q		V				
18+40	2.4741	1.21			Q		V				
18+45	2.4823	1.18			Q		V				
18+50	2.4903	1.16			Q		V				

18+55	2.4981	1.14	Q				V	
19+ 0	2.5058	1.12	Q				V	
19+ 5	2.5134	1.10	Q				V	
19+10	2.5209	1.08	Q				V	
19+15	2.5283	1.07	Q				V	
19+20	2.5355	1.05	Q				V	
19+25	2.5426	1.04	Q				V	
19+30	2.5497	1.02	Q				V	
19+35	2.5566	1.01	Q				V	
19+40	2.5634	0.99	Q				V	
19+45	2.5702	0.98	Q				V	
19+50	2.5768	0.97	Q				V	
19+55	2.5834	0.95	Q				V	
20+ 0	2.5899	0.94	Q				V	
20+ 5	2.5963	0.93	Q				V	
20+10	2.6026	0.92	Q				V	
20+15	2.6088	0.91	Q				V	
20+20	2.6150	0.90	Q				V	
20+25	2.6211	0.89	Q				V	
20+30	2.6272	0.88	Q				V	
20+35	2.6331	0.87	Q				V	
20+40	2.6390	0.86	Q				V	
20+45	2.6449	0.85	Q				V	
20+50	2.6507	0.84	Q				V	
20+55	2.6564	0.83	Q				V	
21+ 0	2.6621	0.82	Q				V	
21+ 5	2.6677	0.82	Q				V	
21+10	2.6733	0.81	Q				V	
21+15	2.6788	0.80	Q				V	
21+20	2.6842	0.79	Q				V	
21+25	2.6896	0.79	Q				V	
21+30	2.6950	0.78	Q				V	
21+35	2.7003	0.77	Q				V	
21+40	2.7056	0.76	Q				V	
21+45	2.7108	0.76	Q				V	
21+50	2.7160	0.75	Q				V	
21+55	2.7211	0.75	Q				V	
22+ 0	2.7262	0.74	Q				V	
22+ 5	2.7312	0.73	Q				V	
22+10	2.7363	0.73	Q				V	
22+15	2.7412	0.72	Q				V	
22+20	2.7462	0.72	Q				V	
22+25	2.7510	0.71	Q				V	
22+30	2.7559	0.71	Q				V	
22+35	2.7607	0.70	Q				V	
22+40	2.7655	0.69	Q				V	
22+45	2.7703	0.69	Q				V	
22+50	2.7750	0.68	Q				V	
22+55	2.7797	0.68	Q				V	
23+ 0	2.7843	0.68	Q				V	
23+ 5	2.7889	0.67	Q				V	
23+10	2.7935	0.67	Q				V	
23+15	2.7981	0.66	Q				V	
23+20	2.8026	0.66	Q				V	
23+25	2.8071	0.65	Q				V	
23+30	2.8115	0.65	Q				V	
23+35	2.8160	0.64	Q				V	
23+40	2.8204	0.64	Q				V	
23+45	2.8248	0.64	Q				V	

23+50	2.8291	0.63	IQ				V
23+55	2.8334	0.63	IQ				V
24+ 0	2.8377	0.62	IQ				V
24+ 5	2.8418	0.59	IQ				V
24+10	2.8445	0.40	Q				V
24+15	2.8456	0.15	Q				V
24+20	2.8459	0.04	Q				V
24+25	2.8459	0.01	Q				V
24+30	2.8460	0.00	Q				V

Basin CC - Detention Basin CC

Unit Hydrograph Analysis

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Study date 01/09/19

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San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6094

Tract 19756
Kimball
Interim Condition
Basin CC

Storm Event Year = 100

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 100		
16.74	1	1.40

Rainfall data for year 100
16.74 6 3.48

Rainfall data for year 100
16.74 24 6.36

+++++

***** Area-averaged max loss rate, Fm *****

SCS curve No. (AMCII)	SCS curve NO. (AMC 3)	Area (Ac.)	Area Fraction	Fp (Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
56.0	75.8	16.74	1.000	0.440	0.400	0.176

Area-averaged adjusted loss rate Fm (In/Hr) = 0.176

***** Area-Averaged low loss rate fraction, Yb *****

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
6.70	0.400	56.0	75.8	3.19	0.577
10.04	0.600	98.0	98.0	0.20	0.962

Area-averaged catchment yield fraction, Y = 0.808

Area-averaged low loss fraction, Yb = 0.192

User entry of time of concentration = 0.140 (hours)

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Watershed area = 16.74(Ac.)

Catchment Lag time = 0.112 hours

Unit interval = 5.000 minutes

Unit interval percentage of lag time = 74.4048

Hydrograph baseflow = 0.00(CFS)

Average maximum watershed loss rate(Fm) = 0.176(In/Hr)

Average low loss rate fraction (Yb) = 0.192 (decimal)

VALLEY DEVELOPED S-Graph Selected

Computed peak 5-minute rainfall = 0.518(In)

Computed peak 30-minute rainfall = 1.061(In)

Specified peak 1-hour rainfall = 1.400(In)

Computed peak 3-hour rainfall = 2.447(In)

Specified peak 6-hour rainfall = 3.480(In)

Specified peak 24-hour rainfall = 6.360(In)

Rainfall depth area reduction factors:

Using a total area of 16.74(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999	Adjusted rainfall = 0.518(In)
30-minute factor = 0.999	Adjusted rainfall = 1.060(In)
1-hour factor = 0.999	Adjusted rainfall = 1.399(In)
3-hour factor = 1.000	Adjusted rainfall = 2.447(In)
6-hour factor = 1.000	Adjusted rainfall = 3.480(In)
24-hour factor = 1.000	Adjusted rainfall = 6.360(In)

U n i t H y d r o g r a p h

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Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
--------------------	--------------------------	------------------------------

(K = 202.45 (CFS))

1	9.857	19.956
2	58.164	97.797
3	91.715	67.925
4	98.412	13.557
5	100.000	3.215

Total soil rain loss = 1.10(In)

Total effective rainfall = 5.26(In)

Peak flow rate in flood hydrograph = 62.76(CFS)

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24 - 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 5 Minute intervals ((CFS))

Time (h+m)	Volume	Ac.Ft	Q(CFS)	0	17.5	35.0	52.5	70.0

0+ 5	0.0011		0.16	Q				
0+10	0.0074		0.92	Q				
0+15	0.0173		1.45	Q				
0+20	0.0280		1.56	Q				
0+25	0.0390		1.59	Q				
0+30	0.0499		1.59	Q				
0+35	0.0609		1.59	Q				
0+40	0.0719		1.60	Q				
0+45	0.0830		1.60	Q				
0+50	0.0940		1.61	Q				
0+55	0.1052		1.61	Q				
1+ 0	0.1163		1.62	Q				
1+ 5	0.1275		1.62	Q				
1+10	0.1387		1.63	Q				
1+15	0.1500		1.63	Q				
1+20	0.1613		1.64	Q				
1+25	0.1726		1.64	Q				
1+30	0.1840		1.65	QV				
1+35	0.1954		1.66	QV				
1+40	0.2068		1.66	QV				
1+45	0.2183		1.67	QV				
1+50	0.2298		1.67	QV				
1+55	0.2413		1.68	QV				
2+ 0	0.2529		1.68	QV				
2+ 5	0.2646		1.69	QV				
2+10	0.2762		1.69	QV				
2+15	0.2879		1.70	QV				
2+20	0.2997		1.71	QV				
2+25	0.3115		1.71	QV				
2+30	0.3233		1.72	QV				
2+35	0.3352		1.72	QV				
2+40	0.3471		1.73	QV				
2+45	0.3590		1.74	QV				
2+50	0.3710		1.74	Q V				
2+55	0.3830		1.75	Q V				
3+ 0	0.3951		1.75	QV				
3+ 5	0.4072		1.76	QV				
3+10	0.4194		1.77	QV				
3+15	0.4316		1.77	QV				
3+20	0.4439		1.78	QV				
3+25	0.4562		1.79	QV				
3+30	0.4685		1.79	QV				
3+35	0.4809		1.80	QV				
3+40	0.4933		1.81	QV				
3+45	0.5058		1.81	QV				
3+50	0.5184		1.82	QV				
3+55	0.5309		1.83	QV				
4+ 0	0.5436		1.83	QV				
4+ 5	0.5562		1.84	Q V				
4+10	0.5690		1.85	Q V				
4+15	0.5817		1.86	Q V				

4+20	0.5946	1.86	IQ	V				
4+25	0.6074	1.87	IQ	V				
4+30	0.6204	1.88	IQ	V				
4+35	0.6334	1.88	IQ	V				
4+40	0.6464	1.89	IQ	V				
4+45	0.6595	1.90	IQ	V				
4+50	0.6726	1.91	IQ	V				
4+55	0.6858	1.92	IQ	V				
5+ 0	0.6991	1.92	IQ	V				
5+ 5	0.7124	1.93	IQ	V				
5+10	0.7258	1.94	IQ	V				
5+15	0.7392	1.95	IQ	V				
5+20	0.7527	1.96	IQ	V				
5+25	0.7662	1.97	IQ	V				
5+30	0.7798	1.97	IQ	V				
5+35	0.7935	1.98	IQ	V				
5+40	0.8072	1.99	IQ	V				
5+45	0.8210	2.00	IQ	V				
5+50	0.8348	2.01	IQ	V				
5+55	0.8487	2.02	IQ	V				
6+ 0	0.8627	2.03	IQ	V				
6+ 5	0.8767	2.04	IQ	V				
6+10	0.8908	2.05	IQ	V				
6+15	0.9050	2.06	IQ	V				
6+20	0.9193	2.07	IQ	V				
6+25	0.9336	2.08	IQ	V				
6+30	0.9479	2.09	IQ	V				
6+35	0.9624	2.10	IQ	V				
6+40	0.9769	2.11	IQ	V				
6+45	0.9915	2.12	IQ	V				
6+50	1.0062	2.13	IQ	V				
6+55	1.0209	2.14	IQ	V				
7+ 0	1.0357	2.15	IQ	V				
7+ 5	1.0506	2.16	IQ	V				
7+10	1.0656	2.17	IQ	V				
7+15	1.0806	2.18	IQ	V				
7+20	1.0958	2.20	IQ	V				
7+25	1.1110	2.21	IQ	V				
7+30	1.1262	2.22	IQ	V				
7+35	1.1416	2.23	IQ	V				
7+40	1.1571	2.24	IQ	V				
7+45	1.1726	2.26	IQ	V				
7+50	1.1883	2.27	IQ	V				
7+55	1.2040	2.28	IQ	V				
8+ 0	1.2198	2.30	IQ	V				
8+ 5	1.2357	2.31	IQ	V				
8+10	1.2517	2.32	IQ	V				
8+15	1.2678	2.34	IQ	V				
8+20	1.2840	2.35	IQ	V				
8+25	1.3002	2.36	IQ	V				
8+30	1.3166	2.38	IQ	V				
8+35	1.3331	2.39	IQ	V				
8+40	1.3497	2.41	IQ	V				
8+45	1.3664	2.42	IQ	V				
8+50	1.3832	2.44	IQ	V				
8+55	1.4001	2.45	IQ	V				
9+ 0	1.4171	2.47	IQ	V				
9+ 5	1.4343	2.49	IQ	V				
9+10	1.4515	2.50	IQ	V				

9+15	1.4689	2.52	Q	V				
9+20	1.4863	2.54	Q	V				
9+25	1.5039	2.56	Q	V				
9+30	1.5217	2.57	Q	V				
9+35	1.5395	2.59	Q	V				
9+40	1.5575	2.61	Q	V				
9+45	1.5756	2.63	Q	V				
9+50	1.5939	2.65	Q	V				
9+55	1.6122	2.67	Q	V				
10+ 0	1.6308	2.69	Q	V				
10+ 5	1.6494	2.71	Q	V				
10+10	1.6682	2.73	Q	V				
10+15	1.6872	2.75	Q	V				
10+20	1.7063	2.78	Q	V				
10+25	1.7256	2.80	Q	V				
10+30	1.7450	2.82	Q	V				
10+35	1.7646	2.84	Q	V				
10+40	1.7844	2.87	Q	V				
10+45	1.8043	2.89	Q	V				
10+50	1.8244	2.92	Q	V				
10+55	1.8447	2.94	Q	V				
11+ 0	1.8651	2.97	Q	V				
11+ 5	1.8858	3.00	Q	V				
11+10	1.9066	3.03	Q	V				
11+15	1.9277	3.05	Q	V				
11+20	1.9489	3.09	Q	V				
11+25	1.9703	3.11	Q	V				
11+30	1.9920	3.15	Q	V				
11+35	2.0139	3.18	Q	V				
11+40	2.0360	3.21	Q	V				
11+45	2.0584	3.24	Q	V				
11+50	2.0810	3.28	Q	V				
11+55	2.1038	3.32	Q	V				
12+ 0	2.1269	3.35	Q	V				
12+ 5	2.1507	3.45	Q	V				
12+10	2.1766	3.77	Q	V				
12+15	2.2042	4.00	Q	V				
12+20	2.2323	4.09	Q	V				
12+25	2.2608	4.14	Q	V				
12+30	2.2897	4.19	Q	V				
12+35	2.3188	4.23	Q	V				
12+40	2.3483	4.28	Q	V				
12+45	2.3781	4.33	Q	V				
12+50	2.4083	4.39	Q	V				
12+55	2.4389	4.44	Q	V				
13+ 0	2.4699	4.50	Q	V				
13+ 5	2.5012	4.55	Q	V				
13+10	2.5330	4.62	Q	V				
13+15	2.5653	4.68	Q	V				
13+20	2.5980	4.75	Q	V				
13+25	2.6311	4.82	Q	V				
13+30	2.6648	4.89	Q	V				
13+35	2.6990	4.97	Q	V				
13+40	2.7338	5.05	Q	V				
13+45	2.7691	5.13	Q	V				
13+50	2.8051	5.22	Q	V				
13+55	2.8416	5.31	Q	V				
14+ 0	2.8789	5.41	Q	V				
14+ 5	2.9169	5.51	Q	V				

14+10	2.9557	5.63	Q		V			
14+15	2.9953	5.75	Q		V			
14+20	3.0358	5.88	Q		V			
14+25	3.0772	6.01	Q		V			
14+30	3.1196	6.16	Q		V			
14+35	3.1630	6.31	Q		V			
14+40	3.2077	6.48	Q		V			
14+45	3.2535	6.66	Q		V			
14+50	3.3008	6.87	Q		V			
14+55	3.3495	7.07	Q		V			
15+ 0	3.4000	7.33	Q		V			
15+ 5	3.4522	7.58	Q		V			
15+10	3.5066	7.89	Q		V			
15+15	3.5632	8.22	Q		V			
15+20	3.6226	8.63	Q		V			
15+25	3.6836	8.85	Q		V			
15+30	3.7414	8.40	Q		V			
15+35	3.7986	8.30	Q		V			
15+40	3.8604	8.98	Q		V			
15+45	3.9288	9.92	Q		V			
15+50	4.0076	11.44	Q		V			
15+55	4.1028	13.83	Q		V			
16+ 0	4.2339	19.04	Q		V			
16+ 5	4.4618	33.09			Q			
16+10	4.8940	62.76				V		Q
16+15	5.2094	45.79				Q	V	
16+20	5.3414	19.16	Q				V	
16+25	5.4215	11.63	Q				V	
16+30	5.4862	9.40	Q				V	
16+35	5.5472	8.87	Q				V	
16+40	5.6034	8.16	Q				V	
16+45	5.6555	7.55	Q				V	
16+50	5.7040	7.05	Q				V	
16+55	5.7497	6.63	Q				V	
17+ 0	5.7930	6.29	Q				V	
17+ 5	5.8342	5.99	Q				V	
17+10	5.8736	5.73	Q				V	
17+15	5.9115	5.50	Q				V	
17+20	5.9480	5.30	Q				V	
17+25	5.9832	5.11	Q				V	
17+30	6.0173	4.95	Q				V	
17+35	6.0504	4.80	Q				V	
17+40	6.0825	4.67	Q				V	
17+45	6.1138	4.54	Q				V	
17+50	6.1443	4.43	Q				V	
17+55	6.1741	4.32	Q				V	
18+ 0	6.2031	4.22	Q				V	
18+ 5	6.2312	4.07	Q				V	
18+10	6.2567	3.71	Q				V	
18+15	6.2804	3.43	Q				V	
18+20	6.3032	3.32	Q				V	
18+25	6.3255	3.24	Q				V	
18+30	6.3473	3.17	Q				V	
18+35	6.3688	3.11	Q				V	
18+40	6.3898	3.05	Q				V	
18+45	6.4104	2.99	Q				V	
18+50	6.4306	2.94	Q				V	
18+55	6.4505	2.89	Q				V	
19+ 0	6.4700	2.84	Q				V	

19+ 5	6.4893	2.79	IQ				V	
19+10	6.5082	2.75	IQ				V	
19+15	6.5268	2.71	IQ				V	
19+20	6.5452	2.66	IQ				V	
19+25	6.5633	2.63	IQ				V	
19+30	6.5811	2.59	IQ				V	
19+35	6.5987	2.55	IQ				V	
19+40	6.6160	2.52	IQ				V	
19+45	6.6331	2.48	IQ				V	
19+50	6.6500	2.45	IQ				V	
19+55	6.6667	2.42	IQ				V	
20+ 0	6.6831	2.39	IQ				V	
20+ 5	6.6994	2.36	IQ				V	
20+10	6.7155	2.33	IQ				V	
20+15	6.7313	2.31	IQ				V	
20+20	6.7470	2.28	IQ				V	
20+25	6.7626	2.25	IQ				V	
20+30	6.7779	2.23	IQ				V	
20+35	6.7931	2.21	IQ				V	
20+40	6.8081	2.18	IQ				V	
20+45	6.8230	2.16	IQ				V	
20+50	6.8377	2.14	IQ				V	
20+55	6.8523	2.12	IQ				V	
21+ 0	6.8667	2.10	IQ				V	
21+ 5	6.8810	2.08	IQ				V	
21+10	6.8952	2.06	IQ				V	
21+15	6.9092	2.04	IQ				V	
21+20	6.9231	2.02	IQ				V	
21+25	6.9369	2.00	IQ				V	
21+30	6.9505	1.98	IQ				V	
21+35	6.9640	1.96	IQ				V	
21+40	6.9775	1.95	IQ				V	
21+45	6.9907	1.93	IQ				V	
21+50	7.0039	1.91	IQ				V	
21+55	7.0170	1.90	IQ				V	
22+ 0	7.0300	1.88	IQ				V	
22+ 5	7.0428	1.87	IQ				V	
22+10	7.0556	1.85	IQ				V	
22+15	7.0683	1.84	IQ				V	
22+20	7.0808	1.82	IQ				V	
22+25	7.0933	1.81	IQ				V	
22+30	7.1057	1.80	IQ				V	
22+35	7.1180	1.78	IQ				V	
22+40	7.1302	1.77	IQ				V	
22+45	7.1423	1.76	IQ				V	
22+50	7.1543	1.75	Q				V	
22+55	7.1663	1.73	Q				V	
23+ 0	7.1781	1.72	Q				V	
23+ 5	7.1899	1.71	Q				V	
23+10	7.2016	1.70	Q				V	
23+15	7.2132	1.69	Q				V	
23+20	7.2248	1.68	Q				V	
23+25	7.2362	1.66	Q				V	
23+30	7.2476	1.65	Q				V	
23+35	7.2589	1.64	Q				V	
23+40	7.2702	1.63	Q				V	
23+45	7.2814	1.62	Q				V	
23+50	7.2925	1.61	Q				V	
23+55	7.3035	1.60	Q				V	

24+ 0	7.3145	1.59	Q				V
24+ 5	7.3243	1.43	Q				V
24+10	7.3289	0.66	Q				V
24+15	7.3298	0.13	Q				V
24+20	7.3300	0.03	Q				V

Basin D - Detention Basin #1

Unit Hydrograph Analysis

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Study date 09/25/17

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San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6094

TRACT MAP 20008, PARCEL 2

100-YR STORM
DEVELOPED CONDITION

Storm Event Year = 100

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 100		
20.58	1	1.39

Rainfall data for year 100		
20.58	6	3.46

Rainfall data for year 100		
20.58	24	6.34

***** Area-averaged max loss rate, Fm *****

SCS curve No. (AMCII)	SCS curve NO. (AMC 3)	Area (Ac.)	Area Fraction	Fp (Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
56.0	75.8	20.58	1.000	0.440	0.380	0.167

Area-averaged adjusted loss rate Fm (In/Hr) = 0.167

***** Area-Averaged low loss rate fraction, Yb *****

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
7.82	0.380	56.0	75.8	3.19	0.576
12.76	0.620	98.0	98.0	0.20	0.962

Area-averaged catchment yield fraction, Y = 0.816

Area-averaged low loss fraction, Yb = 0.184

User entry of time of concentration = 0.252 (hours)

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Watershed area = 20.58(Ac.)

Catchment Lag time = 0.202 hours

Unit interval = 5.000 minutes

Unit interval percentage of lag time = 41.3360

Hydrograph baseflow = 0.00(CFS)

Average maximum watershed loss rate(Fm) = 0.167(In/Hr)

Average low loss rate fraction (Yb) = 0.184 (decimal)

VALLEY DEVELOPED S-Graph Selected

Computed peak 5-minute rainfall = 0.514(In)

Computed peak 30-minute rainfall = 1.053(In)

Specified peak 1-hour rainfall = 1.390(In)

Computed peak 3-hour rainfall = 2.431(In)

Specified peak 6-hour rainfall = 3.460(In)

Specified peak 24-hour rainfall = 6.340(In)

Rainfall depth area reduction factors:

Using a total area of 20.58(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999 Adjusted rainfall = 0.514(In)

30-minute factor = 0.999 Adjusted rainfall = 1.052(In)

1-hour factor = 0.999 Adjusted rainfall = 1.389(In)

3-hour factor = 1.000 Adjusted rainfall = 2.431(In)

6-hour factor = 1.000 Adjusted rainfall = 3.460(In)

24-hour factor = 1.000 Adjusted rainfall = 6.340(In)

U n i t H y d r o g r a p h

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Interval	'S' Graph	Unit Hydrograph
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Number	Mean values	((CFS))
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(K = 248.89 (CFS))

1	3.215	8.002
2	20.838	43.862
3	52.526	78.869
4	80.103	68.636
5	92.285	30.320
6	97.246	12.348
7	98.636	3.460
8	99.380	1.852
9	100.000	1.542

Total soil rain loss = 1.06(In)

Total effective rainfall = 5.28(In)

Peak flow rate in flood hydrograph = 58.27(CFS)

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24 - 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 5 Minute intervals ((CFS))

Time(h+m)	Volume	Ac.Ft	Q(CFS)	0	15.0	30.0	45.0	60.0
0+ 5	0.0004		0.06	Q				
0+10	0.0032		0.41	Q				
0+15	0.0103		1.03	Q				
0+20	0.0211		1.57	VQ				
0+25	0.0336		1.81	VQ				
0+30	0.0468		1.91	VQ				
0+35	0.0602		1.95	VQ				
0+40	0.0737		1.97	VQ				
0+45	0.0874		1.99	VQ				
0+50	0.1011		1.99	VQ				
0+55	0.1149		2.00	VQ				
1+ 0	0.1287		2.00	VQ				
1+ 5	0.1425		2.01	VQ				
1+10	0.1564		2.02	VQ				
1+15	0.1703		2.02	VQ				
1+20	0.1843		2.03	VQ				
1+25	0.1983		2.04	VQ				
1+30	0.2124		2.04	VQ				
1+35	0.2265		2.05	IQ				
1+40	0.2407		2.05	IQ				
1+45	0.2549		2.06	IQ				
1+50	0.2691		2.07	IQ				
1+55	0.2834		2.07	IQ				
2+ 0	0.2977		2.08	IQ				
2+ 5	0.3121		2.09	IQ				
2+10	0.3265		2.10	IQ				
2+15	0.3410		2.10	IQ				
2+20	0.3555		2.11	IQ				
2+25	0.3701		2.12	IQ				
2+30	0.3847		2.12	IQ				
2+35	0.3994		2.13	IQ				
2+40	0.4141		2.14	IQ				
2+45	0.4289		2.15	IQ				
2+50	0.4438		2.15	IQ				
2+55	0.4586		2.16	IQV				
3+ 0	0.4736		2.17	IQV				
3+ 5	0.4886		2.18	IQV				
3+10	0.5036		2.18	IQV				
3+15	0.5187		2.19	IQV				
3+20	0.5338		2.20	IQV				
3+25	0.5490		2.21	IQV				
3+30	0.5643		2.22	IQV				
3+35	0.5796		2.22	IQV				
3+40	0.5950		2.23	IQV				
3+45	0.6104		2.24	IQV				
3+50	0.6259		2.25	IQV				
3+55	0.6415		2.26	IQV				
4+ 0	0.6571		2.27	IQV				
4+ 5	0.6727		2.27	IQV				
4+10	0.6885		2.28	IQ V				

4+15	0.7043	2.29	Q V				
4+20	0.7201	2.30	Q V				
4+25	0.7360	2.31	Q V				
4+30	0.7520	2.32	Q V				
4+35	0.7680	2.33	Q V				
4+40	0.7841	2.34	Q V				
4+45	0.8003	2.35	Q V				
4+50	0.8166	2.36	Q V				
4+55	0.8329	2.37	Q V				
5+ 0	0.8492	2.38	Q V				
5+ 5	0.8657	2.39	Q V				
5+10	0.8822	2.40	Q V				
5+15	0.8988	2.41	Q V				
5+20	0.9154	2.42	Q V				
5+25	0.9321	2.43	Q V				
5+30	0.9489	2.44	Q V				
5+35	0.9658	2.45	Q V				
5+40	0.9827	2.46	Q V				
5+45	0.9998	2.47	Q V				
5+50	1.0168	2.48	Q V				
5+55	1.0340	2.49	Q V				
6+ 0	1.0513	2.50	Q V				
6+ 5	1.0686	2.52	Q V				
6+10	1.0860	2.53	Q V				
6+15	1.1035	2.54	Q V				
6+20	1.1211	2.55	Q V				
6+25	1.1387	2.56	Q V				
6+30	1.1565	2.58	Q V				
6+35	1.1743	2.59	Q V				
6+40	1.1922	2.60	Q V				
6+45	1.2102	2.61	Q V				
6+50	1.2283	2.63	Q V				
6+55	1.2465	2.64	Q V				
7+ 0	1.2648	2.65	Q V				
7+ 5	1.2831	2.67	Q V				
7+10	1.3016	2.68	Q V				
7+15	1.3201	2.69	Q V				
7+20	1.3388	2.71	Q V				
7+25	1.3576	2.72	Q V				
7+30	1.3764	2.74	Q V				
7+35	1.3954	2.75	Q V				
7+40	1.4144	2.77	Q V				
7+45	1.4336	2.78	Q V				
7+50	1.4528	2.80	Q V				
7+55	1.4722	2.81	Q V				
8+ 0	1.4917	2.83	Q V				
8+ 5	1.5113	2.85	Q V				
8+10	1.5310	2.86	Q V				
8+15	1.5508	2.88	Q V				
8+20	1.5708	2.90	Q V				
8+25	1.5908	2.91	Q V				
8+30	1.6110	2.93	Q V				
8+35	1.6313	2.95	Q V				
8+40	1.6517	2.97	Q V				
8+45	1.6723	2.98	Q V				
8+50	1.6930	3.00	Q V				
8+55	1.7138	3.02	Q V				
9+ 0	1.7348	3.04	Q V				
9+ 5	1.7558	3.06	Q V				
9+10	1.7771	3.08	Q V				

9+15	1.7984	3.10	Q	V				
9+20	1.8199	3.12	Q	V				
9+25	1.8416	3.14	Q	V				
9+30	1.8634	3.17	Q	V				
9+35	1.8854	3.19	Q	V				
9+40	1.9075	3.21	Q	V				
9+45	1.9298	3.23	Q	V				
9+50	1.9522	3.26	Q	V				
9+55	1.9748	3.28	Q	V				
10+ 0	1.9976	3.31	Q	V				
10+ 5	2.0205	3.33	Q	V				
10+10	2.0436	3.36	Q	V				
10+15	2.0669	3.38	Q	V				
10+20	2.0904	3.41	Q	V				
10+25	2.1140	3.44	Q	V				
10+30	2.1379	3.46	Q	V				
10+35	2.1620	3.49	Q	V				
10+40	2.1862	3.52	Q	V				
10+45	2.2107	3.55	Q	V				
10+50	2.2353	3.58	Q	V				
10+55	2.2602	3.61	Q	V				
11+ 0	2.2853	3.65	Q	V				
11+ 5	2.3107	3.68	Q	V				
11+10	2.3362	3.71	Q	V				
11+15	2.3620	3.75	Q	V				
11+20	2.3881	3.78	Q	V				
11+25	2.4144	3.82	Q	V				
11+30	2.4409	3.86	Q	V				
11+35	2.4677	3.89	Q	V				
11+40	2.4948	3.93	Q	V				
11+45	2.5222	3.97	Q	V				
11+50	2.5498	4.02	Q	V				
11+55	2.5778	4.06	Q	V				
12+ 0	2.6060	4.10	Q	V				
12+ 5	2.6348	4.17	Q	V				
12+10	2.6647	4.34	Q	V				
12+15	2.6964	4.61	Q	V				
12+20	2.7299	4.86	Q	V				
12+25	2.7643	5.00	Q	V				
12+30	2.7994	5.09	Q	V				
12+35	2.8349	5.15	Q	V				
12+40	2.8708	5.22	Q	V				
12+45	2.9071	5.28	Q	V				
12+50	2.9439	5.34	Q	V				
12+55	2.9812	5.41	Q	V				
13+ 0	3.0189	5.48	Q	V				
13+ 5	3.0571	5.54	Q	V				
13+10	3.0958	5.62	Q	V				
13+15	3.1350	5.69	Q	V				
13+20	3.1747	5.77	Q	V				
13+25	3.2150	5.85	Q	V				
13+30	3.2559	5.94	Q	V				
13+35	3.2974	6.03	Q	V				
13+40	3.3396	6.12	Q	V				
13+45	3.3824	6.22	Q	V				
13+50	3.4260	6.32	Q	V				
13+55	3.4703	6.43	Q	V				
14+ 0	3.5154	6.55	Q	V				
14+ 5	3.5613	6.67	Q	V				
14+10	3.6081	6.80	Q	V				

14+15	3.6559	6.94		Q		V					
14+20	3.7047	7.08		Q		V					
14+25	3.7546	7.24		Q		V					
14+30	3.8056	7.41		Q		V					
14+35	3.8578	7.58		Q		V					
14+40	3.9113	7.77		Q		V					
14+45	3.9663	7.98		Q		V					
14+50	4.0228	8.20		Q		V					
14+55	4.0809	8.45		Q		V					
15+ 0	4.1409	8.72		Q		V					
15+ 5	4.2030	9.01		Q		V					
15+10	4.2673	9.34		Q		V					
15+15	4.3342	9.71		Q		V					
15+20	4.4039	10.12		Q		V					
15+25	4.4763	10.52		Q		V					
15+30	4.5494	10.62		Q		V					
15+35	4.6213	10.44		Q		V					
15+40	4.6938	10.52		Q		V					
15+45	4.7708	11.18		Q		V					
15+50	4.8560	12.37		Q		V					
15+55	4.9544	14.30		Q		V					
16+ 0	5.0773	17.84		Q		V					
16+ 5	5.2594	26.44				Q		V			
16+10	5.5684	44.87						V		Q	
16+15	5.9697	58.27						V			
16+20	6.3135	49.92						V		Q	
16+25	6.5196	29.91				Q		V			
16+30	6.6511	19.11		Q				V			
16+35	6.7457	13.73		Q				V			
16+40	6.8285	12.02		Q				V			
16+45	6.9037	10.92		Q				V			
16+50	6.9693	9.52		Q				V			
16+55	7.0301	8.84		Q				V			
17+ 0	7.0873	8.30		Q				V			
17+ 5	7.1414	7.86		Q				V			
17+10	7.1929	7.47		Q				V			
17+15	7.2421	7.14		Q				V			
17+20	7.2892	6.85		Q				V			
17+25	7.3346	6.59		Q				V			
17+30	7.3784	6.36		Q				V			
17+35	7.4208	6.15		Q				V			
17+40	7.4619	5.97		Q				V			
17+45	7.5018	5.80		Q				V			
17+50	7.5406	5.64		Q				V			
17+55	7.5785	5.49		Q				V			
18+ 0	7.6154	5.36		Q				V			
18+ 5	7.6513	5.21		Q				V			
18+10	7.6856	4.97		Q				V			
18+15	7.7175	4.64		Q				V			
18+20	7.7475	4.35		Q				V			
18+25	7.7762	4.17		Q				V			
18+30	7.8041	4.05		Q				V			
18+35	7.8313	3.95		Q				V			
18+40	7.8579	3.87		Q				V			
18+45	7.8841	3.79		Q				V			
18+50	7.9097	3.72		Q				V			
18+55	7.9348	3.65		Q				V			
19+ 0	7.9596	3.59		Q				V			
19+ 5	7.9839	3.53		Q				V			
19+10	8.0078	3.47		Q				V			

19+15	8.0313	3.42	Q				V	
19+20	8.0544	3.36	Q				V	
19+25	8.0772	3.31	Q				V	
19+30	8.0997	3.26	Q				V	
19+35	8.1219	3.22	Q				V	
19+40	8.1437	3.17	Q				V	
19+45	8.1652	3.13	Q				V	
19+50	8.1865	3.09	Q				V	
19+55	8.2075	3.05	Q				V	
20+ 0	8.2282	3.01	Q				V	
20+ 5	8.2487	2.97	Q				V	
20+10	8.2689	2.93	Q				V	
20+15	8.2888	2.90	Q				V	
20+20	8.3086	2.87	Q				V	
20+25	8.3281	2.83	Q				V	
20+30	8.3474	2.80	Q				V	
20+35	8.3664	2.77	Q				V	
20+40	8.3853	2.74	Q				V	
20+45	8.4040	2.71	Q				V	
20+50	8.4225	2.68	Q				V	
20+55	8.4408	2.66	Q				V	
21+ 0	8.4589	2.63	Q				V	
21+ 5	8.4768	2.60	Q				V	
21+10	8.4946	2.58	Q				V	
21+15	8.5122	2.55	Q				V	
21+20	8.5296	2.53	Q				V	
21+25	8.5469	2.51	Q				V	
21+30	8.5640	2.48	Q				V	
21+35	8.5809	2.46	Q				V	
21+40	8.5977	2.44	Q				V	
21+45	8.6144	2.42	Q				V	
21+50	8.6309	2.40	Q				V	
21+55	8.6473	2.38	Q				V	
22+ 0	8.6636	2.36	Q				V	
22+ 5	8.6797	2.34	Q				V	
22+10	8.6957	2.32	Q				V	
22+15	8.7115	2.30	Q				V	
22+20	8.7273	2.29	Q				V	
22+25	8.7429	2.27	Q				V	
22+30	8.7584	2.25	Q				V	
22+35	8.7738	2.23	Q				V	
22+40	8.7890	2.22	Q				V	
22+45	8.8042	2.20	Q				V	
22+50	8.8193	2.19	Q				V	
22+55	8.8342	2.17	Q				V	
23+ 0	8.8490	2.15	Q				V	
23+ 5	8.8638	2.14	Q				V	
23+10	8.8784	2.13	Q				V	
23+15	8.8930	2.11	Q				V	
23+20	8.9074	2.10	Q				V	
23+25	8.9217	2.08	Q				V	
23+30	8.9360	2.07	Q				V	
23+35	8.9502	2.06	Q				V	
23+40	8.9642	2.04	Q				V	
23+45	8.9782	2.03	Q				V	
23+50	8.9921	2.02	Q				V	
23+55	9.0059	2.00	Q				V	
24+ 0	9.0196	1.99	Q				V	
24+ 5	9.0328	1.92	Q				V	
24+10	9.0436	1.56	Q				V	

24+15	9.0500	0.94	Q				V
24+20	9.0527	0.39	Q				V
24+25	9.0538	0.15	Q				V
24+30	9.0542	0.05	Q				V
24+35	9.0543	0.03	Q				V
24+40	9.0544	0.01	Q				V

Basin E - Detention Basin #2

Unit Hydrograph Analysis

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Study date 01/09/19

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San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6094

AREA B1 - AREA B19
100 YR STORM

Storm Event Year = 100

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 100		
9.74	1	1.40

Rainfall data for year 100
9.74 6 3.48

Rainfall data for year 100
9.74 24 6.36

+++++

***** Area-averaged max loss rate, Fm *****

SCS curve No. (AMCII)	SCS curve NO. (AMC 3)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
56.0	75.8	9.74	1.000	0.440	0.219	0.096

Area-averaged adjusted loss rate Fm (In/Hr) = 0.096

***** Area-Averaged low loss rate fraction, Yb *****

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
2.13	0.219	56.0	75.8	3.19	0.577
7.61	0.781	98.0	98.0	0.20	0.962

Area-averaged catchment yield fraction, Y = 0.878

Area-averaged low loss fraction, Yb = 0.122

User entry of time of concentration = 0.142 (hours)

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Watershed area = 9.74 (Ac.)

Catchment Lag time = 0.114 hours

Unit interval = 5.000 minutes

Unit interval percentage of lag time = 73.3568

Hydrograph baseflow = 0.00 (CFS)

Average maximum watershed loss rate (Fm) = 0.096 (In/Hr)

Average low loss rate fraction (Yb) = 0.122 (decimal)

VALLEY DEVELOPED S-Graph Selected

Computed peak 5-minute rainfall = 0.518 (In)

Computed peak 30-minute rainfall = 1.061 (In)

Specified peak 1-hour rainfall = 1.400 (In)

Computed peak 3-hour rainfall = 2.447 (In)

Specified peak 6-hour rainfall = 3.480 (In)

Specified peak 24-hour rainfall = 6.360 (In)

Rainfall depth area reduction factors:

Using a total area of 9.74 (Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.518 (In)

30-minute factor = 1.000 Adjusted rainfall = 1.061 (In)

1-hour factor = 1.000 Adjusted rainfall = 1.399 (In)

3-hour factor = 1.000 Adjusted rainfall = 2.447 (In)

6-hour factor = 1.000 Adjusted rainfall = 3.480 (In)

24-hour factor = 1.000 Adjusted rainfall = 6.360 (In)

U n i t H y d r o g r a p h

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Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
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(K = 117.79 (CFS))

1	9.595	11.302
2	57.072	55.925
3	91.196	40.195
4	98.309	8.379
5	100.000	1.992

Total soil rain loss = 0.69 (In)

Total effective rainfall = 5.67 (In)

Peak flow rate in flood hydrograph = 36.95 (CFS)

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24 - 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 5 Minute intervals ((CFS))

Time (h+m)	Volume Ac.Ft	Q (CFS)	0	10.0	20.0	30.0	40.0
0+ 5	0.0007	0.10	Q				
0+10	0.0046	0.57	Q				
0+15	0.0108	0.91	Q				
0+20	0.0176	0.98	Q				
0+25	0.0245	1.00	VQ				
0+30	0.0314	1.00	VQ				
0+35	0.0383	1.01	VQ				
0+40	0.0453	1.01	VQ				
0+45	0.0523	1.01	VQ				
0+50	0.0593	1.02	VQ				
0+55	0.0663	1.02	VQ				
1+ 0	0.0734	1.02	VQ				
1+ 5	0.0804	1.03	VQ				
1+10	0.0875	1.03	VQ				
1+15	0.0946	1.03	VQ				
1+20	0.1018	1.04	VQ				
1+25	0.1089	1.04	VQ				
1+30	0.1161	1.04	IQ				
1+35	0.1233	1.05	IQ				
1+40	0.1306	1.05	IQ				
1+45	0.1378	1.05	IQ				
1+50	0.1451	1.06	IQ				
1+55	0.1524	1.06	IQ				
2+ 0	0.1597	1.06	IQ				
2+ 5	0.1671	1.07	IQ				
2+10	0.1744	1.07	IQ				
2+15	0.1818	1.07	IQ				
2+20	0.1892	1.08	IQ				
2+25	0.1967	1.08	IQ				
2+30	0.2042	1.09	IQ				
2+35	0.2117	1.09	IQ				
2+40	0.2192	1.09	IQ				
2+45	0.2267	1.10	IQ				
2+50	0.2343	1.10	IQV				
2+55	0.2419	1.10	IQV				
3+ 0	0.2496	1.11	IQV				
3+ 5	0.2572	1.11	IQV				
3+10	0.2649	1.12	IQV				
3+15	0.2726	1.12	IQV				
3+20	0.2804	1.12	IQV				
3+25	0.2881	1.13	IQV				
3+30	0.2959	1.13	IQV				
3+35	0.3038	1.14	IQV				
3+40	0.3116	1.14	IQV				
3+45	0.3195	1.15	IQV				
3+50	0.3274	1.15	IQV				
3+55	0.3354	1.15	IQV				
4+ 0	0.3434	1.16	IQV				
4+ 5	0.3514	1.16	IQ V				
4+10	0.3594	1.17	IQ V				
4+15	0.3675	1.17	IQ V				

4+20	0.3756	1.18	IQ	V				
4+25	0.3837	1.18	IQ	V				
4+30	0.3919	1.19	IQ	V				
4+35	0.4001	1.19	IQ	V				
4+40	0.4084	1.20	IQ	V				
4+45	0.4166	1.20	IQ	V				
4+50	0.4249	1.21	IQ	V				
4+55	0.4333	1.21	IQ	V				
5+ 0	0.4417	1.22	IQ	V				
5+ 5	0.4501	1.22	IQ	V				
5+10	0.4585	1.23	IQ	V				
5+15	0.4670	1.23	IQ	V				
5+20	0.4755	1.24	IQ	V				
5+25	0.4841	1.24	IQ	V				
5+30	0.4927	1.25	IQ	V				
5+35	0.5013	1.25	IQ	V				
5+40	0.5100	1.26	IQ	V				
5+45	0.5187	1.26	IQ	V				
5+50	0.5274	1.27	IQ	V				
5+55	0.5362	1.28	IQ	V				
6+ 0	0.5451	1.28	IQ	V				
6+ 5	0.5539	1.29	IQ	V				
6+10	0.5628	1.29	IQ	V				
6+15	0.5718	1.30	IQ	V				
6+20	0.5808	1.31	IQ	V				
6+25	0.5898	1.31	IQ	V				
6+30	0.5989	1.32	IQ	V				
6+35	0.6080	1.33	IQ	V				
6+40	0.6172	1.33	IQ	V				
6+45	0.6264	1.34	IQ	V				
6+50	0.6357	1.35	IQ	V				
6+55	0.6450	1.35	IQ	V				
7+ 0	0.6544	1.36	IQ	V				
7+ 5	0.6638	1.37	IQ	V				
7+10	0.6733	1.37	IQ	V				
7+15	0.6828	1.38	IQ	V				
7+20	0.6923	1.39	IQ	V				
7+25	0.7019	1.40	IQ	V				
7+30	0.7116	1.40	IQ	V				
7+35	0.7213	1.41	IQ	V				
7+40	0.7311	1.42	IQ	V				
7+45	0.7409	1.43	IQ	V				
7+50	0.7508	1.43	IQ	V				
7+55	0.7607	1.44	IQ	V				
8+ 0	0.7707	1.45	IQ	V				
8+ 5	0.7808	1.46	IQ	V				
8+10	0.7909	1.47	IQ	V				
8+15	0.8010	1.48	IQ	V				
8+20	0.8113	1.49	IQ	V				
8+25	0.8215	1.49	IQ	V				
8+30	0.8319	1.50	IQ	V				
8+35	0.8423	1.51	IQ	V				
8+40	0.8528	1.52	IQ	V				
8+45	0.8634	1.53	IQ	V				
8+50	0.8740	1.54	IQ	V				
8+55	0.8847	1.55	IQ	V				
9+ 0	0.8954	1.56	IQ	V				
9+ 5	0.9062	1.57	IQ	V				
9+10	0.9171	1.58	IQ	V				

9+15	0.9281	1.59	Q	V				
9+20	0.9391	1.60	Q	V				
9+25	0.9503	1.61	Q	V				
9+30	0.9615	1.63	Q	V				
9+35	0.9728	1.64	Q	V				
9+40	0.9841	1.65	Q	V				
9+45	0.9956	1.66	Q	V				
9+50	1.0071	1.67	Q	V				
9+55	1.0187	1.69	Q	V				
10+ 0	1.0304	1.70	Q	V				
10+ 5	1.0422	1.71	Q	V				
10+10	1.0541	1.73	Q	V				
10+15	1.0661	1.74	Q	V				
10+20	1.0781	1.75	Q	V				
10+25	1.0903	1.77	Q	V				
10+30	1.1026	1.78	Q	V				
10+35	1.1150	1.80	Q	V				
10+40	1.1275	1.81	Q	V				
10+45	1.1400	1.83	Q	V				
10+50	1.1528	1.84	Q	V				
10+55	1.1656	1.86	Q	V				
11+ 0	1.1785	1.88	Q	V				
11+ 5	1.1915	1.89	Q	V				
11+10	1.2047	1.91	Q	V				
11+15	1.2180	1.93	Q	V				
11+20	1.2314	1.95	Q	V				
11+25	1.2450	1.97	Q	V				
11+30	1.2587	1.99	Q	V				
11+35	1.2725	2.01	Q	V				
11+40	1.2865	2.03	Q	V				
11+45	1.3006	2.05	Q	V				
11+50	1.3149	2.07	Q	V				
11+55	1.3293	2.10	Q	V				
12+ 0	1.3439	2.12	Q	V				
12+ 5	1.3589	2.18	Q	V				
12+10	1.3753	2.38	Q	V				
12+15	1.3927	2.53	Q	V				
12+20	1.4105	2.58	Q	V				
12+25	1.4285	2.61	Q	V				
12+30	1.4467	2.64	Q	V				
12+35	1.4651	2.67	Q	V				
12+40	1.4837	2.71	Q	V				
12+45	1.5026	2.74	Q	V				
12+50	1.5217	2.77	Q	V				
12+55	1.5410	2.80	Q	V				
13+ 0	1.5606	2.84	Q	V				
13+ 5	1.5804	2.88	Q	V				
13+10	1.6005	2.92	Q	V				
13+15	1.6208	2.96	Q	V				
13+20	1.6415	3.00	Q	V				
13+25	1.6625	3.04	Q	V				
13+30	1.6837	3.09	Q	V				
13+35	1.7053	3.14	Q	V				
13+40	1.7273	3.19	Q	V				
13+45	1.7496	3.24	Q	V				
13+50	1.7723	3.30	Q	V				
13+55	1.7955	3.36	Q	V				
14+ 0	1.8190	3.42	Q	V				
14+ 5	1.8430	3.48	Q	V				

14+10	1.8675	3.56	Q		V			
14+15	1.8925	3.63	Q		V			
14+20	1.9181	3.71	Q		V			
14+25	1.9442	3.79	Q		V			
14+30	1.9710	3.89	Q		V			
14+35	1.9984	3.98	Q		V			
14+40	2.0266	4.09	Q		V			
14+45	2.0556	4.20	Q		V			
14+50	2.0854	4.33	Q		V			
14+55	2.1162	4.47	Q		V			
15+ 0	2.1480	4.62	Q		V			
15+ 5	2.1810	4.79	Q		V			
15+10	2.2153	4.98	Q		V			
15+15	2.2511	5.19	Q		V			
15+20	2.2886	5.44	Q		V			
15+25	2.3271	5.59	Q		V			
15+30	2.3637	5.31	Q		V			
15+35	2.3998	5.25	Q		V			
15+40	2.4389	5.67	Q		V			
15+45	2.4821	6.27	Q		V			
15+50	2.5322	7.28	Q		V			
15+55	2.5925	8.76	Q		V			
16+ 0	2.6737	11.79		Q		V		
16+ 5	2.8104	19.85			Q	V		
16+10	3.0649	36.95				V	Q	
16+15	3.2560	27.74				QV		
16+20	3.3390	12.06		Q			V	
16+25	3.3898	7.37	Q				V	
16+30	3.4308	5.95	Q				V	
16+35	3.4694	5.61	Q				V	
16+40	3.5050	5.16	Q				V	
16+45	3.5379	4.78	Q				V	
16+50	3.5686	4.46	Q				V	
16+55	3.5975	4.20	Q				V	
17+ 0	3.6249	3.97	Q				V	
17+ 5	3.6509	3.79	Q				V	
17+10	3.6759	3.62	Q				V	
17+15	3.6998	3.48	Q				V	
17+20	3.7229	3.35	Q				V	
17+25	3.7452	3.23	Q				V	
17+30	3.7667	3.13	Q				V	
17+35	3.7876	3.04	Q				V	
17+40	3.8080	2.95	Q				V	
17+45	3.8278	2.87	Q				V	
17+50	3.8470	2.80	Q				V	
17+55	3.8659	2.73	Q				V	
18+ 0	3.8842	2.67	Q				V	
18+ 5	3.9020	2.58	Q				V	
18+10	3.9182	2.35	Q				V	
18+15	3.9331	2.17	Q				V	
18+20	3.9476	2.10	Q				V	
18+25	3.9617	2.05	Q				V	
18+30	3.9755	2.01	Q				V	
18+35	3.9890	1.97	Q				V	
18+40	4.0023	1.93	Q				V	
18+45	4.0153	1.89	Q				V	
18+50	4.0281	1.86	Q				V	
18+55	4.0407	1.83	Q				V	
19+ 0	4.0530	1.79	Q				V	

19+ 5	4.0652	1.77	IQ				V	
19+10	4.0772	1.74	IQ				V	
19+15	4.0889	1.71	IQ				V	
19+20	4.1005	1.68	IQ				V	
19+25	4.1120	1.66	IQ				V	
19+30	4.1232	1.64	IQ				V	
19+35	4.1344	1.61	IQ				V	
19+40	4.1453	1.59	IQ				V	
19+45	4.1561	1.57	IQ				V	
19+50	4.1668	1.55	IQ				V	
19+55	4.1773	1.53	IQ				V	
20+ 0	4.1877	1.51	IQ				V	
20+ 5	4.1980	1.49	IQ				V	
20+10	4.2082	1.47	IQ				V	
20+15	4.2182	1.46	IQ				V	
20+20	4.2281	1.44	IQ				V	
20+25	4.2380	1.42	IQ				V	
20+30	4.2477	1.41	IQ				V	
20+35	4.2573	1.39	IQ				V	
20+40	4.2668	1.38	IQ				V	
20+45	4.2762	1.37	IQ				V	
20+50	4.2855	1.35	IQ				V	
20+55	4.2947	1.34	IQ				V	
21+ 0	4.3038	1.32	IQ				V	
21+ 5	4.3128	1.31	IQ				V	
21+10	4.3218	1.30	IQ				V	
21+15	4.3307	1.29	IQ				V	
21+20	4.3394	1.28	IQ				V	
21+25	4.3481	1.26	IQ				V	
21+30	4.3568	1.25	IQ				V	
21+35	4.3653	1.24	IQ				V	
21+40	4.3738	1.23	IQ				V	
21+45	4.3822	1.22	IQ				V	
21+50	4.3905	1.21	IQ				V	
21+55	4.3988	1.20	IQ				V	
22+ 0	4.4070	1.19	IQ				V	
22+ 5	4.4151	1.18	IQ				V	
22+10	4.4232	1.17	IQ				V	
22+15	4.4312	1.16	IQ				V	
22+20	4.4392	1.15	IQ				V	
22+25	4.4470	1.14	IQ				V	
22+30	4.4549	1.14	IQ				V	
22+35	4.4626	1.13	IQ				V	
22+40	4.4703	1.12	IQ				V	
22+45	4.4780	1.11	IQ				V	
22+50	4.4856	1.10	IQ				V	
22+55	4.4931	1.10	IQ				V	
23+ 0	4.5006	1.09	IQ				V	
23+ 5	4.5081	1.08	IQ				V	
23+10	4.5155	1.07	IQ				V	
23+15	4.5228	1.07	IQ				V	
23+20	4.5301	1.06	IQ				V	
23+25	4.5374	1.05	IQ				V	
23+30	4.5446	1.05	IQ				V	
23+35	4.5517	1.04	IQ				V	
23+40	4.5588	1.03	IQ				V	
23+45	4.5659	1.03	IQ				V	
23+50	4.5729	1.02	IQ				V	
23+55	4.5799	1.01	IQ				V	

24+ 0	4.5868	1.01	Q				V
24+ 5	4.5931	0.91	Q				V
24+10	4.5960	0.43	Q				V
24+15	4.5966	0.09	Q				V
24+20	4.5968	0.02	Q				V

Basin E - Detention Basin #3

Unit Hydrograph Analysis

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Study date 01/09/19

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San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6094

AREA B20 - AREA B38
100 YR STORM

Storm Event Year = 100

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 100		
8.78	1	1.40

Rainfall data for year 100
8.78 6 3.48

Rainfall data for year 100
8.78 24 6.36

+++++

***** Area-averaged max loss rate, Fm *****

SCS curve No. (AMCII)	SCS curve NO. (AMC 3)	Area (Ac.)	Area Fraction	Fp (Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
56.0	75.8	8.78	1.000	0.440	0.251	0.110

Area-averaged adjusted loss rate Fm (In/Hr) = 0.110

***** Area-Averaged low loss rate fraction, Yb *****

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
2.20	0.251	56.0	75.8	3.19	0.577
6.58	0.749	98.0	98.0	0.20	0.962

Area-averaged catchment yield fraction, Y = 0.866

Area-averaged low loss fraction, Yb = 0.134

User entry of time of concentration = 0.145 (hours)

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Watershed area = 8.78(Ac.)

Catchment Lag time = 0.116 hours

Unit interval = 5.000 minutes

Unit interval percentage of lag time = 71.8391

Hydrograph baseflow = 0.00(CFS)

Average maximum watershed loss rate(Fm) = 0.110(In/Hr)

Average low loss rate fraction (Yb) = 0.134 (decimal)

VALLEY DEVELOPED S-Graph Selected

Computed peak 5-minute rainfall = 0.518(In)

Computed peak 30-minute rainfall = 1.061(In)

Specified peak 1-hour rainfall = 1.400(In)

Computed peak 3-hour rainfall = 2.447(In)

Specified peak 6-hour rainfall = 3.480(In)

Specified peak 24-hour rainfall = 6.360(In)

Rainfall depth area reduction factors:

Using a total area of 8.78(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.518(In)

30-minute factor = 1.000 Adjusted rainfall = 1.061(In)

1-hour factor = 1.000 Adjusted rainfall = 1.399(In)

3-hour factor = 1.000 Adjusted rainfall = 2.447(In)

6-hour factor = 1.000 Adjusted rainfall = 3.480(In)

24-hour factor = 1.000 Adjusted rainfall = 6.360(In)

U n i t H y d r o g r a p h

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Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
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(K = 106.18 (CFS))

1	9.222	9.792
2	55.464	49.101
3	90.385	37.081
4	98.145	8.240
5	100.000	1.970

Total soil rain loss = 0.77(In)

Total effective rainfall = 5.59(In)

Peak flow rate in flood hydrograph = 32.71(CFS)

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24 - 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 5 Minute intervals ((CFS))

Time (h+m)	Volume Ac.Ft	Q (CFS)	0	10.0	20.0	30.0	40.0
0+ 5	0.0006	0.08	Q				
0+10	0.0039	0.49	Q				
0+15	0.0095	0.80	Q				
0+20	0.0155	0.87	Q				
0+25	0.0216	0.89	Q				
0+30	0.0277	0.89	Q				
0+35	0.0339	0.90	Q				
0+40	0.0401	0.90	Q				
0+45	0.0463	0.90	Q				
0+50	0.0525	0.90	Q				
0+55	0.0588	0.91	Q				
1+ 0	0.0650	0.91	Q				
1+ 5	0.0713	0.91	Q				
1+10	0.0776	0.92	Q				
1+15	0.0839	0.92	Q				
1+20	0.0903	0.92	Q				
1+25	0.0966	0.92	Q				
1+30	0.1030	0.93	QV				
1+35	0.1094	0.93	QV				
1+40	0.1158	0.93	QV				
1+45	0.1223	0.94	QV				
1+50	0.1288	0.94	QV				
1+55	0.1352	0.94	QV				
2+ 0	0.1417	0.95	QV				
2+ 5	0.1483	0.95	QV				
2+10	0.1548	0.95	QV				
2+15	0.1614	0.95	QV				
2+20	0.1680	0.96	QV				
2+25	0.1746	0.96	QV				
2+30	0.1813	0.96	QV				
2+35	0.1879	0.97	QV				
2+40	0.1946	0.97	QV				
2+45	0.2013	0.97	QV				
2+50	0.2081	0.98	Q V				
2+55	0.2148	0.98	Q V				
3+ 0	0.2216	0.98	Q V				
3+ 5	0.2284	0.99	Q V				
3+10	0.2352	0.99	Q V				
3+15	0.2421	1.00	Q V				
3+20	0.2490	1.00	Q V				
3+25	0.2559	1.00	QV				
3+30	0.2628	1.01	QV				
3+35	0.2698	1.01	QV				
3+40	0.2768	1.01	QV				
3+45	0.2838	1.02	QV				
3+50	0.2908	1.02	QV				
3+55	0.2979	1.03	QV				
4+ 0	0.3050	1.03	QV				
4+ 5	0.3121	1.03	Q V				
4+10	0.3192	1.04	Q V				
4+15	0.3264	1.04	Q V				

4+20	0.3336	1.05	Q	V				
4+25	0.3409	1.05	Q	V				
4+30	0.3481	1.05	Q	V				
4+35	0.3554	1.06	Q	V				
4+40	0.3627	1.06	Q	V				
4+45	0.3701	1.07	Q	V				
4+50	0.3775	1.07	Q	V				
4+55	0.3849	1.08	Q	V				
5+ 0	0.3923	1.08	Q	V				
5+ 5	0.3998	1.09	Q	V				
5+10	0.4073	1.09	Q	V				
5+15	0.4148	1.09	Q	V				
5+20	0.4224	1.10	Q	V				
5+25	0.4300	1.10	Q	V				
5+30	0.4376	1.11	Q	V				
5+35	0.4453	1.11	Q	V				
5+40	0.4530	1.12	Q	V				
5+45	0.4608	1.12	Q	V				
5+50	0.4685	1.13	Q	V				
5+55	0.4764	1.13	Q	V				
6+ 0	0.4842	1.14	Q	V				
6+ 5	0.4921	1.14	Q	V				
6+10	0.5000	1.15	Q	V				
6+15	0.5080	1.16	Q	V				
6+20	0.5160	1.16	Q	V				
6+25	0.5240	1.17	Q	V				
6+30	0.5321	1.17	Q	V				
6+35	0.5402	1.18	Q	V				
6+40	0.5483	1.18	Q	V				
6+45	0.5565	1.19	Q	V				
6+50	0.5648	1.20	Q	V				
6+55	0.5730	1.20	Q	V				
7+ 0	0.5814	1.21	Q	V				
7+ 5	0.5897	1.21	Q	V				
7+10	0.5981	1.22	Q	V				
7+15	0.6066	1.23	Q	V				
7+20	0.6151	1.23	Q	V				
7+25	0.6236	1.24	Q	V				
7+30	0.6322	1.25	Q	V				
7+35	0.6408	1.25	Q	V				
7+40	0.6495	1.26	Q	V				
7+45	0.6582	1.27	Q	V				
7+50	0.6670	1.27	Q	V				
7+55	0.6759	1.28	Q	V				
8+ 0	0.6847	1.29	Q	V				
8+ 5	0.6937	1.30	Q	V				
8+10	0.7026	1.30	Q	V				
8+15	0.7117	1.31	Q	V				
8+20	0.7208	1.32	Q	V				
8+25	0.7299	1.33	Q	V				
8+30	0.7391	1.34	Q	V				
8+35	0.7484	1.34	Q	V				
8+40	0.7577	1.35	Q	V				
8+45	0.7671	1.36	Q	V				
8+50	0.7765	1.37	Q	V				
8+55	0.7860	1.38	Q	V				
9+ 0	0.7955	1.39	Q	V				
9+ 5	0.8052	1.40	Q	V				
9+10	0.8148	1.41	Q	V				

9+15	0.8246	1.42	Q	V				
9+20	0.8344	1.43	Q	V				
9+25	0.8443	1.44	Q	V				
9+30	0.8543	1.45	Q	V				
9+35	0.8643	1.46	Q	V				
9+40	0.8744	1.47	Q	V				
9+45	0.8845	1.48	Q	V				
9+50	0.8948	1.49	Q	V				
9+55	0.9051	1.50	Q	V				
10+ 0	0.9155	1.51	Q	V				
10+ 5	0.9260	1.52	Q	V				
10+10	0.9366	1.53	Q	V				
10+15	0.9472	1.55	Q	V				
10+20	0.9579	1.56	Q	V				
10+25	0.9687	1.57	Q	V				
10+30	0.9797	1.58	Q	V				
10+35	0.9906	1.60	Q	V				
10+40	1.0017	1.61	Q	V				
10+45	1.0129	1.62	Q	V				
10+50	1.0242	1.64	Q	V				
10+55	1.0356	1.65	Q	V				
11+ 0	1.0471	1.67	Q	V				
11+ 5	1.0587	1.68	Q	V				
11+10	1.0704	1.70	Q	V				
11+15	1.0822	1.72	Q	V				
11+20	1.0941	1.73	Q	V				
11+25	1.1062	1.75	Q	V				
11+30	1.1183	1.77	Q	V				
11+35	1.1306	1.78	Q	V				
11+40	1.1430	1.80	Q	V				
11+45	1.1556	1.82	Q	V				
11+50	1.1683	1.84	Q	V				
11+55	1.1811	1.86	Q	V				
12+ 0	1.1941	1.88	Q	V				
12+ 5	1.2074	1.93	Q	V				
12+10	1.2219	2.11	Q	V				
12+15	1.2373	2.24	Q	V				
12+20	1.2531	2.29	Q	V				
12+25	1.2691	2.32	Q	V				
12+30	1.2853	2.35	Q	V				
12+35	1.3017	2.38	Q	V				
12+40	1.3182	2.40	Q	V				
12+45	1.3350	2.43	Q	V				
12+50	1.3519	2.46	Q	V				
12+55	1.3691	2.49	Q	V				
13+ 0	1.3865	2.52	Q	V				
13+ 5	1.4041	2.56	Q	V				
13+10	1.4220	2.59	Q	V				
13+15	1.4400	2.63	Q	V				
13+20	1.4584	2.67	Q	V				
13+25	1.4770	2.70	Q	V				
13+30	1.4959	2.75	Q	V				
13+35	1.5151	2.79	Q	V				
13+40	1.5346	2.83	Q	V				
13+45	1.5545	2.88	Q	V				
13+50	1.5746	2.93	Q	V				
13+55	1.5952	2.98	Q	V				
14+ 0	1.6161	3.04	Q	V				
14+ 5	1.6374	3.09	Q	V				

14+10	1.6592	3.16	Q		V			
14+15	1.6814	3.22	Q		V			
14+20	1.7041	3.30	Q		V			
14+25	1.7273	3.37	Q		V			
14+30	1.7511	3.45	Q		V			
14+35	1.7754	3.54	Q		V			
14+40	1.8005	3.63	Q		V			
14+45	1.8262	3.73	Q		V			
14+50	1.8527	3.85	Q		V			
14+55	1.8800	3.97	Q		V			
15+ 0	1.9083	4.11	Q		V			
15+ 5	1.9376	4.25	Q		V			
15+10	1.9680	4.42	Q		V			
15+15	1.9998	4.61	Q		V			
15+20	2.0330	4.83	Q		V			
15+25	2.0672	4.97	Q		V			
15+30	2.0998	4.73	Q		V			
15+35	2.1320	4.66	Q		V			
15+40	2.1666	5.03	Q		V			
15+45	2.2048	5.56	Q		V			
15+50	2.2491	6.43	Q		V			
15+55	2.3024	7.73	Q		V			
16+ 0	2.3741	10.41		Q	V			
16+ 5	2.4948	17.52			Q	V		
16+10	2.7200	32.71				V	Q	
16+15	2.8943	25.30				Q	V	
16+20	2.9708	11.12		Q			V	
16+25	3.0168	6.67	Q				V	
16+30	3.0533	5.29	Q				V	
16+35	3.0877	4.99	Q				V	
16+40	3.1194	4.60	Q				V	
16+45	3.1487	4.26	Q				V	
16+50	3.1760	3.97	Q				V	
16+55	3.2018	3.74	Q				V	
17+ 0	3.2261	3.54	Q				V	
17+ 5	3.2493	3.37	Q				V	
17+10	3.2715	3.22	Q				V	
17+15	3.2929	3.09	Q				V	
17+20	3.3134	2.98	Q				V	
17+25	3.3332	2.88	Q				V	
17+30	3.3524	2.79	Q				V	
17+35	3.3710	2.70	Q				V	
17+40	3.3891	2.63	Q				V	
17+45	3.4067	2.56	Q				V	
17+50	3.4238	2.49	Q				V	
17+55	3.4406	2.43	Q				V	
18+ 0	3.4569	2.37	Q				V	
18+ 5	3.4727	2.29	Q				V	
18+10	3.4871	2.09	Q				V	
18+15	3.5004	1.93	Q				V	
18+20	3.5133	1.87	Q				V	
18+25	3.5258	1.82	Q				V	
18+30	3.5381	1.78	Q				V	
18+35	3.5501	1.75	Q				V	
18+40	3.5619	1.71	Q				V	
18+45	3.5735	1.68	Q				V	
18+50	3.5849	1.65	Q				V	
18+55	3.5961	1.62	Q				V	
19+ 0	3.6071	1.60	Q				V	

19+ 5	3.6179	1.57	IQ				V	
19+10	3.6285	1.54	IQ				V	
19+15	3.6390	1.52	IQ				V	
19+20	3.6493	1.50	IQ				V	
19+25	3.6595	1.48	IQ				V	
19+30	3.6695	1.45	IQ				V	
19+35	3.6794	1.43	IQ				V	
19+40	3.6891	1.41	IQ				V	
19+45	3.6987	1.40	IQ				V	
19+50	3.7082	1.38	IQ				V	
19+55	3.7176	1.36	IQ				V	
20+ 0	3.7269	1.34	IQ				V	
20+ 5	3.7360	1.33	IQ				V	
20+10	3.7450	1.31	IQ				V	
20+15	3.7540	1.30	IQ				V	
20+20	3.7628	1.28	IQ				V	
20+25	3.7715	1.27	IQ				V	
20+30	3.7801	1.25	IQ				V	
20+35	3.7887	1.24	IQ				V	
20+40	3.7971	1.23	IQ				V	
20+45	3.8055	1.21	IQ				V	
20+50	3.8137	1.20	IQ				V	
20+55	3.8219	1.19	IQ				V	
21+ 0	3.8301	1.18	IQ				V	
21+ 5	3.8381	1.17	IQ				V	
21+10	3.8460	1.16	IQ				V	
21+15	3.8539	1.14	IQ				V	
21+20	3.8617	1.13	IQ				V	
21+25	3.8695	1.12	IQ				V	
21+30	3.8771	1.11	IQ				V	
21+35	3.8847	1.10	IQ				V	
21+40	3.8923	1.09	IQ				V	
21+45	3.8997	1.08	IQ				V	
21+50	3.9072	1.08	IQ				V	
21+55	3.9145	1.07	IQ				V	
22+ 0	3.9218	1.06	IQ				V	
22+ 5	3.9290	1.05	IQ				V	
22+10	3.9362	1.04	IQ				V	
22+15	3.9433	1.03	IQ				V	
22+20	3.9504	1.03	IQ				V	
22+25	3.9574	1.02	IQ				V	
22+30	3.9643	1.01	IQ				V	
22+35	3.9712	1.00	IQ				V	
22+40	3.9781	1.00	Q				V	
22+45	3.9849	0.99	Q				V	
22+50	3.9917	0.98	Q				V	
22+55	3.9984	0.97	Q				V	
23+ 0	4.0050	0.97	Q				V	
23+ 5	4.0117	0.96	Q				V	
23+10	4.0182	0.95	Q				V	
23+15	4.0248	0.95	Q				V	
23+20	4.0312	0.94	Q				V	
23+25	4.0377	0.94	Q				V	
23+30	4.0441	0.93	Q				V	
23+35	4.0504	0.92	Q				V	
23+40	4.0568	0.92	Q				V	
23+45	4.0630	0.91	Q				V	
23+50	4.0693	0.91	Q				V	
23+55	4.0755	0.90	Q				V	

24+ 0	4.0817	0.90	Q				V
24+ 5	4.0872	0.81	Q				V
24+10	4.0900	0.40	Q				V
24+15	4.0905	0.09	Q				V
24+20	4.0907	0.02	Q				V

APPENDIX E

FLOOD ROUTING CALCULATIONS

***100-Year Flood Routing Calculations
(Interim Condition)***

FLOOD HYDROGRAPH ROUTING PROGRAM
Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2005
Study date: 01/14/19

Tract 19756
Kimball
Interim Condition
100 year

Program License Serial Number 6094

***** HYDROGRAPH INFORMATION *****

From study/file name: kimal00.rte
*****HYDROGRAPH DATA*****
Number of intervals = 295
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 122.378 (CFS)
Total volume = 18.323 (Ac.Ft)
Status of hydrographs being held in storage
Stream 1 Stream 2 Stream 3 Stream 4 Stream 5
Peak (CFS) 0.000 0.000 0.000 0.000 0.000
Vol (Ac.Ft) 0.000 0.000 0.000 0.000 0.000

+++++
Process from Point/Station 1.000 to Point/Station 2.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 295
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00 (Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
1.000	0.330	8.010	0.302	0.358
2.000	1.010	16.660	0.953	1.067

3.000	1.760	24.330	1.676	1.844
4.000	2.580	31.920	2.470	2.690
5.000	3.460	37.700	3.330	3.590
6.000	4.410	70.840	4.166	4.654

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)						Depth (Ft.)
0.083	0.18	0.01	0.001	O					0.00
0.167	1.17	0.12	0.005	O					0.01
0.250	2.71	0.40	0.016	O					0.05
0.333	3.57	0.82	0.034	O					0.10
0.417	3.87	1.27	0.052	OI					0.16
0.500	3.96	1.68	0.069	OI					0.21
0.583	4.01	2.03	0.084	OI					0.25
0.667	4.03	2.34	0.096	OI					0.29
0.750	4.05	2.60	0.107	OI					0.32
0.833	4.06	2.83	0.116	OI					0.35
0.917	4.07	3.02	0.124	OI					0.38
1.000	4.08	3.18	0.131	OI					0.40
1.083	4.10	3.32	0.137	OI					0.41
1.167	4.11	3.44	0.142	OI					0.43
1.250	4.12	3.54	0.146	OI					0.44
1.333	4.13	3.63	0.150	OI					0.45
1.417	4.15	3.71	0.153	OI					0.46
1.500	4.16	3.78	0.156	OI					0.47
1.583	4.17	3.84	0.158	IO					0.48
1.667	4.19	3.89	0.160	IO					0.49
1.750	4.20	3.94	0.162	IO					0.49
1.833	4.21	3.98	0.164	IO					0.50
1.917	4.23	4.02	0.166	IO					0.50
2.000	4.24	4.05	0.167	IO					0.51
2.083	4.26	4.08	0.168	IO					0.51
2.167	4.27	4.11	0.169	IO					0.51
2.250	4.28	4.14	0.170	IO					0.52
2.333	4.30	4.16	0.171	IO					0.52
2.417	4.31	4.18	0.172	IO					0.52
2.500	4.33	4.20	0.173	IO					0.52
2.583	4.34	4.22	0.174	IO					0.53
2.667	4.36	4.24	0.175	IO					0.53
2.750	4.37	4.26	0.176	IO					0.53
2.833	4.39	4.28	0.176	IO					0.53
2.917	4.40	4.30	0.177	IO					0.54
3.000	4.42	4.32	0.178	IO					0.54
3.083	4.44	4.33	0.179	IO					0.54
3.167	4.45	4.35	0.179	IO					0.54
3.250	4.47	4.37	0.180	IO					0.55
3.333	4.48	4.38	0.181	IO					0.55
3.417	4.50	4.40	0.181	IO					0.55
3.500	4.52	4.42	0.182	IO					0.55
3.583	4.53	4.43	0.183	IO					0.55
3.667	4.55	4.45	0.183	IO					0.56
3.750	4.57	4.47	0.184	IO					0.56
3.833	4.59	4.48	0.185	IO					0.56
3.917	4.60	4.50	0.185	IO					0.56

4.000	4.62	4.52	0.186	O				0.56
4.083	4.64	4.54	0.187	O				0.57
4.167	4.66	4.55	0.188	O				0.57
4.250	4.68	4.57	0.188	O				0.57
4.333	4.69	4.59	0.189	O				0.57
4.417	4.71	4.61	0.190	O				0.57
4.500	4.73	4.62	0.190	O				0.58
4.583	4.75	4.64	0.191	O				0.58
4.667	4.77	4.66	0.192	O				0.58
4.750	4.79	4.68	0.193	O				0.58
4.833	4.81	4.70	0.194	O				0.59
4.917	4.83	4.72	0.194	O				0.59
5.000	4.85	4.73	0.195	O				0.59
5.083	4.87	4.75	0.196	O				0.59
5.167	4.89	4.77	0.197	O				0.60
5.250	4.91	4.79	0.197	O				0.60
5.333	4.93	4.81	0.198	O				0.60
5.417	4.95	4.83	0.199	O				0.60
5.500	4.97	4.85	0.200	O				0.61
5.583	5.00	4.87	0.201	O				0.61
5.667	5.02	4.89	0.202	O				0.61
5.750	5.04	4.92	0.202	O				0.61
5.833	5.06	4.94	0.203	O				0.62
5.917	5.09	4.96	0.204	O				0.62
6.000	5.11	4.98	0.205	O				0.62
6.083	5.13	5.00	0.206	O				0.62
6.167	5.16	5.02	0.207	O				0.63
6.250	5.18	5.05	0.208	O				0.63
6.333	5.21	5.07	0.209	O				0.63
6.417	5.23	5.09	0.210	O				0.64
6.500	5.26	5.12	0.211	O				0.64
6.583	5.28	5.14	0.212	O				0.64
6.667	5.31	5.16	0.213	O				0.64
6.750	5.33	5.19	0.214	O				0.65
6.833	5.36	5.21	0.215	O				0.65
6.917	5.39	5.24	0.216	O				0.65
7.000	5.42	5.26	0.217	O				0.66
7.083	5.44	5.29	0.218	O				0.66
7.167	5.47	5.31	0.219	O				0.66
7.250	5.50	5.34	0.220	O				0.67
7.333	5.53	5.37	0.221	O				0.67
7.417	5.56	5.40	0.222	O				0.67
7.500	5.59	5.42	0.223	O				0.68
7.583	5.62	5.45	0.225	O				0.68
7.667	5.65	5.48	0.226	O				0.68
7.750	5.68	5.51	0.227	O				0.69
7.833	5.71	5.54	0.228	O				0.69
7.917	5.75	5.57	0.229	O				0.69
8.000	5.78	5.60	0.231	O				0.70
8.083	5.81	5.63	0.232	O				0.70
8.167	5.84	5.66	0.233	O				0.71
8.250	5.88	5.69	0.234	O				0.71
8.333	5.91	5.72	0.236	O				0.71
8.417	5.95	5.75	0.237	O				0.72
8.500	5.99	5.79	0.238	O				0.72
8.583	6.02	5.82	0.240	O				0.73
8.667	6.06	5.85	0.241	O				0.73
8.750	6.10	5.89	0.243	O				0.74
8.833	6.14	5.92	0.244	O				0.74

8.917	6.18	5.96	0.246	O				0.74
9.000	6.22	6.00	0.247	O				0.75
9.083	6.26	6.03	0.249	O				0.75
9.167	6.30	6.07	0.250	O				0.76
9.250	6.34	6.11	0.252	O				0.76
9.333	6.38	6.15	0.253	O				0.77
9.417	6.43	6.19	0.255	O				0.77
9.500	6.47	6.23	0.257	O				0.78
9.583	6.52	6.27	0.258	O				0.78
9.667	6.56	6.31	0.260	O				0.79
9.750	6.61	6.35	0.262	O				0.79
9.833	6.66	6.40	0.264	O				0.80
9.917	6.71	6.44	0.265	O				0.80
10.000	6.76	6.49	0.267	O				0.81
10.083	6.81	6.53	0.269	O				0.82
10.167	6.86	6.58	0.271	O				0.82
10.250	6.92	6.63	0.273	O				0.83
10.333	6.97	6.68	0.275	O				0.83
10.417	7.03	6.73	0.277	O				0.84
10.500	7.09	6.78	0.279	O				0.85
10.583	7.15	6.83	0.281	O				0.85
10.667	7.20	6.88	0.284	O				0.86
10.750	7.27	6.94	0.286	O				0.87
10.833	7.33	6.99	0.288	O				0.87
10.917	7.39	7.05	0.290	O				0.88
11.000	7.46	7.11	0.293	O				0.89
11.083	7.53	7.17	0.295	O				0.89
11.167	7.60	7.23	0.298	O				0.90
11.250	7.67	7.29	0.300	OI				0.91
11.333	7.74	7.35	0.303	OI				0.92
11.417	7.82	7.42	0.306	OI				0.93
11.500	7.89	7.49	0.308	OI				0.93
11.583	7.97	7.56	0.311	OI				0.94
11.667	8.06	7.63	0.314	OI				0.95
11.750	8.14	7.70	0.317	O				0.96
11.833	8.23	7.77	0.320	O				0.97
11.917	8.32	7.85	0.323	O				0.98
12.000	8.41	7.93	0.327	O				0.99
12.083	8.57	8.01	0.330	O				1.00
12.167	9.03	8.08	0.335	O				1.01
12.250	9.70	8.19	0.344	O				1.02
12.333	10.12	8.33	0.355	O				1.04
12.417	10.34	8.49	0.368	O				1.06
12.500	10.48	8.65	0.380	O				1.07
12.583	10.61	8.81	0.393	O				1.09
12.667	10.73	8.97	0.405	O				1.11
12.750	10.86	9.12	0.417	O				1.13
12.833	10.99	9.27	0.429	O				1.15
12.917	11.12	9.42	0.441	O				1.16
13.000	11.26	9.57	0.453	O				1.18
13.083	11.41	9.72	0.464	O				1.20
13.167	11.56	9.87	0.476	OI				1.21
13.250	11.72	10.01	0.488	OI				1.23
13.333	11.88	10.16	0.499	OI				1.25
13.417	12.05	10.31	0.511	OI				1.27
13.500	12.23	10.47	0.523	OI				1.28
13.583	12.42	10.62	0.535	OI				1.30
13.667	12.61	10.78	0.548	OI				1.32
13.750	12.82	10.94	0.561	OI				1.34

13.833	13.03	11.11	0.574		OI							1.36
13.917	13.26	11.28	0.587		OI							1.38
14.000	13.50	11.46	0.601		OI							1.40
14.083	13.76	11.64	0.615		O							1.42
14.167	14.03	11.83	0.630		O							1.44
14.250	14.33	12.03	0.646		O							1.46
14.333	14.64	12.23	0.662		O							1.49
14.417	14.97	12.45	0.679		O							1.51
14.500	15.32	12.68	0.697		OI							1.54
14.583	15.70	12.91	0.715		OI							1.57
14.667	16.09	13.16	0.735		OI							1.60
14.750	16.53	13.43	0.756		OI							1.63
14.833	17.00	13.71	0.778		OI							1.66
14.917	17.53	14.01	0.801		OI							1.69
15.000	18.09	14.33	0.827		OI							1.73
15.083	18.73	14.67	0.853		OI							1.77
15.167	19.42	15.04	0.883		O I							1.81
15.250	20.22	15.44	0.914		OI							1.86
15.333	21.11	15.88	0.949		OI							1.91
15.417	21.93	16.35	0.986		OI							1.96
15.500	21.82	16.79	1.022		OI							2.02
15.583	21.19	17.11	1.054		OI							2.06
15.667	21.80	17.41	1.083		OI							2.10
15.750	23.72	17.77	1.118		O I							2.14
15.833	26.79	18.28	1.168		O I							2.21
15.917	31.48	19.02	1.241		O I							2.31
16.000	39.59	20.14	1.350		O		I					2.45
16.083	59.63	22.15	1.546		O			I				2.72
16.167	102.58	25.99	1.939		O				I			3.22
16.250	122.38	31.33	2.517			O				I		3.92
16.333	80.90	34.61	2.989			O		I				4.47
16.417	45.54	35.88	3.182			O I						4.68
16.500	29.85	35.96	3.194			I O						4.70
16.583	25.62	35.59	3.139			I O						4.64
16.667	22.80	35.09	3.062		I	O						4.55
16.750	20.30	34.49	2.971		I	O						4.44
16.833	18.78	33.83	2.870		I	O						4.33
16.917	17.57	33.14	2.765		I	O						4.21
17.000	16.57	32.42	2.657		I	O						4.09
17.083	15.72	31.62	2.548		I	O						3.96
17.167	14.98	30.61	2.439		I	O						3.83
17.250	14.33	29.63	2.332		I	O						3.70
17.333	13.76	28.67	2.228		I	O						3.57
17.417	13.26	27.73	2.127		I	O						3.45
17.500	12.82	26.82	2.029		I	O						3.33
17.583	12.41	25.94	1.934		I	O						3.21
17.667	12.05	25.10	1.843		I	O						3.10
17.750	11.71	24.28	1.755		I	O						2.99
17.833	11.40	23.41	1.670		I	O						2.88
17.917	11.12	22.58	1.589		I	O						2.77
18.000	10.85	21.79	1.512		I	O						2.67
18.083	10.54	21.04	1.438		I	O						2.57
18.167	9.95	20.31	1.366		I	O						2.48
18.250	9.16	19.57	1.295		I	O						2.38
18.333	8.65	18.85	1.224		I	O						2.29
18.417	8.36	18.14	1.155		I	O						2.19
18.500	8.16	17.47	1.089		I	O						2.11
18.583	7.98	16.83	1.027		I	O						2.02
18.667	7.81	16.12	0.968		I	O						1.94

18.750	7.67	15.42	0.912	I O				1.86
18.833	7.52	14.76	0.861	I O				1.78
18.917	7.39	14.15	0.813	I O				1.71
19.000	7.26	13.58	0.768	I O				1.64
19.083	7.14	13.04	0.726	I O				1.58
19.167	7.03	12.54	0.686	I O				1.52
19.250	6.91	12.07	0.649	I O				1.47
19.333	6.81	11.64	0.615	I O				1.42
19.417	6.71	11.23	0.583	IO				1.37
19.500	6.61	10.84	0.553	IO				1.33
19.583	6.51	10.48	0.524	IO				1.29
19.667	6.42	10.15	0.498	IO				1.25
19.750	6.34	9.83	0.473	IO				1.21
19.833	6.25	9.53	0.450	IO				1.18
19.917	6.17	9.26	0.428	IO				1.14
20.000	6.09	8.99	0.407	IO				1.11
20.083	6.02	8.75	0.388	IO				1.09
20.167	5.95	8.51	0.370	IO				1.06
20.250	5.88	8.30	0.353	IO				1.03
20.333	5.81	8.09	0.336	IO				1.01
20.417	5.74	7.80	0.321	IO				0.97
20.500	5.68	7.48	0.308	O				0.93
20.583	5.62	7.20	0.296	O				0.90
20.667	5.56	6.95	0.286	O				0.87
20.750	5.50	6.73	0.277	O				0.84
20.833	5.44	6.53	0.269	O				0.82
20.917	5.39	6.36	0.262	O				0.79
21.000	5.33	6.21	0.256	O				0.77
21.083	5.28	6.07	0.250	O				0.76
21.167	5.23	5.94	0.245	O				0.74
21.250	5.18	5.83	0.240	O				0.73
21.333	5.13	5.73	0.236	O				0.71
21.417	5.09	5.63	0.232	O				0.70
21.500	5.04	5.54	0.228	O				0.69
21.583	4.99	5.46	0.225	O				0.68
21.667	4.95	5.39	0.222	O				0.67
21.750	4.91	5.32	0.219	O				0.66
21.833	4.87	5.25	0.216	O				0.66
21.917	4.83	5.19	0.214	O				0.65
22.000	4.79	5.13	0.211	O				0.64
22.083	4.75	5.07	0.209	O				0.63
22.167	4.71	5.02	0.207	O				0.63
22.250	4.67	4.97	0.205	O				0.62
22.333	4.64	4.92	0.203	O				0.61
22.417	4.60	4.87	0.201	O				0.61
22.500	4.57	4.83	0.199	O				0.60
22.583	4.53	4.79	0.197	O				0.60
22.667	4.50	4.74	0.195	O				0.59
22.750	4.47	4.70	0.194	O				0.59
22.833	4.43	4.67	0.192	O				0.58
22.917	4.40	4.63	0.191	O				0.58
23.000	4.37	4.59	0.189	O				0.57
23.083	4.34	4.55	0.188	O				0.57
23.167	4.31	4.52	0.186	O				0.56
23.250	4.28	4.49	0.185	O				0.56
23.333	4.26	4.45	0.183	O				0.56
23.417	4.23	4.42	0.182	O				0.55
23.500	4.20	4.39	0.181	O				0.55
23.583	4.17	4.36	0.179	O				0.54

23.667	4.15	4.33	0.178	IO					0.54
23.750	4.12	4.30	0.177	IO					0.54
23.833	4.09	4.27	0.176	IO					0.53
23.917	4.07	4.24	0.175	IO					0.53
24.000	4.04	4.21	0.173	IO					0.53
24.083	3.84	4.17	0.172	IO					0.52
24.167	2.83	4.04	0.166	IO					0.50
24.250	1.27	3.73	0.154	O					0.47
24.333	0.42	3.29	0.135	O					0.41
24.417	0.12	2.82	0.116	O					0.35
24.500	0.05	2.40	0.099	O					0.30
24.583	0.02	2.04	0.084	O					0.25
24.667	0.00	1.72	0.071	O					0.22
24.750	0.00	1.46	0.060	O					0.18
24.833	0.00	1.23	0.051	O					0.15
24.917	0.00	1.04	0.043	O					0.13
25.000	0.00	0.88	0.036	O					0.11
25.083	0.00	0.75	0.031	O					0.09
25.167	0.00	0.63	0.026	O					0.08
25.250	0.00	0.53	0.022	O					0.07
25.333	0.00	0.45	0.019	O					0.06
25.417	0.00	0.38	0.016	O					0.05
25.500	0.00	0.32	0.013	O					0.04
25.583	0.00	0.27	0.011	O					0.03
25.667	0.00	0.23	0.010	O					0.03
25.750	0.00	0.20	0.008	O					0.02
25.833	0.00	0.17	0.007	O					0.02
25.917	0.00	0.14	0.006	O					0.02
26.000	0.00	0.12	0.005	O					0.01
26.083	0.00	0.10	0.004	O					0.01
26.167	0.00	0.08	0.003	O					0.01
26.250	0.00	0.07	0.003	O					0.01
26.333	0.00	0.06	0.002	O					0.01
26.417	0.00	0.05	0.002	O					0.01
26.500	0.00	0.04	0.002	O					0.01
26.583	0.00	0.04	0.002	O					0.00
26.667	0.00	0.03	0.001	O					0.00
26.750	0.00	0.03	0.001	O					0.00
26.833	0.00	0.02	0.001	O					0.00
26.917	0.00	0.02	0.001	O					0.00
27.000	0.00	0.02	0.001	O					0.00
27.083	0.00	0.01	0.001	O					0.00
27.167	0.00	0.01	0.000	O					0.00
27.250	0.00	0.01	0.000	O					0.00
27.333	0.00	0.01	0.000	O					0.00
27.417	0.00	0.01	0.000	O					0.00

*****HYDROGRAPH DATA*****

Number of intervals = 329
 Time interval = 5.0 (Min.)
 Maximum/Peak flow rate = 35.955 (CFS)
 Total volume = 18.323 (Ac.Ft)
 Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

```

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Process from Point/Station      2.000 to Point/Station      3.000
**** STREAM ROUTING SCS CONVEX METHOD ****

```

```

HYDROGRAPH STREAM ROUTING DATA:
Length of stream =      450.00 (Ft.)
Elevation difference =      2.25 (Ft.)
Slope of channel =  0.005000 (Vert/Horiz)
Channel type - Pipe

```

```

Pipe length =  450.00(Ft.)   Elevation difference =  2.25(Ft.)
Manning's N = 0.013   No. of pipes = 1
Pipe evaluation using mean flow rate of hydrograph
Required pipe flow =      9.607(CFS)
Nearest computed pipe diameter =      21.00(In.)
Calculated individual pipe flow =      9.607(CFS)
Normal flow depth in pipe =  14.98(In.)
Flow top width inside pipe =  19.00(In.)
Critical Depth =  1.15(Ft.)
Pipe flow velocity =      5.24(Ft/s)
Travel time through pipe =  1.43 min.

```

```

Pipe length =  450.00(Ft.)   Elevation difference =  2.25(Ft.)
Manning's N = 0.013   No. of pipes = 1
Pipe evaluation using maximum flow rate of hydrograph
Required pipe flow =     35.955(CFS)
Nearest computed pipe diameter =     33.00(In.)
Calculated individual pipe flow =     35.955(CFS)
Normal flow depth in pipe =  25.97(In.)
Flow top width inside pipe =  27.03(In.)
Critical Depth =  2.00(Ft.)
Pipe flow velocity =      7.17(Ft/s)
Travel time through pipe =  1.05 min.

```

```

***** SCS CONVEX CHANNEL ROUTING *****

```

```

Convex method of stream routing  data items:

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```

Using equation: Outflow =

```

```

O(t+dt) = (1-c*)O(t+dt-dt*) + Input(c*)

```

```

      where c* = 1 - (1-c)^e and dt = c(length)/velocity

```

```

      c(v/v+1.7) =  0.8084   Travel time =  1.05 (min.)

```

```

      dt*(unit time interval) =  5.00(min.),   e=  4.2758

```

```

      dt(routing time-step) =  0.85 (min.),   c* =  0.9991

```

```

Output hydrograph delayed by 0  unit time increments

```

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```

```

      P R I N T   O F   S T O R M
      R u n o f f       H y d r o g r a p h

```

```

      Hydrograph in  5  Minute intervals (CFS)

```

```

Time(h+m) Out = O(CFS) In = I  0          9.0        18.0        27.0        36.0

```

0+ 5	0.0115	0.01	O				
0+10	0.0983	0.12	O				
0+15	0.3494	0.40	O				
0+20	0.7489	0.82	O				
0+25	1.1926	1.27	O				
0+30	1.6077	1.68	O				
0+35	1.9722	2.03	O				
0+40	2.2870	2.34	O				
0+45	2.5568	2.60	O				
0+50	2.7871	2.83	O				
0+55	2.9837	3.02	O				
1+ 0	3.1520	3.18	O				
1+ 5	3.2962	3.32	O				
1+10	3.4202	3.44	O				
1+15	3.5270	3.54	O				
1+20	3.6193	3.63	O				
1+25	3.6994	3.71	O				
1+30	3.7691	3.78	O				
1+35	3.8302	3.84	O				
1+40	3.8839	3.89	O				
1+45	3.9313	3.94	O				
1+50	3.9736	3.98	O				
1+55	4.0115	4.02	O				
2+ 0	4.0456	4.05	O				
2+ 5	4.0767	4.08	O				
2+10	4.1051	4.11	O				
2+15	4.1314	4.14	O				
2+20	4.1558	4.16	O				
2+25	4.1787	4.18	O				
2+30	4.2003	4.20	O				
2+35	4.2209	4.22	O				
2+40	4.2406	4.24	O				
2+45	4.2596	4.26	O				
2+50	4.2780	4.28	O				
2+55	4.2960	4.30	O				
3+ 0	4.3135	4.32	O				
3+ 5	4.3308	4.33	O				
3+10	4.3479	4.35	O				
3+15	4.3648	4.37	O				
3+20	4.3816	4.38	O				
3+25	4.3983	4.40	O				
3+30	4.4149	4.42	O				
3+35	4.4316	4.43	O				
3+40	4.4483	4.45	O				
3+45	4.4651	4.47	O				
3+50	4.4819	4.48	O				
3+55	4.4988	4.50	O				
4+ 0	4.5158	4.52	O				
4+ 5	4.5329	4.54	O				
4+10	4.5501	4.55	O				
4+15	4.5675	4.57	O				
4+20	4.5850	4.59	O				
4+25	4.6027	4.61	O				
4+30	4.6205	4.62	O				
4+35	4.6385	4.64	O				
4+40	4.6567	4.66	O				
4+45	4.6751	4.68	O				
4+50	4.6936	4.70	O				

4+55	4.7124	4.72		O				
5+ 0	4.7313	4.73		O				
5+ 5	4.7504	4.75		O				
5+10	4.7698	4.77		O				
5+15	4.7894	4.79		O				
5+20	4.8091	4.81		O				
5+25	4.8292	4.83		O				
5+30	4.8494	4.85		O				
5+35	4.8699	4.87		O				
5+40	4.8906	4.89		O				
5+45	4.9115	4.92		O				
5+50	4.9327	4.94		O				
5+55	4.9542	4.96		O				
6+ 0	4.9759	4.98		O				
6+ 5	4.9979	5.00		O				
6+10	5.0201	5.02		O				
6+15	5.0427	5.05		O				
6+20	5.0655	5.07		O				
6+25	5.0886	5.09		O				
6+30	5.1120	5.12		O				
6+35	5.1357	5.14		O				
6+40	5.1597	5.16		O				
6+45	5.1840	5.19		O				
6+50	5.2086	5.21		O				
6+55	5.2336	5.24		O				
7+ 0	5.2589	5.26		O				
7+ 5	5.2845	5.29		O				
7+10	5.3105	5.31		O				
7+15	5.3369	5.34		O				
7+20	5.3636	5.37		O				
7+25	5.3907	5.40		OI				
7+30	5.4181	5.42		O				
7+35	5.4460	5.45		O				
7+40	5.4743	5.48		O				
7+45	5.5029	5.51		O				
7+50	5.5320	5.54		O				
7+55	5.5616	5.57		O				
8+ 0	5.5915	5.60		O				
8+ 5	5.6220	5.63		O				
8+10	5.6528	5.66		O				
8+15	5.6842	5.69		O				
8+20	5.7161	5.72		O				
8+25	5.7484	5.75		O				
8+30	5.7813	5.79		O				
8+35	5.8147	5.82		O				
8+40	5.8486	5.85		O				
8+45	5.8831	5.89		O				
8+50	5.9182	5.92		O				
8+55	5.9538	5.96		O				
9+ 0	5.9901	6.00		O				
9+ 5	6.0269	6.03		O				
9+10	6.0644	6.07		O				
9+15	6.1026	6.11		O				
9+20	6.1415	6.15		O				
9+25	6.1810	6.19		O				
9+30	6.2212	6.23		O				
9+35	6.2622	6.27		O				
9+40	6.3040	6.31		O				
9+45	6.3465	6.35		O				

9+50	6.3899	6.40		O					
9+55	6.4340	6.44		O					
10+ 0	6.4791	6.49		O					
10+ 5	6.5250	6.53		O					
10+10	6.5718	6.58		O					
10+15	6.6196	6.63		O					
10+20	6.6684	6.68		O					
10+25	6.7182	6.73		O					
10+30	6.7690	6.78		O					
10+35	6.8209	6.83		O					
10+40	6.8740	6.88		O					
10+45	6.9282	6.94		O					
10+50	6.9836	6.99		O					
10+55	7.0402	7.05		O					
11+ 0	7.0982	7.11		O					
11+ 5	7.1575	7.17		O					
11+10	7.2182	7.23		O					
11+15	7.2804	7.29		O					
11+20	7.3441	7.35		O					
11+25	7.4094	7.42		O					
11+30	7.4763	7.49		O					
11+35	7.5449	7.56		O					
11+40	7.6153	7.63		O					
11+45	7.6876	7.70		O					
11+50	7.7618	7.77		O					
11+55	7.8380	7.85		O					
12+ 0	7.9164	7.93		O					
12+ 5	7.9990	8.01		O					
12+10	8.0680	8.08		O					
12+15	8.1688	8.19		O					
12+20	8.3072	8.33		O					
12+25	8.4639	8.49		O					
12+30	8.6244	8.65		O					
12+35	8.7833	8.81		O					
12+40	8.9397	8.97		O					
12+45	9.0936	9.12		O					
12+50	9.2453	9.27		O					
12+55	9.3953	9.42		O					
13+ 0	9.5441	9.57		O					
13+ 5	9.6923	9.72		O					
13+10	9.8403	9.87		O					
13+15	9.9888	10.01		O					
13+20	10.1383	10.16		O					
13+25	10.2891	10.31		O					
13+30	10.4418	10.47		O					
13+35	10.5969	10.62		O					
13+40	10.7550	10.78		O					
13+45	10.9165	10.94		O					
13+50	11.0820	11.11		O					
13+55	11.2521	11.28		O					
14+ 0	11.4274	11.46		O					
14+ 5	11.6086	11.64		O					
14+10	11.7966	11.83		O					
14+15	11.9928	12.03		O					
14+20	12.1979	12.23		O					
14+25	12.4125	12.45		O					
14+30	12.6370	12.68		O					
14+35	12.8727	12.91		O					
14+40	13.1209	13.16		O					

14+45	13.3829	13.43			O				
14+50	13.6606	13.71			O				
14+55	13.9561	14.01			O				
15+ 0	14.2717	14.33			O				
15+ 5	14.6104	14.67			O				
15+10	14.9757	15.04			O				
15+15	15.3718	15.44			O				
15+20	15.8042	15.88			O				
15+25	16.2718	16.35			O				
15+30	16.7124	16.79			O				
15+35	17.0524	17.11			O				
15+40	17.3546	17.41			O				
15+45	17.7076	17.77			O				
15+50	18.1922	18.28			O				
15+55	18.8921	19.02			O				
16+ 0	19.9505	20.14			O				
16+ 5	21.8055	22.15			O				
16+10	25.3364	25.99			O				
16+15	30.4247	31.33			O				
16+20	34.0522	34.61			O				
16+25	35.6596	35.88			O				
16+30	35.9416	35.96			O				
16+35	35.6534	35.59			O				
16+40	35.1736	35.09			O				
16+45	34.5910	34.49			O				
16+50	33.9402	33.83			O				
16+55	33.2531	33.14			O				
17+ 0	32.5457	32.42			O				
17+ 5	31.7564	31.62			O				
17+10	30.7852	30.61			O				
17+15	29.7960	29.63			O				
17+20	28.8294	28.67			O				
17+25	27.8889	27.73			O				
17+30	26.9765	26.82			O				
17+35	26.0938	25.94			O				
17+40	25.2414	25.10			O				
17+45	24.4155	24.28			O				
17+50	23.5576	23.41			O				
17+55	22.7244	22.58			O				
18+ 0	21.9290	21.79			O				
18+ 5	21.1682	21.04			O				
18+10	20.4302	20.31			O				
18+15	19.6984	19.57			O				
18+20	18.9717	18.85			O				
18+25	18.2642	18.14			O				
18+30	17.5862	17.47			O				
18+35	16.9407	16.83			O				
18+40	16.2426	16.12			O				
18+45	15.5380	15.42			O				
18+50	14.8734	14.76			O				
18+55	14.2529	14.15			O				
19+ 0	13.6735	13.58			O				
19+ 5	13.1321	13.04			O				
19+10	12.6261	12.54			O				
19+15	12.1530	12.07			O				
19+20	11.7104	11.64			O				
19+25	11.2961	11.23			O				
19+30	10.9082	10.84			O				
19+35	10.5447	10.48			O				

19+40	10.2040	10.15		O			
19+45	9.8844	9.83		O			
19+50	9.5844	9.53		O			
19+55	9.3026	9.26		O			
20+ 0	9.0378	8.99		O			
20+ 5	8.7887	8.75		O			
20+10	8.5543	8.51		O			
20+15	8.3335	8.30		O			
20+20	8.1255	8.09		O			
20+25	7.8500	7.80		O			
20+30	7.5331	7.48		O			
20+35	7.2439	7.20		O			
20+40	6.9898	6.95		O			
20+45	6.7658	6.73		O			
20+50	6.5674	6.53		O			
20+55	6.3909	6.36		O			
21+ 0	6.2332	6.21		O			
21+ 5	6.0917	6.07		O			
21+10	5.9640	5.94		O			
21+15	5.8482	5.83		O			
21+20	5.7428	5.73		O			
21+25	5.6462	5.63		O			
21+30	5.5574	5.54		O			
21+35	5.4753	5.46		O			
21+40	5.3990	5.39		IO			
21+45	5.3278	5.32		O			
21+50	5.2611	5.25		O			
21+55	5.1983	5.19		O			
22+ 0	5.1390	5.13		O			
22+ 5	5.0827	5.07		O			
22+10	5.0292	5.02		O			
22+15	4.9782	4.97		O			
22+20	4.9293	4.92		O			
22+25	4.8825	4.87		O			
22+30	4.8374	4.83		O			
22+35	4.7939	4.79		O			
22+40	4.7520	4.74		O			
22+45	4.7114	4.70		O			
22+50	4.6720	4.67		O			
22+55	4.6338	4.63		O			
23+ 0	4.5967	4.59		O			
23+ 5	4.5606	4.55		O			
23+10	4.5254	4.52		O			
23+15	4.4911	4.49		O			
23+20	4.4577	4.45		O			
23+25	4.4250	4.42		O			
23+30	4.3931	4.39		O			
23+35	4.3619	4.36		O			
23+40	4.3313	4.33		O			
23+45	4.3014	4.30		O			
23+50	4.2721	4.27		O			
23+55	4.2434	4.24		O			
24+ 0	4.2153	4.21		O			
24+ 5	4.1762	4.17		O			
24+10	4.0625	4.04		O			
24+15	3.7862	3.73		O			
24+20	3.3642	3.29		O			
24+25	2.9020	2.82		O			
24+30	2.4727	2.40		O			

24+35	2.0979	2.04	O				
24+40	1.7762	1.72	O				
24+45	1.5024	1.46	O				
24+50	1.2706	1.23	O				
24+55	1.0746	1.04	O				
25+ 0	0.9088	0.88	O				
25+ 5	0.7686	0.75	O				
25+10	0.6500	0.63	O				
25+15	0.5497	0.53	O				
25+20	0.4649	0.45	O				
25+25	0.3932	0.38	O				
25+30	0.3325	0.32	O				
25+35	0.2812	0.27	O				
25+40	0.2379	0.23	O				
25+45	0.2012	0.20	O				
25+50	0.1701	0.17	O				
25+55	0.1439	0.14	O				
26+ 0	0.1217	0.12	O				
26+ 5	0.1029	0.10	O				
26+10	0.0870	0.08	O				
26+15	0.0736	0.07	O				
26+20	0.0623	0.06	O				
26+25	0.0526	0.05	O				
26+30	0.0445	0.04	O				
26+35	0.0377	0.04	O				
26+40	0.0318	0.03	O				
26+45	0.0269	0.03	O				
26+50	0.0228	0.02	O				
26+55	0.0193	0.02	O				
27+ 0	0.0163	0.02	O				
27+ 5	0.0138	0.01	O				
27+10	0.0117	0.01	O				
27+15	0.0099	0.01	O				
27+20	0.0083	0.01	O				
27+25	0.0070	0.01	O				
27+30	0.0012	0.00	O				
27+35	0.0000	0.00	O				

*****HYDROGRAPH DATA*****

Number of intervals = 331

Time interval = 5.0 (Min.)

Maximum/Peak flow rate = 35.942 (CFS)

Total volume = 18.323 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

+++++

Process from Point/Station 2.000 to Point/Station 3.000

**** STORE OR DELETE CURRENT HYDROGRAPH ****

Current stream hydrograph of 5.0 minute
intervals has been stored as stream number 1 with
a starting time of 0.00 hours and ending time of 36.00 hours

With a total volume of 18.32 (Ac.Ft)
 *****HYDROGRAPH DATA*****
 Number of intervals = 0
 Time interval = 0.0 (Min.)
 Maximum/Peak flow rate = 0.000 (CFS)
 Total volume = 0.000 (Ac.Ft)
 Status of hydrographs being held in storage
 Stream 1 Stream 2 Stream 3 Stream 4 Stream 5
 Peak (CFS) 35.942 0.000 0.000 0.000 0.000
 Vol (Ac.Ft) 18.323 0.000 0.000 0.000 0.000

 ++++++
 Process from Point/Station 4.000 to Point/Station 3.000
 **** ADD/COMBINE/RECOVER HYDROGRAPHS ****

***** HYDROGRAPH INFORMATION *****

From study/file name: kimb100.rte
 ++++++
 P R I N T O F S T O R M
 R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals (CFS)

Time (h+m)	Add q (CFS)	Tot. Q	0	33.2	66.4	99.5	132.7
0+ 5	0.4089	0.41	Q				
0+10	2.1709	2.17	Q				
0+15	2.9796	2.98	Q				
0+20	3.0960	3.10	Q				
0+25	3.1274	3.13	Q				
0+30	3.1374	3.14	Q				
0+35	3.1462	3.15	Q				
0+40	3.1564	3.16	Q				
0+45	3.1654	3.17	Q				
0+50	3.1758	3.18	Q				
0+55	3.1849	3.18	Q				
1+ 0	3.1954	3.20	Q				
1+ 5	3.2047	3.20	Q				
1+10	3.2155	3.22	Q				
1+15	3.2249	3.22	Q				
1+20	3.2358	3.24	Q				
1+25	3.2454	3.25	Q				
1+30	3.2565	3.26	Q				
1+35	3.2663	3.27	Q				
1+40	3.2776	3.28	Q				
1+45	3.2876	3.29	Q				
1+50	3.2991	3.30	Q				
1+55	3.3093	3.31	Q				
2+ 0	3.3210	3.32	IQ				
2+ 5	3.3313	3.33	IQ				
2+10	3.3433	3.34	IQ				
2+15	3.3538	3.35	IQ				
2+20	3.3660	3.37	IQ				

2+25	3.3767	3.38	IQ				
2+30	3.3891	3.39	IQ				
2+35	3.4000	3.40	IQ				
2+40	3.4127	3.41	IQ				
2+45	3.4238	3.42	IQ				
2+50	3.4367	3.44	IQ				
2+55	3.4481	3.45	IQ				
3+ 0	3.4612	3.46	IQ				
3+ 5	3.4728	3.47	IQ				
3+10	3.4862	3.49	IQ				
3+15	3.4980	3.50	IQ				
3+20	3.5117	3.51	IQ				
3+25	3.5238	3.52	IQ				
3+30	3.5377	3.54	IQ				
3+35	3.5501	3.55	IQ				
3+40	3.5643	3.56	IQ				
3+45	3.5769	3.58	IQ				
3+50	3.5914	3.59	IQ				
3+55	3.6043	3.60	IQ				
4+ 0	3.6192	3.62	IQ				
4+ 5	3.6323	3.63	IQ				
4+10	3.6475	3.65	IQ				
4+15	3.6609	3.66	IQ				
4+20	3.6764	3.68	IQ				
4+25	3.6901	3.69	IQ				
4+30	3.7060	3.71	IQ				
4+35	3.7200	3.72	IQ				
4+40	3.7362	3.74	IQ				
4+45	3.7506	3.75	IQ				
4+50	3.7672	3.77	IQ				
4+55	3.7818	3.78	IQ				
5+ 0	3.7988	3.80	IQ				
5+ 5	3.8138	3.81	IQ				
5+10	3.8312	3.83	IQ				
5+15	3.8466	3.85	IQ				
5+20	3.8644	3.86	IQ				
5+25	3.8802	3.88	IQ				
5+30	3.8984	3.90	IQ				
5+35	3.9146	3.91	IQ				
5+40	3.9333	3.93	IQ				
5+45	3.9498	3.95	IQ				
5+50	3.9690	3.97	IQ				
5+55	3.9859	3.99	IQ				
6+ 0	4.0056	4.01	IQ				
6+ 5	4.0230	4.02	IQ				
6+10	4.0432	4.04	IQ				
6+15	4.0610	4.06	IQ				
6+20	4.0818	4.08	IQ				
6+25	4.1001	4.10	IQ				
6+30	4.1214	4.12	IQ				
6+35	4.1402	4.14	IQ				
6+40	4.1621	4.16	IQ				
6+45	4.1814	4.18	IQ				
6+50	4.2039	4.20	IQ				
6+55	4.2238	4.22	IQ				
7+ 0	4.2469	4.25	IQ				
7+ 5	4.2674	4.27	IQ				
7+10	4.2912	4.29	IQ				
7+15	4.3122	4.31	IQ				

7+20	4.3367	4.34	I Q				
7+25	4.3584	4.36	I Q				
7+30	4.3836	4.38	I Q				
7+35	4.4060	4.41	I Q				
7+40	4.4320	4.43	I Q				
7+45	4.4550	4.46	I Q				
7+50	4.4819	4.48	I Q				
7+55	4.5056	4.51	I Q				
8+ 0	4.5333	4.53	I Q				
8+ 5	4.5578	4.56	I Q				
8+10	4.5864	4.59	I Q				
8+15	4.6117	4.61	I Q				
8+20	4.6413	4.64	I Q				
8+25	4.6675	4.67	I Q				
8+30	4.6980	4.70	I Q				
8+35	4.7251	4.73	I Q				
8+40	4.7567	4.76	I Q				
8+45	4.7848	4.78	I Q				
8+50	4.8175	4.82	I Q				
8+55	4.8465	4.85	I Q				
9+ 0	4.8805	4.88	I Q				
9+ 5	4.9106	4.91	I Q				
9+10	4.9458	4.95	I Q				
9+15	4.9770	4.98	I Q				
9+20	5.0136	5.01	I Q				
9+25	5.0460	5.05	I Q				
9+30	5.0840	5.08	I Q				
9+35	5.1178	5.12	I Q				
9+40	5.1573	5.16	I Q				
9+45	5.1924	5.19	I Q				
9+50	5.2335	5.23	I Q				
9+55	5.2701	5.27	I Q				
10+ 0	5.3129	5.31	I Q				
10+ 5	5.3511	5.35	I Q				
10+10	5.3958	5.40	I Q				
10+15	5.4357	5.44	I Q				
10+20	5.4824	5.48	I Q				
10+25	5.5240	5.52	I Q				
10+30	5.5729	5.57	I Q				
10+35	5.6165	5.62	I Q				
10+40	5.6677	5.67	I Q				
10+45	5.7134	5.71	I Q				
10+50	5.7671	5.77	I Q				
10+55	5.8150	5.82	I Q				
11+ 0	5.8715	5.87	I Q				
11+ 5	5.9219	5.92	I Q				
11+10	5.9813	5.98	I Q				
11+15	6.0343	6.03	I Q				
11+20	6.0969	6.10	I Q				
11+25	6.1529	6.15	I Q				
11+30	6.2190	6.22	I Q				
11+35	6.2782	6.28	I Q				
11+40	6.3481	6.35	I Q				
11+45	6.4108	6.41	I Q				
11+50	6.4849	6.48	I Q				
11+55	6.5515	6.55	I Q				
12+ 0	6.6302	6.63	I Q				
12+ 5	6.8518	6.85	I Q				
12+10	7.5850	7.58	I Q				

12+15	7.9574	7.96	Q				
12+20	8.0877	8.09	Q				
12+25	8.1779	8.18	Q				
12+30	8.2750	8.28	Q				
12+35	8.3625	8.36	Q				
12+40	8.4665	8.47	Q				
12+45	8.5603	8.56	Q				
12+50	8.6721	8.67	Q				
12+55	8.7730	8.77	Q				
13+ 0	8.8936	8.89	Q				
13+ 5	9.0027	9.00	Q				
13+10	9.1332	9.13	Q				
13+15	9.2516	9.25	Q				
13+20	9.3936	9.39	Q				
13+25	9.5227	9.52	Q				
13+30	9.6780	9.68	Q				
13+35	9.8194	9.82	Q				
13+40	9.9901	9.99	Q				
13+45	10.1461	10.15	Q				
13+50	10.3350	10.33	Q				
13+55	10.5082	10.51	Q				
14+ 0	10.7188	10.72	Q				
14+ 5	10.9157	10.92	Q				
14+10	11.1658	11.17	Q				
14+15	11.3907	11.39	Q				
14+20	11.6604	11.66	Q				
14+25	11.9105	11.91	Q				
14+30	12.2195	12.22	Q				
14+35	12.5086	12.51	Q				
14+40	12.8689	12.87	Q				
14+45	13.2086	13.21	Q				
14+50	13.6362	13.64	Q				
14+55	14.0434	14.04	Q				
15+ 0	14.5623	14.56	Q				
15+ 5	15.0629	15.06	Q				
15+10	15.7112	15.71	Q				
15+15	16.3479	16.35	Q				
15+20	17.1906	17.19	Q				
15+25	17.4955	17.50	Q				
15+30	16.3094	16.31	Q				
15+35	16.4360	16.44	Q				
15+40	18.0167	18.02	Q				
15+45	19.9591	19.96	Q				
15+50	23.2250	23.23	Q				
15+55	28.2894	28.29	Q				
16+ 0	39.6736	39.67	Q				
16+ 5	71.4628	71.46		Q			
16+10	132.7248	132.72			Q		
16+15	74.8156	74.82				Q	
16+20	30.3939	30.39		Q			
16+25	20.5114	20.51		Q			
16+30	18.3563	18.36		Q			
16+35	17.2466	17.25		Q			
16+40	15.8347	15.83		Q			
16+45	14.6741	14.67		Q			
16+50	13.7218	13.72		Q			
16+55	12.9369	12.94		Q			
17+ 0	12.2752	12.28		Q			
17+ 5	11.7041	11.70		Q			

17+10	11.1961	11.20	Q				
17+15	10.7541	10.75	Q				
17+20	10.3652	10.37	Q				
17+25	10.0167	10.02	Q				
17+30	9.7017	9.70	Q				
17+35	9.4150	9.41	Q				
17+40	9.1526	9.15	Q				
17+45	8.9112	8.91	Q				
17+50	8.6882	8.69	Q				
17+55	8.4813	8.48	Q				
18+ 0	8.2887	8.29	Q				
18+ 5	7.9582	7.96	Q				
18+10	7.1414	7.14	Q				
18+15	6.6891	6.69	Q				
18+20	6.5036	6.50	Q				
18+25	6.3577	6.36	Q				
18+30	6.2280	6.23	Q				
18+35	6.1054	6.11	Q				
18+40	5.9892	5.99	Q				
18+45	5.8790	5.88	Q				
18+50	5.7742	5.77	Q				
18+55	5.6745	5.67	Q				
19+ 0	5.5794	5.58	Q				
19+ 5	5.4885	5.49	Q				
19+10	5.4017	5.40	Q				
19+15	5.3185	5.32	Q				
19+20	5.2388	5.24	Q				
19+25	5.1624	5.16	Q				
19+30	5.0889	5.09	Q				
19+35	5.0183	5.02	Q				
19+40	4.9503	4.95	Q				
19+45	4.8848	4.88	Q				
19+50	4.8217	4.82	Q				
19+55	4.7607	4.76	Q				
20+ 0	4.7019	4.70	Q				
20+ 5	4.6450	4.65	Q				
20+10	4.5900	4.59	Q				
20+15	4.5368	4.54	Q				
20+20	4.4852	4.49	Q				
20+25	4.4353	4.44	Q				
20+30	4.3868	4.39	Q				
20+35	4.3398	4.34	Q				
20+40	4.2941	4.29	Q				
20+45	4.2498	4.25	Q				
20+50	4.2067	4.21	Q				
20+55	4.1648	4.16	Q				
21+ 0	4.1240	4.12	Q				
21+ 5	4.0843	4.08	Q				
21+10	4.0457	4.05	Q				
21+15	4.0080	4.01	Q				
21+20	3.9714	3.97	Q				
21+25	3.9356	3.94	Q				
21+30	3.9007	3.90	Q				
21+35	3.8666	3.87	Q				
21+40	3.8334	3.83	Q				
21+45	3.8009	3.80	Q				
21+50	3.7692	3.77	Q				
21+55	3.7382	3.74	Q				
22+ 0	3.7079	3.71	Q				

22+ 5	3.6783	3.68	IQ				
22+10	3.6493	3.65	IQ				
22+15	3.6210	3.62	IQ				
22+20	3.5932	3.59	IQ				
22+25	3.5660	3.57	IQ				
22+30	3.5394	3.54	IQ				
22+35	3.5134	3.51	IQ				
22+40	3.4878	3.49	IQ				
22+45	3.4628	3.46	IQ				
22+50	3.4383	3.44	IQ				
22+55	3.4142	3.41	IQ				
23+ 0	3.3906	3.39	IQ				
23+ 5	3.3674	3.37	IQ				
23+10	3.3447	3.34	IQ				
23+15	3.3224	3.32	IQ				
23+20	3.3005	3.30	Q				
23+25	3.2790	3.28	Q				
23+30	3.2579	3.26	Q				
23+35	3.2371	3.24	Q				
23+40	3.2167	3.22	Q				
23+45	3.1967	3.20	Q				
23+50	3.1770	3.18	Q				
23+55	3.1577	3.16	Q				
24+ 0	3.1386	3.14	Q				
24+ 5	2.7118	2.71	Q				
24+10	0.9380	0.94	Q				
24+15	0.1304	0.13	Q				
24+20	0.0229	0.02	Q				

*****HYDROGRAPH DATA*****

Number of intervals = 292

Time interval = 5.0 (Min.)

Maximum/Peak flow rate = 132.725 (CFS)

Total volume = 14.414 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	35.942	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	18.323	0.000	0.000	0.000	0.000

+++++

Process from Point/Station 4.000 to Point/Station 3.000

**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 292

Hydrograph time unit = 5.000 (Min.)

Initial depth in storage basin = 0.00 (Ft.)

Initial basin depth = 0.00 (Ft.)

Initial basin storage = 0.00 (Ac.Ft)

Initial basin outflow = 0.00 (CFS)

 Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
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0.000	0.000	0.000	0.000	0.000
1.000	0.440	0.960	0.437	0.443
2.000	1.350	2.330	1.342	1.358
3.000	2.320	4.010	2.306	2.334
4.000	3.360	5.960	3.339	3.381
5.000	4.480	7.180	4.455	4.505
6.000	5.670	8.200	5.642	5.698
7.000	6.930	9.100	6.899	6.961
8.000	8.270	9.920	8.236	8.304
9.000	9.690	38.930	9.556	9.824

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)					Depth (Ft.)
-----------------	-----------------	------------------	--------------------	--	--	--	--	----------------

0.083	0.41	0.00	0.001	0	33.2	66.36	99.54	132.72	0.00
0.167	2.17	0.02	0.010	O					0.02
0.250	2.98	0.06	0.028	O					0.06
0.333	3.10	0.10	0.048	O					0.11
0.417	3.13	0.15	0.069	O					0.16
0.500	3.14	0.19	0.089	O					0.20
0.583	3.15	0.24	0.109	O					0.25
0.667	3.16	0.28	0.129	O					0.29
0.750	3.17	0.32	0.149	O					0.34
0.833	3.18	0.37	0.168	O					0.38
0.917	3.18	0.41	0.187	O					0.43
1.000	3.20	0.45	0.206	O					0.47
1.083	3.20	0.49	0.225	O					0.51
1.167	3.22	0.53	0.244	O					0.55
1.250	3.22	0.57	0.262	O					0.60
1.333	3.24	0.61	0.280	O					0.64
1.417	3.25	0.65	0.298	O					0.68
1.500	3.26	0.69	0.316	O					0.72
1.583	3.27	0.73	0.334	O					0.76
1.667	3.28	0.77	0.351	O					0.80
1.750	3.29	0.80	0.368	O					0.84
1.833	3.30	0.84	0.385	O					0.88
1.917	3.31	0.88	0.402	O					0.91
2.000	3.32	0.91	0.419	O					0.95
2.083	3.33	0.95	0.435	O					0.99
2.167	3.34	0.98	0.452	O					1.01
2.250	3.35	1.00	0.468	O					1.03
2.333	3.37	1.03	0.484	O					1.05
2.417	3.38	1.05	0.500	O					1.07
2.500	3.39	1.07	0.516	O					1.08
2.583	3.40	1.10	0.532	O					1.10
2.667	3.41	1.12	0.548	O					1.12
2.750	3.42	1.15	0.563	O					1.14
2.833	3.44	1.17	0.579	O					1.15
2.917	3.45	1.19	0.595	O					1.17
3.000	3.46	1.22	0.610	O					1.19

3.083	3.47	1.24	0.626	O					1.20
3.167	3.49	1.26	0.641	O					1.22
3.250	3.50	1.29	0.656	O					1.24
3.333	3.51	1.31	0.671	O					1.25
3.417	3.52	1.33	0.687	O					1.27
3.500	3.54	1.35	0.702	O					1.29
3.583	3.55	1.38	0.717	O					1.30
3.667	3.56	1.40	0.732	O					1.32
3.750	3.58	1.42	0.746	O					1.34
3.833	3.59	1.44	0.761	O					1.35
3.917	3.60	1.47	0.776	O					1.37
4.000	3.62	1.49	0.791	O					1.39
4.083	3.63	1.51	0.805	O					1.40
4.167	3.65	1.53	0.820	O					1.42
4.250	3.66	1.55	0.835	O					1.43
4.333	3.68	1.58	0.849	O					1.45
4.417	3.69	1.60	0.863	O					1.47
4.500	3.71	1.62	0.878	O					1.48
4.583	3.72	1.64	0.892	O					1.50
4.667	3.74	1.66	0.907	O					1.51
4.750	3.75	1.68	0.921	O					1.53
4.833	3.77	1.71	0.935	O					1.54
4.917	3.78	1.73	0.949	O					1.56
5.000	3.80	1.75	0.963	O					1.58
5.083	3.81	1.77	0.977	O					1.59
5.167	3.83	1.79	0.991	O					1.61
5.250	3.85	1.81	1.006	O					1.62
5.333	3.86	1.83	1.020	O					1.64
5.417	3.88	1.85	1.034	O					1.65
5.500	3.90	1.87	1.047	O					1.67
5.583	3.91	1.90	1.061	O					1.68
5.667	3.93	1.92	1.075	O					1.70
5.750	3.95	1.94	1.089	O					1.71
5.833	3.97	1.96	1.103	O					1.73
5.917	3.99	1.98	1.117	O					1.74
6.000	4.01	2.00	1.131	O					1.76
6.083	4.02	2.02	1.144	O					1.77
6.167	4.04	2.04	1.158	O					1.79
6.250	4.06	2.06	1.172	O					1.80
6.333	4.08	2.08	1.186	O					1.82
6.417	4.10	2.10	1.200	O					1.83
6.500	4.12	2.12	1.213	O					1.85
6.583	4.14	2.14	1.227	O					1.86
6.667	4.16	2.17	1.241	OI					1.88
6.750	4.18	2.19	1.255	OI					1.90
6.833	4.20	2.21	1.268	OI					1.91
6.917	4.22	2.23	1.282	OI					1.93
7.000	4.25	2.25	1.296	OI					1.94
7.083	4.27	2.27	1.310	OI					1.96
7.167	4.29	2.29	1.323	OI					1.97
7.250	4.31	2.31	1.337	OI					1.99
7.333	4.34	2.33	1.351	OI					2.00
7.417	4.36	2.36	1.365	OI					2.02
7.500	4.38	2.38	1.379	OI					2.03
7.583	4.41	2.40	1.392	OI					2.04
7.667	4.43	2.43	1.406	OI					2.06
7.750	4.46	2.45	1.420	OI					2.07
7.833	4.48	2.48	1.434	OI					2.09
7.917	4.51	2.50	1.448	OI					2.10

8.000	4.53	2.52	1.461	OI					2.11
8.083	4.56	2.55	1.475	OI					2.13
8.167	4.59	2.57	1.489	OI					2.14
8.250	4.61	2.59	1.503	OI					2.16
8.333	4.64	2.62	1.517	OI					2.17
8.417	4.67	2.64	1.531	OI					2.19
8.500	4.70	2.67	1.545	OI					2.20
8.583	4.73	2.69	1.559	OI					2.22
8.667	4.76	2.72	1.573	OI					2.23
8.750	4.78	2.74	1.587	OI					2.24
8.833	4.82	2.76	1.601	OI					2.26
8.917	4.85	2.79	1.615	OI					2.27
9.000	4.88	2.81	1.629	OI					2.29
9.083	4.91	2.84	1.644	OI					2.30
9.167	4.95	2.86	1.658	OI					2.32
9.250	4.98	2.89	1.672	OI					2.33
9.333	5.01	2.91	1.687	OI					2.35
9.417	5.05	2.94	1.701	OI					2.36
9.500	5.08	2.96	1.716	OI					2.38
9.583	5.12	2.99	1.730	OI					2.39
9.667	5.16	3.01	1.745	OI					2.41
9.750	5.19	3.04	1.760	OI					2.42
9.833	5.23	3.07	1.775	OI					2.44
9.917	5.27	3.09	1.790	OI					2.45
10.000	5.31	3.12	1.805	OI					2.47
10.083	5.35	3.14	1.820	OI					2.48
10.167	5.40	3.17	1.835	OI					2.50
10.250	5.44	3.20	1.851	OI					2.52
10.333	5.48	3.22	1.866	OI					2.53
10.417	5.52	3.25	1.882	OI					2.55
10.500	5.57	3.28	1.897	OI					2.56
10.583	5.62	3.31	1.913	OI					2.58
10.667	5.67	3.33	1.929	OI					2.60
10.750	5.71	3.36	1.945	OI					2.61
10.833	5.77	3.39	1.962	OI					2.63
10.917	5.82	3.42	1.978	OI					2.65
11.000	5.87	3.45	1.995	OI					2.66
11.083	5.92	3.48	2.012	OI					2.68
11.167	5.98	3.51	2.028	OI					2.70
11.250	6.03	3.53	2.046	OI					2.72
11.333	6.10	3.56	2.063	OI					2.73
11.417	6.15	3.60	2.080	OI					2.75
11.500	6.22	3.63	2.098	OI					2.77
11.583	6.28	3.66	2.116	OI					2.79
11.667	6.35	3.69	2.134	OI					2.81
11.750	6.41	3.72	2.153	OI					2.83
11.833	6.48	3.75	2.171	OI					2.85
11.917	6.55	3.79	2.190	OI					2.87
12.000	6.63	3.82	2.210	OI					2.89
12.083	6.85	3.85	2.230	OI					2.91
12.167	7.58	3.89	2.253	OI					2.93
12.250	7.96	3.94	2.279	OI					2.96
12.333	8.09	3.99	2.307	OI					2.99
12.417	8.18	4.04	2.335	OI					3.01
12.500	8.28	4.09	2.364	OI					3.04
12.583	8.36	4.15	2.393	O I					3.07
12.667	8.47	4.20	2.422	OI					3.10
12.750	8.56	4.26	2.452	OI					3.13
12.833	8.67	4.31	2.482	OI					3.16

12.917	8.77	4.37	2.512	OI					3.18
13.000	8.89	4.43	2.542	OI					3.21
13.083	9.00	4.48	2.573	OI					3.24
13.167	9.13	4.54	2.605	OI					3.27
13.250	9.25	4.60	2.636	OI					3.30
13.333	9.39	4.66	2.669	OI					3.34
13.417	9.52	4.73	2.702	OI					3.37
13.500	9.68	4.79	2.735	OI					3.40
13.583	9.82	4.85	2.769	OI					3.43
13.667	9.99	4.92	2.803	OI					3.46
13.750	10.15	4.98	2.839	OI					3.50
13.833	10.33	5.05	2.875	OI					3.53
13.917	10.51	5.12	2.911	OI					3.57
14.000	10.72	5.19	2.949	OI					3.60
14.083	10.92	5.26	2.988	OI					3.64
14.167	11.17	5.34	3.027	OI					3.68
14.250	11.39	5.41	3.068	OI					3.72
14.333	11.66	5.49	3.110	OI					3.76
14.417	11.91	5.57	3.153	OI					3.80
14.500	12.22	5.65	3.197	OI					3.84
14.583	12.51	5.74	3.243	O I					3.89
14.667	12.87	5.83	3.291	O I					3.93
14.750	13.21	5.92	3.340	O I					3.98
14.833	13.64	5.99	3.391	O I					4.03
14.917	14.04	6.05	3.445	O I					4.08
15.000	14.56	6.11	3.502	O I					4.13
15.083	15.06	6.18	3.561	O I					4.18
15.167	15.71	6.25	3.625	O I					4.24
15.250	16.35	6.32	3.692	O I					4.30
15.333	17.19	6.40	3.763	O I					4.36
15.417	17.50	6.48	3.838	O I					4.43
15.500	16.31	6.56	3.910	O I					4.49
15.583	16.44	6.63	3.977	O I					4.55
15.667	18.02	6.71	4.050	O I					4.62
15.750	19.96	6.80	4.134	O I					4.69
15.833	23.23	6.91	4.236	O I					4.78
15.917	28.29	7.05	4.365	O I					4.90
16.000	39.67	7.24	4.550	O	I				5.06
16.083	71.46	7.52	4.882	O		I			5.34
16.167	132.72	8.08	5.531	O				I	5.88
16.250	74.82	8.57	6.188	O		I			6.41
16.333	30.39	8.79	6.491	O I					6.65
16.417	20.51	8.87	6.605	O I					6.74
16.500	18.36	8.92	6.678	O I					6.80
16.583	17.25	8.96	6.739	O I					6.85
16.667	15.83	9.00	6.791	OI					6.89
16.750	14.67	9.03	6.834	OI					6.92
16.833	13.72	9.06	6.869	OI					6.95
16.917	12.94	9.08	6.899	OI					6.98
17.000	12.28	9.10	6.923	O					6.99
17.083	11.70	9.11	6.943	O					7.01
17.167	11.20	9.12	6.959	O					7.02
17.250	10.75	9.13	6.972	O					7.03
17.333	10.37	9.13	6.982	O					7.04
17.417	10.02	9.14	6.989	O					7.04
17.500	9.70	9.14	6.994	O					7.05
17.583	9.41	9.14	6.997	O					7.05
17.667	9.15	9.14	6.998	O					7.05
17.750	8.91	9.14	6.997	O					7.05

17.833	8.69	9.14	6.995	O					7.05
17.917	8.48	9.14	6.991	O					7.05
18.000	8.29	9.13	6.986	IO					7.04
18.083	7.96	9.13	6.979	IO					7.04
18.167	7.14	9.12	6.968	IO					7.03
18.250	6.69	9.11	6.953	IO					7.02
18.333	6.50	9.10	6.935	IO					7.00
18.417	6.36	9.09	6.917	IO					6.99
18.500	6.23	9.08	6.898	IO					6.97
18.583	6.11	9.06	6.878	IO					6.96
18.667	5.99	9.05	6.857	IO					6.94
18.750	5.88	9.03	6.836	IO					6.93
18.833	5.77	9.02	6.814	IO					6.91
18.917	5.67	9.00	6.791	IO					6.89
19.000	5.58	8.98	6.768	IO					6.87
19.083	5.49	8.97	6.744	IO					6.85
19.167	5.40	8.95	6.720	IO					6.83
19.250	5.32	8.93	6.695	IO					6.81
19.333	5.24	8.91	6.670	IO					6.79
19.417	5.16	8.90	6.645	IO					6.77
19.500	5.09	8.88	6.619	IO					6.75
19.583	5.02	8.86	6.593	IO					6.73
19.667	4.95	8.84	6.566	IO					6.71
19.750	4.88	8.82	6.539	IO					6.69
19.833	4.82	8.80	6.512	IO					6.67
19.917	4.76	8.78	6.484	IO					6.65
20.000	4.70	8.76	6.456	IO					6.62
20.083	4.65	8.74	6.428	IO					6.60
20.167	4.59	8.72	6.400	IO					6.58
20.250	4.54	8.70	6.371	IO					6.56
20.333	4.49	8.68	6.343	IO					6.53
20.417	4.44	8.66	6.314	IO					6.51
20.500	4.39	8.64	6.284	IO					6.49
20.583	4.34	8.62	6.255	IO					6.46
20.667	4.29	8.60	6.225	IO					6.44
20.750	4.25	8.58	6.196	IO					6.42
20.833	4.21	8.55	6.166	IO					6.39
20.917	4.16	8.53	6.136	IO					6.37
21.000	4.12	8.51	6.106	I O					6.35
21.083	4.08	8.49	6.075	I O					6.32
21.167	4.05	8.47	6.045	I O					6.30
21.250	4.01	8.45	6.015	I O					6.27
21.333	3.97	8.42	5.984	I O					6.25
21.417	3.94	8.40	5.953	I O					6.22
21.500	3.90	8.38	5.922	I O					6.20
21.583	3.87	8.36	5.892	I O					6.18
21.667	3.83	8.34	5.861	I O					6.15
21.750	3.80	8.31	5.830	I O					6.13
21.833	3.77	8.29	5.798	IO					6.10
21.917	3.74	8.27	5.767	IO					6.08
22.000	3.71	8.25	5.736	IO					6.05
22.083	3.68	8.22	5.705	IO					6.03
22.167	3.65	8.20	5.673	IO					6.00
22.250	3.62	8.18	5.642	IO					5.98
22.333	3.59	8.15	5.611	IO					5.95
22.417	3.57	8.12	5.579	IO					5.92
22.500	3.54	8.10	5.548	IO					5.90
22.583	3.51	8.07	5.517	IO					5.87
22.667	3.49	8.04	5.485	IO					5.84

22.750	3.46	8.01	5.454	IO					5.82
22.833	3.44	7.99	5.422	IO					5.79
22.917	3.41	7.96	5.391	IO					5.77
23.000	3.39	7.93	5.360	IO					5.74
23.083	3.37	7.91	5.329	IO					5.71
23.167	3.34	7.88	5.297	IO					5.69
23.250	3.32	7.85	5.266	IO					5.66
23.333	3.30	7.83	5.235	IO					5.63
23.417	3.28	7.80	5.204	IO					5.61
23.500	3.26	7.77	5.173	IO					5.58
23.583	3.24	7.75	5.142	IO					5.56
23.667	3.22	7.72	5.110	IO					5.53
23.750	3.20	7.69	5.079	IO					5.50
23.833	3.18	7.67	5.049	IO					5.48
23.917	3.16	7.64	5.018	IO					5.45
24.000	3.14	7.61	4.987	IO					5.43
24.083	2.71	7.59	4.955	IO					5.40
24.167	0.94	7.55	4.915	IO					5.37
24.250	0.13	7.51	4.867	IO					5.33
24.333	0.02	7.47	4.816	IO					5.28
24.417	0.00	7.42	4.765	IO					5.24
24.500	0.00	7.38	4.714	IO					5.20
24.583	0.00	7.34	4.663	IO					5.15
24.667	0.00	7.29	4.613	IO					5.11
24.750	0.00	7.25	4.562	IO					5.07
24.833	0.00	7.21	4.513	IO					5.03
24.917	0.00	7.16	4.463	IO					4.98
25.000	0.00	7.11	4.414	IO					4.94
25.083	0.00	7.06	4.365	IO					4.90
25.167	0.00	7.00	4.317	IO					4.85
25.250	0.00	6.95	4.269	IO					4.81
25.333	0.00	6.90	4.221	IO					4.77
25.417	0.00	6.85	4.174	IO					4.73
25.500	0.00	6.80	4.127	IO					4.68
25.583	0.00	6.74	4.080	IO					4.64
25.667	0.00	6.69	4.034	IO					4.60
25.750	0.00	6.64	3.988	IO					4.56
25.833	0.00	6.59	3.942	IO					4.52
25.917	0.00	6.55	3.897	IO					4.48
26.000	0.00	6.50	3.852	IO					4.44
26.083	0.00	6.45	3.808	IO					4.40
26.167	0.00	6.40	3.763	IO					4.36
26.250	0.00	6.35	3.720	IO					4.32
26.333	0.00	6.30	3.676	IO					4.28
26.417	0.00	6.26	3.633	IO					4.24
26.500	0.00	6.21	3.590	IO					4.21
26.583	0.00	6.16	3.547	IO					4.17
26.667	0.00	6.12	3.505	IO					4.13
26.750	0.00	6.07	3.463	IO					4.09
26.833	0.00	6.03	3.421	IO					4.05
26.917	0.00	5.98	3.380	IO					4.02
27.000	0.00	5.92	3.339	IO					3.98
27.083	0.00	5.84	3.298	IO					3.94
27.167	0.00	5.77	3.258	IO					3.90
27.250	0.00	5.70	3.219	IO					3.86
27.333	0.00	5.62	3.180	IO					3.83
27.417	0.00	5.55	3.141	IO					3.79
27.500	0.00	5.48	3.103	IO					3.75
27.583	0.00	5.41	3.066	IO					3.72

27.667	0.00	5.34	3.029	IO					3.68
27.750	0.00	5.27	2.992	IO					3.65
27.833	0.00	5.20	2.956	IO					3.61
27.917	0.00	5.14	2.921	IO					3.58
28.000	0.00	5.07	2.886	IO					3.54
28.083	0.00	5.01	2.851	IO					3.51
28.167	0.00	4.94	2.817	IO					3.48
28.250	0.00	4.88	2.783	IO					3.45
28.333	0.00	4.82	2.749	IO					3.41
28.417	0.00	4.75	2.717	IO					3.38
28.500	0.00	4.69	2.684	IO					3.35
28.583	0.00	4.63	2.652	IO					3.32
28.667	0.00	4.57	2.620	IO					3.29
28.750	0.00	4.51	2.589	IO					3.26
28.833	0.00	4.46	2.558	IO					3.23
28.917	0.00	4.40	2.528	IO					3.20
29.000	0.00	4.34	2.497	IO					3.17
29.083	0.00	4.29	2.468	IO					3.14
29.167	0.00	4.23	2.438	IO					3.11
29.250	0.00	4.18	2.409	IO					3.09
29.333	0.00	4.12	2.381	O					3.06
29.417	0.00	4.07	2.353	O					3.03
29.500	0.00	4.02	2.325	O					3.00
29.583	0.00	3.97	2.297	O					2.98
29.667	0.00	3.92	2.270	O					2.95
29.750	0.00	3.88	2.243	O					2.92
29.833	0.00	3.83	2.217	O					2.89
29.917	0.00	3.79	2.190	O					2.87
30.000	0.00	3.74	2.164	O					2.84
30.083	0.00	3.70	2.139	O					2.81
30.167	0.00	3.65	2.114	O					2.79
30.250	0.00	3.61	2.089	O					2.76
30.333	0.00	3.57	2.064	O					2.74
30.417	0.00	3.52	2.039	O					2.71
30.500	0.00	3.48	2.015	O					2.69
30.583	0.00	3.44	1.991	O					2.66
30.667	0.00	3.40	1.968	O					2.64
30.750	0.00	3.36	1.945	O					2.61
30.833	0.00	3.32	1.922	O					2.59
30.917	0.00	3.28	1.899	O					2.57
31.000	0.00	3.24	1.876	O					2.54
31.083	0.00	3.20	1.854	O					2.52
31.167	0.00	3.17	1.832	O					2.50
31.250	0.00	3.13	1.811	O					2.47
31.333	0.00	3.09	1.789	O					2.45
31.417	0.00	3.05	1.768	O					2.43
31.500	0.00	3.02	1.747	O					2.41
31.583	0.00	2.98	1.727	O					2.39
31.667	0.00	2.95	1.706	O					2.37
31.750	0.00	2.91	1.686	O					2.35
31.833	0.00	2.88	1.666	O					2.33
31.917	0.00	2.84	1.646	O					2.31
32.000	0.00	2.81	1.627	O					2.29
32.083	0.00	2.78	1.608	O					2.27
32.167	0.00	2.74	1.589	O					2.25
32.250	0.00	2.71	1.570	O					2.23
32.333	0.00	2.68	1.551	O					2.21
32.417	0.00	2.65	1.533	O					2.19
32.500	0.00	2.62	1.515	O					2.17

32.583	0.00	2.58	1.497	O					2.15
32.667	0.00	2.55	1.479	O					2.13
32.750	0.00	2.52	1.462	O					2.12
32.833	0.00	2.49	1.444	O					2.10
32.917	0.00	2.46	1.427	O					2.08
33.000	0.00	2.43	1.410	O					2.06
33.083	0.00	2.41	1.394	O					2.05
33.167	0.00	2.38	1.377	O					2.03
33.250	0.00	2.35	1.361	O					2.01
33.333	0.00	2.32	1.345	O					1.99
33.417	0.00	2.30	1.329	O					1.98
33.500	0.00	2.27	1.313	O					1.96
33.583	0.00	2.25	1.298	O					1.94
33.667	0.00	2.23	1.282	O					1.93
33.750	0.00	2.21	1.267	O					1.91
33.833	0.00	2.18	1.252	O					1.89
33.917	0.00	2.16	1.237	O					1.88
34.000	0.00	2.14	1.222	O					1.86
34.083	0.00	2.12	1.208	O					1.84
34.167	0.00	2.09	1.193	O					1.83
34.250	0.00	2.07	1.179	O					1.81
34.333	0.00	2.05	1.165	O					1.80
34.417	0.00	2.03	1.150	O					1.78
34.500	0.00	2.01	1.137	O					1.77
34.583	0.00	1.99	1.123	O					1.75
34.667	0.00	1.97	1.109	O					1.74
34.750	0.00	1.95	1.096	O					1.72
34.833	0.00	1.93	1.082	O					1.71
34.917	0.00	1.91	1.069	O					1.69
35.000	0.00	1.89	1.056	O					1.68
35.083	0.00	1.87	1.043	O					1.66
35.167	0.00	1.85	1.030	O					1.65
35.250	0.00	1.83	1.018	O					1.63
35.333	0.00	1.81	1.005	O					1.62
35.417	0.00	1.79	0.993	O					1.61
35.500	0.00	1.77	0.980	O					1.59
35.583	0.00	1.76	0.968	O					1.58
35.667	0.00	1.74	0.956	O					1.57
35.750	0.00	1.72	0.944	O					1.55
35.833	0.00	1.70	0.933	O					1.54
35.917	0.00	1.68	0.921	O					1.53
36.000	0.00	1.67	0.909	O					1.52
36.083	0.00	1.65	0.898	O					1.50
36.167	0.00	1.63	0.887	O					1.49
36.250	0.00	1.62	0.875	O					1.48
36.333	0.00	1.60	0.864	O					1.47
36.417	0.00	1.58	0.853	O					1.45
36.500	0.00	1.57	0.843	O					1.44
36.583	0.00	1.55	0.832	O					1.43
36.667	0.00	1.53	0.821	O					1.42
36.750	0.00	1.52	0.811	O					1.41
36.833	0.00	1.50	0.800	O					1.40
36.917	0.00	1.49	0.790	O					1.38
37.000	0.00	1.47	0.780	O					1.37
37.083	0.00	1.46	0.770	O					1.36
37.167	0.00	1.44	0.760	O					1.35
37.250	0.00	1.43	0.750	O					1.34
37.333	0.00	1.41	0.740	O					1.33
37.417	0.00	1.40	0.730	O					1.32

37.500	0.00	1.38	0.721	O					1.31
37.583	0.00	1.37	0.711	O					1.30
37.667	0.00	1.35	0.702	O					1.29
37.750	0.00	1.34	0.693	O					1.28
37.833	0.00	1.33	0.684	O					1.27
37.917	0.00	1.31	0.675	O					1.26
38.000	0.00	1.30	0.666	O					1.25
38.083	0.00	1.29	0.657	O					1.24
38.167	0.00	1.27	0.648	O					1.23
38.250	0.00	1.26	0.639	O					1.22
38.333	0.00	1.25	0.630	O					1.21
38.417	0.00	1.23	0.622	O					1.20
38.500	0.00	1.22	0.613	O					1.19
38.583	0.00	1.21	0.605	O					1.18
38.667	0.00	1.20	0.597	O					1.17
38.750	0.00	1.18	0.589	O					1.16
38.833	0.00	1.17	0.580	O					1.15
38.917	0.00	1.16	0.572	O					1.15
39.000	0.00	1.15	0.565	O					1.14
39.083	0.00	1.14	0.557	O					1.13
39.167	0.00	1.12	0.549	O					1.12
39.250	0.00	1.11	0.541	O					1.11
39.333	0.00	1.10	0.534	O					1.10
39.417	0.00	1.09	0.526	O					1.09
39.500	0.00	1.08	0.519	O					1.09
39.583	0.00	1.07	0.511	O					1.08
39.667	0.00	1.06	0.504	O					1.07
39.750	0.00	1.05	0.497	O					1.06
39.833	0.00	1.03	0.489	O					1.05
39.917	0.00	1.02	0.482	O					1.05
40.000	0.00	1.01	0.475	O					1.04
40.083	0.00	1.00	0.468	O					1.03
40.167	0.00	0.99	0.462	O					1.02
40.250	0.00	0.98	0.455	O					1.02
40.333	0.00	0.97	0.448	O					1.01
40.417	0.00	0.96	0.441	O					1.00
40.500	0.00	0.95	0.435	O					0.99
40.583	0.00	0.93	0.428	O					0.97
40.667	0.00	0.92	0.422	O					0.96
40.750	0.00	0.91	0.416	O					0.94
40.833	0.00	0.89	0.409	O					0.93
40.917	0.00	0.88	0.403	O					0.92
41.000	0.00	0.87	0.397	O					0.90
41.083	0.00	0.85	0.391	O					0.89
41.167	0.00	0.84	0.386	O					0.88
41.250	0.00	0.83	0.380	O					0.86
41.333	0.00	0.82	0.374	O					0.85
41.417	0.00	0.80	0.369	O					0.84
41.500	0.00	0.79	0.363	O					0.83
41.583	0.00	0.78	0.358	O					0.81
41.667	0.00	0.77	0.352	O					0.80
41.750	0.00	0.76	0.347	O					0.79
41.833	0.00	0.75	0.342	O					0.78
41.917	0.00	0.73	0.337	O					0.77
42.000	0.00	0.72	0.332	O					0.75
42.083	0.00	0.71	0.327	O					0.74
42.167	0.00	0.70	0.322	O					0.73
42.250	0.00	0.69	0.317	O					0.72
42.333	0.00	0.68	0.312	O					0.71

42.417	0.00	0.67	0.308	O					0.70
42.500	0.00	0.66	0.303	O					0.69
42.583	0.00	0.65	0.299	O					0.68
42.667	0.00	0.64	0.294	O					0.67
42.750	0.00	0.63	0.290	O					0.66
42.833	0.00	0.62	0.285	O					0.65
42.917	0.00	0.61	0.281	O					0.64
43.000	0.00	0.60	0.277	O					0.63
43.083	0.00	0.60	0.273	O					0.62
43.167	0.00	0.59	0.269	O					0.61
43.250	0.00	0.58	0.265	O					0.60
43.333	0.00	0.57	0.261	O					0.59
43.417	0.00	0.56	0.257	O					0.58
43.500	0.00	0.55	0.253	O					0.58
43.583	0.00	0.54	0.249	O					0.57
43.667	0.00	0.54	0.246	O					0.56
43.750	0.00	0.53	0.242	O					0.55
43.833	0.00	0.52	0.238	O					0.54
43.917	0.00	0.51	0.235	O					0.53
44.000	0.00	0.50	0.231	O					0.53
44.083	0.00	0.50	0.228	O					0.52
44.167	0.00	0.49	0.224	O					0.51
44.250	0.00	0.48	0.221	O					0.50
44.333	0.00	0.48	0.218	O					0.50
44.417	0.00	0.47	0.215	O					0.49
44.500	0.00	0.46	0.211	O					0.48
44.583	0.00	0.45	0.208	O					0.47
44.667	0.00	0.45	0.205	O					0.47
44.750	0.00	0.44	0.202	O					0.46
44.833	0.00	0.43	0.199	O					0.45
44.917	0.00	0.43	0.196	O					0.45
45.000	0.00	0.42	0.193	O					0.44
45.083	0.00	0.42	0.190	O					0.43
45.167	0.00	0.41	0.187	O					0.43
45.250	0.00	0.40	0.185	O					0.42
45.333	0.00	0.40	0.182	O					0.41
45.417	0.00	0.39	0.179	O					0.41
45.500	0.00	0.39	0.176	O					0.40
45.583	0.00	0.38	0.174	O					0.40
45.667	0.00	0.37	0.171	O					0.39
45.750	0.00	0.37	0.169	O					0.38
45.833	0.00	0.36	0.166	O					0.38
45.917	0.00	0.36	0.164	O					0.37
46.000	0.00	0.35	0.161	O					0.37
46.083	0.00	0.35	0.159	O					0.36
46.167	0.00	0.34	0.156	O					0.36
46.250	0.00	0.34	0.154	O					0.35
46.333	0.00	0.33	0.152	O					0.35
46.417	0.00	0.33	0.150	O					0.34
46.500	0.00	0.32	0.147	O					0.33
46.583	0.00	0.32	0.145	O					0.33
46.667	0.00	0.31	0.143	O					0.33
46.750	0.00	0.31	0.141	O					0.32
46.833	0.00	0.30	0.139	O					0.32
46.917	0.00	0.30	0.137	O					0.31
47.000	0.00	0.29	0.135	O					0.31
47.083	0.00	0.29	0.133	O					0.30
47.167	0.00	0.29	0.131	O					0.30
47.250	0.00	0.28	0.129	O					0.29

47.333	0.00	0.28	0.127	O					0.29
47.417	0.00	0.27	0.125	O					0.28
47.500	0.00	0.27	0.123	O					0.28
47.583	0.00	0.26	0.121	O					0.28
47.667	0.00	0.26	0.119	O					0.27
47.750	0.00	0.26	0.118	O					0.27
47.833	0.00	0.25	0.116	O					0.26
47.917	0.00	0.25	0.114	O					0.26
48.000	0.00	0.25	0.112	O					0.26
48.083	0.00	0.24	0.111	O					0.25
48.167	0.00	0.24	0.109	O					0.25
48.250	0.00	0.23	0.107	O					0.24
48.333	0.00	0.23	0.106	O					0.24
48.417	0.00	0.23	0.104	O					0.24
48.500	0.00	0.22	0.103	O					0.23
48.583	0.00	0.22	0.101	O					0.23
48.667	0.00	0.22	0.100	O					0.23
48.750	0.00	0.21	0.098	O					0.22
48.833	0.00	0.21	0.097	O					0.22
48.917	0.00	0.21	0.095	O					0.22
49.000	0.00	0.20	0.094	O					0.21
49.083	0.00	0.20	0.092	O					0.21
49.167	0.00	0.20	0.091	O					0.21
49.250	0.00	0.20	0.090	O					0.20
49.333	0.00	0.19	0.088	O					0.20
49.417	0.00	0.19	0.087	O					0.20
49.500	0.00	0.19	0.086	O					0.19
49.583	0.00	0.18	0.085	O					0.19
49.667	0.00	0.18	0.083	O					0.19
49.750	0.00	0.18	0.082	O					0.19
49.833	0.00	0.18	0.081	O					0.18
49.917	0.00	0.17	0.080	O					0.18
50.000	0.00	0.17	0.078	O					0.18
50.083	0.00	0.17	0.077	O					0.18
50.167	0.00	0.17	0.076	O					0.17
50.250	0.00	0.16	0.075	O					0.17
50.333	0.00	0.16	0.074	O					0.17
50.417	0.00	0.16	0.073	O					0.17
50.500	0.00	0.16	0.072	O					0.16
50.583	0.00	0.15	0.071	O					0.16
50.667	0.00	0.15	0.070	O					0.16
50.750	0.00	0.15	0.068	O					0.16
50.833	0.00	0.15	0.067	O					0.15
50.917	0.00	0.14	0.066	O					0.15
51.000	0.00	0.14	0.065	O					0.15
51.083	0.00	0.14	0.064	O					0.15
51.167	0.00	0.14	0.064	O					0.14
51.250	0.00	0.14	0.063	O					0.14
51.333	0.00	0.13	0.062	O					0.14
51.417	0.00	0.13	0.061	O					0.14
51.500	0.00	0.13	0.060	O					0.14
51.583	0.00	0.13	0.059	O					0.13
51.667	0.00	0.13	0.058	O					0.13
51.750	0.00	0.12	0.057	O					0.13
51.833	0.00	0.12	0.056	O					0.13
51.917	0.00	0.12	0.055	O					0.13
52.000	0.00	0.12	0.055	O					0.12
52.083	0.00	0.12	0.054	O					0.12
52.167	0.00	0.12	0.053	O					0.12

52.250	0.00	0.11	0.052	O					0.12
52.333	0.00	0.11	0.051	O					0.12
52.417	0.00	0.11	0.051	O					0.12
52.500	0.00	0.11	0.050	O					0.11
52.583	0.00	0.11	0.049	O					0.11
52.667	0.00	0.11	0.048	O					0.11
52.750	0.00	0.10	0.048	O					0.11
52.833	0.00	0.10	0.047	O					0.11
52.917	0.00	0.10	0.046	O					0.11
53.000	0.00	0.10	0.046	O					0.10
53.083	0.00	0.10	0.045	O					0.10
53.167	0.00	0.10	0.044	O					0.10
53.250	0.00	0.10	0.044	O					0.10
53.333	0.00	0.09	0.043	O					0.10
53.417	0.00	0.09	0.042	O					0.10
53.500	0.00	0.09	0.042	O					0.09
53.583	0.00	0.09	0.041	O					0.09
53.667	0.00	0.09	0.040	O					0.09
53.750	0.00	0.09	0.040	O					0.09
53.833	0.00	0.09	0.039	O					0.09
53.917	0.00	0.08	0.039	O					0.09
54.000	0.00	0.08	0.038	O					0.09
54.083	0.00	0.08	0.038	O					0.09
54.167	0.00	0.08	0.037	O					0.08
54.250	0.00	0.08	0.036	O					0.08
54.333	0.00	0.08	0.036	O					0.08
54.417	0.00	0.08	0.035	O					0.08
54.500	0.00	0.08	0.035	O					0.08
54.583	0.00	0.07	0.034	O					0.08
54.667	0.00	0.07	0.034	O					0.08
54.750	0.00	0.07	0.033	O					0.08
54.833	0.00	0.07	0.033	O					0.07
54.917	0.00	0.07	0.032	O					0.07
55.000	0.00	0.07	0.032	O					0.07
55.083	0.00	0.07	0.031	O					0.07
55.167	0.00	0.07	0.031	O					0.07
55.250	0.00	0.07	0.030	O					0.07
55.333	0.00	0.07	0.030	O					0.07
55.417	0.00	0.06	0.030	O					0.07
55.500	0.00	0.06	0.029	O					0.07
55.583	0.00	0.06	0.029	O					0.07
55.667	0.00	0.06	0.028	O					0.06
55.750	0.00	0.06	0.028	O					0.06
55.833	0.00	0.06	0.027	O					0.06
55.917	0.00	0.06	0.027	O					0.06
56.000	0.00	0.06	0.027	O					0.06
56.083	0.00	0.06	0.026	O					0.06
56.167	0.00	0.06	0.026	O					0.06
56.250	0.00	0.06	0.025	O					0.06
56.333	0.00	0.05	0.025	O					0.06
56.417	0.00	0.05	0.025	O					0.06
56.500	0.00	0.05	0.024	O					0.06
56.583	0.00	0.05	0.024	O					0.05
56.667	0.00	0.05	0.024	O					0.05
56.750	0.00	0.05	0.023	O					0.05
56.833	0.00	0.05	0.023	O					0.05
56.917	0.00	0.05	0.023	O					0.05
57.000	0.00	0.05	0.022	O					0.05
57.083	0.00	0.05	0.022	O					0.05

57.167	0.00	0.05	0.022	O					0.05
57.250	0.00	0.05	0.021	O					0.05
57.333	0.00	0.05	0.021	O					0.05
57.417	0.00	0.04	0.021	O					0.05
57.500	0.00	0.04	0.020	O					0.05
57.583	0.00	0.04	0.020	O					0.05
57.667	0.00	0.04	0.020	O					0.04
57.750	0.00	0.04	0.019	O					0.04
57.833	0.00	0.04	0.019	O					0.04
57.917	0.00	0.04	0.019	O					0.04
58.000	0.00	0.04	0.019	O					0.04
58.083	0.00	0.04	0.018	O					0.04
58.167	0.00	0.04	0.018	O					0.04
58.250	0.00	0.04	0.018	O					0.04
58.333	0.00	0.04	0.017	O					0.04
58.417	0.00	0.04	0.017	O					0.04
58.500	0.00	0.04	0.017	O					0.04
58.583	0.00	0.04	0.017	O					0.04
58.667	0.00	0.04	0.016	O					0.04
58.750	0.00	0.04	0.016	O					0.04
58.833	0.00	0.03	0.016	O					0.04
58.917	0.00	0.03	0.016	O					0.04
59.000	0.00	0.03	0.015	O					0.04
59.083	0.00	0.03	0.015	O					0.03
59.167	0.00	0.03	0.015	O					0.03
59.250	0.00	0.03	0.015	O					0.03
59.333	0.00	0.03	0.015	O					0.03
59.417	0.00	0.03	0.014	O					0.03
59.500	0.00	0.03	0.014	O					0.03
59.583	0.00	0.03	0.014	O					0.03
59.667	0.00	0.03	0.014	O					0.03
59.750	0.00	0.03	0.014	O					0.03
59.833	0.00	0.03	0.013	O					0.03
59.917	0.00	0.03	0.013	O					0.03
60.000	0.00	0.03	0.013	O					0.03
60.083	0.00	0.03	0.013	O					0.03
60.167	0.00	0.03	0.013	O					0.03
60.250	0.00	0.03	0.012	O					0.03
60.333	0.00	0.03	0.012	O					0.03
60.417	0.00	0.03	0.012	O					0.03
60.500	0.00	0.03	0.012	O					0.03
60.583	0.00	0.03	0.012	O					0.03
60.667	0.00	0.02	0.011	O					0.03
60.750	0.00	0.02	0.011	O					0.03
60.833	0.00	0.02	0.011	O					0.03
60.917	0.00	0.02	0.011	O					0.02
61.000	0.00	0.02	0.011	O					0.02
61.083	0.00	0.02	0.011	O					0.02
61.167	0.00	0.02	0.010	O					0.02
61.250	0.00	0.02	0.010	O					0.02
61.333	0.00	0.02	0.010	O					0.02
61.417	0.00	0.02	0.010	O					0.02
61.500	0.00	0.02	0.010	O					0.02
61.583	0.00	0.02	0.010	O					0.02
61.667	0.00	0.02	0.010	O					0.02
61.750	0.00	0.02	0.009	O					0.02
61.833	0.00	0.02	0.009	O					0.02
61.917	0.00	0.02	0.009	O					0.02
62.000	0.00	0.02	0.009	O					0.02

62.083	0.00	0.02	0.009	O					0.02
62.167	0.00	0.02	0.009	O					0.02
62.250	0.00	0.02	0.009	O					0.02
62.333	0.00	0.02	0.008	O					0.02
62.417	0.00	0.02	0.008	O					0.02
62.500	0.00	0.02	0.008	O					0.02
62.583	0.00	0.02	0.008	O					0.02
62.667	0.00	0.02	0.008	O					0.02
62.750	0.00	0.02	0.008	O					0.02
62.833	0.00	0.02	0.008	O					0.02
62.917	0.00	0.02	0.008	O					0.02
63.000	0.00	0.02	0.008	O					0.02
63.083	0.00	0.02	0.007	O					0.02
63.167	0.00	0.02	0.007	O					0.02
63.250	0.00	0.02	0.007	O					0.02
63.333	0.00	0.02	0.007	O					0.02
63.417	0.00	0.02	0.007	O					0.02
63.500	0.00	0.01	0.007	O					0.02
63.583	0.00	0.01	0.007	O					0.02
63.667	0.00	0.01	0.007	O					0.02
63.750	0.00	0.01	0.007	O					0.01
63.833	0.00	0.01	0.006	O					0.01
63.917	0.00	0.01	0.006	O					0.01
64.000	0.00	0.01	0.006	O					0.01
64.083	0.00	0.01	0.006	O					0.01
64.167	0.00	0.01	0.006	O					0.01
64.250	0.00	0.01	0.006	O					0.01
64.333	0.00	0.01	0.006	O					0.01
64.417	0.00	0.01	0.006	O					0.01
64.500	0.00	0.01	0.006	O					0.01
64.583	0.00	0.01	0.006	O					0.01
64.667	0.00	0.01	0.006	O					0.01
64.750	0.00	0.01	0.005	O					0.01
64.833	0.00	0.01	0.005	O					0.01
64.917	0.00	0.01	0.005	O					0.01
65.000	0.00	0.01	0.005	O					0.01
65.083	0.00	0.01	0.005	O					0.01
65.167	0.00	0.01	0.005	O					0.01
65.250	0.00	0.01	0.005	O					0.01
65.333	0.00	0.01	0.005	O					0.01
65.417	0.00	0.01	0.005	O					0.01
65.500	0.00	0.01	0.005	O					0.01
65.583	0.00	0.01	0.005	O					0.01
65.667	0.00	0.01	0.005	O					0.01
65.750	0.00	0.01	0.005	O					0.01
65.833	0.00	0.01	0.005	O					0.01
65.917	0.00	0.01	0.004	O					0.01
66.000	0.00	0.01	0.004	O					0.01
66.083	0.00	0.01	0.004	O					0.01
66.167	0.00	0.01	0.004	O					0.01
66.250	0.00	0.01	0.004	O					0.01
66.333	0.00	0.01	0.004	O					0.01
66.417	0.00	0.01	0.004	O					0.01
66.500	0.00	0.01	0.004	O					0.01
66.583	0.00	0.01	0.004	O					0.01
66.667	0.00	0.01	0.004	O					0.01
66.750	0.00	0.01	0.004	O					0.01
66.833	0.00	0.01	0.004	O					0.01
66.917	0.00	0.01	0.004	O					0.01

67.000	0.00	0.01	0.004	O					0.01
67.083	0.00	0.01	0.004	O					0.01
67.167	0.00	0.01	0.004	O					0.01
67.250	0.00	0.01	0.003	O					0.01
67.333	0.00	0.01	0.003	O					0.01
67.417	0.00	0.01	0.003	O					0.01
67.500	0.00	0.01	0.003	O					0.01
67.583	0.00	0.01	0.003	O					0.01
67.667	0.00	0.01	0.003	O					0.01
67.750	0.00	0.01	0.003	O					0.01
67.833	0.00	0.01	0.003	O					0.01
67.917	0.00	0.01	0.003	O					0.01
68.000	0.00	0.01	0.003	O					0.01
68.083	0.00	0.01	0.003	O					0.01
68.167	0.00	0.01	0.003	O					0.01
68.250	0.00	0.01	0.003	O					0.01
68.333	0.00	0.01	0.003	O					0.01
68.417	0.00	0.01	0.003	O					0.01
68.500	0.00	0.01	0.003	O					0.01
68.583	0.00	0.01	0.003	O					0.01
68.667	0.00	0.01	0.003	O					0.01
68.750	0.00	0.01	0.003	O					0.01
68.833	0.00	0.01	0.003	O					0.01
68.917	0.00	0.01	0.003	O					0.01
69.000	0.00	0.01	0.003	O					0.01
69.083	0.00	0.01	0.003	O					0.01
69.167	0.00	0.01	0.002	O					0.01
69.250	0.00	0.01	0.002	O					0.01
69.333	0.00	0.01	0.002	O					0.01
69.417	0.00	0.01	0.002	O					0.01
69.500	0.00	0.01	0.002	O					0.01
69.583	0.00	0.01	0.002	O					0.01
69.667	0.00	0.00	0.002	O					0.01
69.750	0.00	0.00	0.002	O					0.01
69.833	0.00	0.00	0.002	O					0.00
69.917	0.00	0.00	0.002	O					0.00
70.000	0.00	0.00	0.002	O					0.00
70.083	0.00	0.00	0.002	O					0.00
70.167	0.00	0.00	0.002	O					0.00
70.250	0.00	0.00	0.002	O					0.00
70.333	0.00	0.00	0.002	O					0.00
70.417	0.00	0.00	0.002	O					0.00
70.500	0.00	0.00	0.002	O					0.00
70.583	0.00	0.00	0.002	O					0.00
70.667	0.00	0.00	0.002	O					0.00
70.750	0.00	0.00	0.002	O					0.00
70.833	0.00	0.00	0.002	O					0.00
70.917	0.00	0.00	0.002	O					0.00
71.000	0.00	0.00	0.002	O					0.00
71.083	0.00	0.00	0.002	O					0.00
71.167	0.00	0.00	0.002	O					0.00
71.250	0.00	0.00	0.002	O					0.00
71.333	0.00	0.00	0.002	O					0.00
71.417	0.00	0.00	0.002	O					0.00
71.500	0.00	0.00	0.002	O					0.00
71.583	0.00	0.00	0.002	O					0.00
71.667	0.00	0.00	0.002	O					0.00
71.750	0.00	0.00	0.002	O					0.00
71.833	0.00	0.00	0.002	O					0.00

71.917	0.00	0.00	0.002	0					0.00
72.000	0.00	0.00	0.001	0					0.00
72.083	0.00	0.00	0.001	0					0.00
72.167	0.00	0.00	0.001	0					0.00
72.250	0.00	0.00	0.001	0					0.00
72.333	0.00	0.00	0.001	0					0.00
72.417	0.00	0.00	0.001	0					0.00
72.500	0.00	0.00	0.001	0					0.00
72.583	0.00	0.00	0.001	0					0.00
72.667	0.00	0.00	0.001	0					0.00
72.750	0.00	0.00	0.001	0					0.00
72.833	0.00	0.00	0.001	0					0.00
72.917	0.00	0.00	0.001	0					0.00
73.000	0.00	0.00	0.001	0					0.00
73.083	0.00	0.00	0.001	0					0.00
73.167	0.00	0.00	0.001	0					0.00
73.250	0.00	0.00	0.001	0					0.00
73.333	0.00	0.00	0.001	0					0.00
73.417	0.00	0.00	0.001	0					0.00
73.500	0.00	0.00	0.001	0					0.00
73.583	0.00	0.00	0.001	0					0.00
73.667	0.00	0.00	0.001	0					0.00
73.750	0.00	0.00	0.001	0					0.00
73.833	0.00	0.00	0.001	0					0.00
73.917	0.00	0.00	0.001	0					0.00
74.000	0.00	0.00	0.001	0					0.00
74.083	0.00	0.00	0.001	0					0.00
74.167	0.00	0.00	0.001	0					0.00
74.250	0.00	0.00	0.001	0					0.00
74.333	0.00	0.00	0.001	0					0.00
74.417	0.00	0.00	0.001	0					0.00
74.500	0.00	0.00	0.001	0					0.00
74.583	0.00	0.00	0.001	0					0.00
74.667	0.00	0.00	0.001	0					0.00
74.750	0.00	0.00	0.001	0					0.00
74.833	0.00	0.00	0.001	0					0.00
74.917	0.00	0.00	0.001	0					0.00
75.000	0.00	0.00	0.001	0					0.00
75.083	0.00	0.00	0.001	0					0.00
75.167	0.00	0.00	0.001	0					0.00
75.250	0.00	0.00	0.001	0					0.00
75.333	0.00	0.00	0.001	0					0.00
75.417	0.00	0.00	0.001	0					0.00
75.500	0.00	0.00	0.001	0					0.00
75.583	0.00	0.00	0.001	0					0.00
75.667	0.00	0.00	0.001	0					0.00
75.750	0.00	0.00	0.001	0					0.00
75.833	0.00	0.00	0.001	0					0.00
75.917	0.00	0.00	0.001	0					0.00
76.000	0.00	0.00	0.001	0					0.00
76.083	0.00	0.00	0.001	0					0.00
76.167	0.00	0.00	0.001	0					0.00
76.250	0.00	0.00	0.001						

76.833	0.00	0.00	0.001	O					0.00
76.917	0.00	0.00	0.001	O					0.00
77.000	0.00	0.00	0.001	O					0.00
77.083	0.00	0.00	0.001	O					0.00
77.167	0.00	0.00	0.001	O					0.00
77.250	0.00	0.00	0.001	O					0.00
77.333	0.00	0.00	0.001	O					0.00
77.417	0.00	0.00	0.001	O					0.00
77.500	0.00	0.00	0.001	O					0.00
77.583	0.00	0.00	0.001	O					0.00
77.667	0.00	0.00	0.001	O					0.00
77.750	0.00	0.00	0.001	O					0.00
77.833	0.00	0.00	0.001	O					0.00
77.917	0.00	0.00	0.001	O					0.00
78.000	0.00	0.00	0.001	O					0.00
78.083	0.00	0.00	0.000	O					0.00
78.167	0.00	0.00	0.000	O					0.00
78.250	0.00	0.00	0.000	O					0.00
78.333	0.00	0.00	0.000	O					0.00
78.417	0.00	0.00	0.000	O					0.00
78.500	0.00	0.00	0.000	O					0.00
78.583	0.00	0.00	0.000	O					0.00

*****HYDROGRAPH DATA*****

Number of intervals = 943
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 9.141 (CFS)
Total volume = 14.414 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	35.942	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	18.323	0.000	0.000	0.000	0.000

++++++
Process from Point/Station 4.000 to Point/Station 3.000
**** ADD/COMBINE/RECOVER HYDROGRAPHS ****

From stored stream number 1 the total
volume of 18.32 (Ac.Ft) is being added to the
current hydrograph at its original rate from user
with a delay time to start of addition of 0.00 hours.

++++++

P R I N T O F S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals (CFS)

Time (h+m)	Add q (CFS)	Tot. Q	0	11.2	22.4	33.6	44.9
0+ 5	0.0115	0.01	Q				
0+10	0.0983	0.12	Q				
0+15	0.3494	0.41	Q				
0+20	0.7489	0.85	Q				
0+25	1.1926	1.34	Q				

0+30	1.6077	1.80	Q				
0+35	1.9722	2.21	Q				
0+40	2.2870	2.57	Q				
0+45	2.5568	2.88	Q				
0+50	2.7871	3.15	Q				
0+55	2.9837	3.39	qQ				
1+ 0	3.1520	3.60	qQ				
1+ 5	3.2962	3.79	qQ				
1+10	3.4202	3.95	Q				
1+15	3.5270	4.10	Q				
1+20	3.6193	4.23	Q				
1+25	3.6994	4.35	Q				
1+30	3.7691	4.46	Q				
1+35	3.8302	4.56	qQ				
1+40	3.8839	4.65	qQ				
1+45	3.9313	4.73	qQ				
1+50	3.9736	4.81	qQ				
1+55	4.0115	4.89	qQ				
2+ 0	4.0456	4.96	qQ				
2+ 5	4.0767	5.03	qQ				
2+10	4.1051	5.08	qQ				
2+15	4.1314	5.13	qQ				
2+20	4.1558	5.18	qQ				
2+25	4.1787	5.23	qQ				
2+30	4.2003	5.27	qQ				
2+35	4.2209	5.32	qQ				
2+40	4.2406	5.36	qQ				
2+45	4.2596	5.41	qQ				
2+50	4.2780	5.45	qQ				
2+55	4.2960	5.49	qQ				
3+ 0	4.3135	5.53	qQ				
3+ 5	4.3308	5.57	qQ				
3+10	4.3479	5.61	q Q				
3+15	4.3648	5.65	q Q				
3+20	4.3816	5.69	q Q				
3+25	4.3983	5.73	q Q				
3+30	4.4149	5.77	q Q				
3+35	4.4316	5.81	q Q				
3+40	4.4483	5.85	q Q				
3+45	4.4651	5.89	q Q				
3+50	4.4819	5.93	q Q				
3+55	4.4988	5.96	qQ				
4+ 0	4.5158	6.00	qQ				
4+ 5	4.5329	6.04	qQ				
4+10	4.5501	6.08	qQ				
4+15	4.5675	6.12	qQ				
4+20	4.5850	6.16	qQ				
4+25	4.6027	6.20	qQ				
4+30	4.6205	6.24	qQ				
4+35	4.6385	6.28	qQ				
4+40	4.6567	6.32	qQ				
4+45	4.6751	6.36	qQ				
4+50	4.6936	6.40	qQ				
4+55	4.7124	6.44	qQ				
5+ 0	4.7313	6.48	qQ				
5+ 5	4.7504	6.52	qQ				
5+10	4.7698	6.56	qQ				
5+15	4.7894	6.60	qQ				
5+20	4.8091	6.64	qQ				

5+25	4.8292	6.68		qQ					
5+30	4.8494	6.72		qQ					
5+35	4.8699	6.77		q Q					
5+40	4.8906	6.81		q Q					
5+45	4.9115	6.85		q Q					
5+50	4.9327	6.89		q Q					
5+55	4.9542	6.93		q Q					
6+ 0	4.9759	6.98		q Q					
6+ 5	4.9979	7.02		q Q					
6+10	5.0201	7.06		q Q					
6+15	5.0427	7.10		q Q					
6+20	5.0655	7.15		q Q					
6+25	5.0886	7.19		q Q					
6+30	5.1120	7.24		q Q					
6+35	5.1357	7.28		q Q					
6+40	5.1597	7.33		q Q					
6+45	5.1840	7.37		q Q					
6+50	5.2086	7.42		q Q					
6+55	5.2336	7.46		q Q					
7+ 0	5.2589	7.51		q Q					
7+ 5	5.2845	7.55		q Q					
7+10	5.3105	7.60		q Q					
7+15	5.3369	7.65		q Q					
7+20	5.3636	7.70		q Q					
7+25	5.3907	7.75		q Q					
7+30	5.4181	7.80		q Q					
7+35	5.4460	7.85		q Q					
7+40	5.4743	7.90		q Q					
7+45	5.5029	7.95		q Q					
7+50	5.5320	8.01		q Q					
7+55	5.5616	8.06		q Q					
8+ 0	5.5915	8.11		q Q					
8+ 5	5.6220	8.17		q Q					
8+10	5.6528	8.22		q Q					
8+15	5.6842	8.28		q Q					
8+20	5.7161	8.34		q Q					
8+25	5.7484	8.39		q Q					
8+30	5.7813	8.45		q Q					
8+35	5.8147	8.51		q Q					
8+40	5.8486	8.56		q Q					
8+45	5.8831	8.62		q Q					
8+50	5.9182	8.68		q Q					
8+55	5.9538	8.74		q Q					
9+ 0	5.9901	8.80		q Q					
9+ 5	6.0269	8.87		q Q					
9+10	6.0644	8.93		q Q					
9+15	6.1026	8.99		q Q					
9+20	6.1415	9.05		q Q					
9+25	6.1810	9.12		q Q					
9+30	6.2212	9.18		q Q					
9+35	6.2622	9.25		q Q					
9+40	6.3040	9.32		q Q					
9+45	6.3465	9.39		q Q					
9+50	6.3899	9.46		q Q					
9+55	6.4340	9.53		q Q					
10+ 0	6.4791	9.60		q Q					
10+ 5	6.5250	9.67		q Q					
10+10	6.5718	9.74		q Q					
10+15	6.6196	9.82		q Q					

10+20	6.6684	9.89		q	Q						
10+25	6.7182	9.97		q	Q						
10+30	6.7690	10.05		q	Q						
10+35	6.8209	10.13		q	Q						
10+40	6.8740	10.21		q	Q						
10+45	6.9282	10.29		q	Q						
10+50	6.9836	10.37		q	Q						
10+55	7.0402	10.46		q	Q						
11+ 0	7.0982	10.54		q	Q						
11+ 5	7.1575	10.63		q	Q						
11+10	7.2182	10.72		q	Q						
11+15	7.2804	10.82		q	Q						
11+20	7.3441	10.91		q	Q						
11+25	7.4094	11.00		q	Q						
11+30	7.4763	11.10		q	Q						
11+35	7.5449	11.20		q	Q						
11+40	7.6153	11.30		q	Q						
11+45	7.6876	11.41		q	Q						
11+50	7.7618	11.51		q	Q						
11+55	7.8380	11.62		q	Q						
12+ 0	7.9164	11.74		q	Q						
12+ 5	7.9990	11.85		q	Q						
12+10	8.0680	11.96		q	Q						
12+15	8.1688	12.11		q	Q						
12+20	8.3072	12.29		q	Q						
12+25	8.4639	12.50		q	Q						
12+30	8.6244	12.72		q	Q						
12+35	8.7833	12.93		q	Q						
12+40	8.9397	13.14		q	Q						
12+45	9.0936	13.35		q	Q						
12+50	9.2453	13.56		q	Q						
12+55	9.3953	13.76		q	Q						
13+ 0	9.5441	13.97		q	Q						
13+ 5	9.6923	14.18		q	Q						
13+10	9.8403	14.38		q	Q						
13+15	9.9888	14.59		q	Q						
13+20	10.1383	14.80		q	Q						
13+25	10.2891	15.01		q	Q						
13+30	10.4418	15.23		q	Q						
13+35	10.5969	15.45		q	Q						
13+40	10.7550	15.67		q	Q						
13+45	10.9165	15.90		q	Q						
13+50	11.0820	16.13		q	Q						
13+55	11.2521	16.37		q	Q						
14+ 0	11.4274	16.62		q	Q						
14+ 5	11.6086	16.87		q	Q						
14+10	11.7966	17.13		q	Q						
14+15	11.9928	17.40		q	Q						
14+20	12.1979	17.69		q	Q						
14+25	12.4125	17.98		q	Q						
14+30	12.6370	18.29		q	Q						
14+35	12.8727	18.61		q	Q						
14+40	13.1209	18.95		q	Q						
14+45	13.3829	19.31		q	Q						
14+50	13.6606	19.65		q	Q						
14+55	13.9561	20.01		q	Q						
15+ 0	14.2717	20.39		q	Q						
15+ 5	14.6104	20.79		q	Q						
15+10	14.9757	21.22		q	Q						

15+15	15.3718	21.69			q	Q		
15+20	15.8042	22.20			q	Q		
15+25	16.2718	22.75			q	Q		
15+30	16.7124	23.27			q	Q		
15+35	17.0524	23.68			q	Q		
15+40	17.3546	24.07			q	Q		
15+45	17.7076	24.51			q	Q		
15+50	18.1922	25.11			q	Q		
15+55	18.8921	25.95			q	Q		
16+ 0	19.9505	27.19			q	Q		
16+ 5	21.8055	29.33			q	Q		
16+10	25.3364	33.42			q	Q		
16+15	30.4247	38.99			q	Q		
16+20	34.0522	42.84			q	Q		
16+25	35.6596	44.53			q	Q		
16+30	35.9416	44.86			q	Q		
16+35	35.6534	44.62			q	Q		
16+40	35.1736	44.17			q	Q		
16+45	34.5910	43.62			q	Q		
16+50	33.9402	43.00			q	Q		
16+55	33.2531	42.33			q	Q		
17+ 0	32.5457	41.64			q	Q		
17+ 5	31.7564	40.86			q	Q		
17+10	30.7852	39.90			q	Q		
17+15	29.7960	38.92			q	Q		
17+20	28.8294	37.96			q	Q		
17+25	27.8889	37.02			q	Q		
17+30	26.9765	36.12			q	Q		
17+35	26.0938	35.23			q	Q		
17+40	25.2414	34.38			q	Q		
17+45	24.4155	33.56			q	Q		
17+50	23.5576	32.70			q	Q		
17+55	22.7244	31.86			q	Q		
18+ 0	21.9290	31.06			q	Q		
18+ 5	21.1682	30.30			q	Q		
18+10	20.4302	29.55			q	Q		
18+15	19.6984	28.81			q	Q		
18+20	18.9717	28.08			q	Q		
18+25	18.2642	27.36			q	Q		
18+30	17.5862	26.66			q	Q		
18+35	16.9407	26.00			q	Q		
18+40	16.2426	25.29			q	Q		
18+45	15.5380	24.57			q	Q		
18+50	14.8734	23.89			q	Q		
18+55	14.2529	23.25			q	Q		
19+ 0	13.6735	22.66			q	Q		
19+ 5	13.1321	22.10			q	Q		
19+10	12.6261	21.58			q	Q		
19+15	12.1530	21.09			q	Q		
19+20	11.7104	20.62			q	Q		
19+25	11.2961	20.19			q	Q		
19+30	10.9082	19.79			q	Q		
19+35	10.5447	19.40			q	Q		
19+40	10.2040	19.04			q	Q		
19+45	9.8844	18.71			q	Q		
19+50	9.5844	18.39			q	Q		
19+55	9.3026	18.08			q	Q		
20+ 0	9.0378	17.80			q	Q		
20+ 5	8.7887	17.53			q	Q		

20+10	8.5543	17.28		q		Q			
20+15	8.3335	17.03		q		Q			
20+20	8.1255	16.81		q		Q			
20+25	7.8500	16.51		q		Q			
20+30	7.5331	16.17		q		Q			
20+35	7.2439	15.86		q		Q			
20+40	6.9898	15.59		q		Q			
20+45	6.7658	15.34		q		Q			
20+50	6.5674	15.12		q		Q			
20+55	6.3909	14.92		q		Q			
21+ 0	6.2332	14.74		q		Q			
21+ 5	6.0917	14.58		q		Q			
21+10	5.9640	14.43		q		Q			
21+15	5.8482	14.29		q		Q			
21+20	5.7428	14.17		q		Q			
21+25	5.6462	14.05		q		Q			
21+30	5.5574	13.94		q		Q			
21+35	5.4753	13.83		q		Q			
21+40	5.3990	13.74		q		Q			
21+45	5.3278	13.64		q		Q			
21+50	5.2611	13.55		q		Q			
21+55	5.1983	13.47		q		Q			
22+ 0	5.1390	13.39		q		Q			
22+ 5	5.0827	13.31		q		Q			
22+10	5.0292	13.23		q		Q			
22+15	4.9782	13.15		q		Q			
22+20	4.9293	13.08		q		Q			
22+25	4.8825	13.00		q		Q			
22+30	4.8374	12.93		q		Q			
22+35	4.7939	12.86		q		Q			
22+40	4.7520	12.79		q		Q			
22+45	4.7114	12.73		q		Q			
22+50	4.6720	12.66		q		Q			
22+55	4.6338	12.59		q		Q			
23+ 0	4.5967	12.53		q		Q			
23+ 5	4.5606	12.47		q		Q			
23+10	4.5254	12.41		q		Q			
23+15	4.4911	12.34		q		Q			
23+20	4.4577	12.28		q		Q			
23+25	4.4250	12.23		q		Q			
23+30	4.3931	12.17		q		Q			
23+35	4.3619	12.11		q		Q			
23+40	4.3313	12.05		q		Q			
23+45	4.3014	12.00		q		Q			
23+50	4.2721	11.94		q		Q			
23+55	4.2434	11.88		q		Q			
24+ 0	4.2153	11.83		q		Q			
24+ 5	4.1762	11.76		q		Q			
24+10	4.0625	11.62		q		Q			
24+15	3.7862	11.30		q		Q			
24+20	3.3642	10.83		q		Q			
24+25	2.9020	10.33		q		Q			
24+30	2.4727	9.85		q		Q			
24+35	2.0979	9.43		q		Q			
24+40	1.7762	9.07		q		Q			
24+45	1.5024	8.75		q		Q			
24+50	1.2706	8.48		q		Q			
24+55	1.0746	8.24		q		Q			
25+ 0	0.9088	8.02		q		Q			

25+ 5	0.7686	7.82	q	Q				
25+10	0.6500	7.65	q	Q				
25+15	0.5497	7.50	q	Q				
25+20	0.4649	7.36	q	Q				
25+25	0.3932	7.24	q	Q				
25+30	0.3325	7.13	q	Q				
25+35	0.2812	7.03	q	Q				
25+40	0.2379	6.93	q	Q				
25+45	0.2012	6.85	q	Q				
25+50	0.1701	6.76	q	Q				
25+55	0.1439	6.69	q	Q				
26+ 0	0.1217	6.62	q	Q				
26+ 5	0.1029	6.55	q	Q				
26+10	0.0870	6.49	q	Q				
26+15	0.0736	6.43	q	Q				
26+20	0.0623	6.37	q	Q				
26+25	0.0526	6.31	q	Q				
26+30	0.0445	6.25	q	Q				
26+35	0.0377	6.20	q	Q				
26+40	0.0318	6.15	q	Q				
26+45	0.0269	6.10	q	Q				
26+50	0.0228	6.05	q	Q				
26+55	0.0193	6.00	q	Q				
27+ 0	0.0163	5.94	q	Q				
27+ 5	0.0138	5.86	q	Q				
27+10	0.0117	5.78	q	Q				
27+15	0.0099	5.71	q	Q				
27+20	0.0083	5.63	q	Q				
27+25	0.0070	5.56	q	Q				
27+30	0.0012	5.48	q	Q				
27+35	0.0000	5.41	q	Q				
27+40	0.0000	5.34	q	Q				
27+45	0.0000	5.27	q	Q				
27+50	0.0000	5.20	q	Q				
27+55	0.0000	5.14	q	Q				
28+ 0	0.0000	5.07	q	Q				
28+ 5	0.0000	5.01	q	Q				
28+10	0.0000	4.94	q	Q				
28+15	0.0000	4.88	q	Q				
28+20	0.0000	4.82	q	Q				
28+25	0.0000	4.75	q	Q				
28+30	0.0000	4.69	q	Q				
28+35	0.0000	4.63	q	Q				
28+40	0.0000	4.57	q	Q				
28+45	0.0000	4.51	q	Q				
28+50	0.0000	4.46	q	Q				
28+55	0.0000	4.40	q	Q				
29+ 0	0.0000	4.34	q	Q				
29+ 5	0.0000	4.29	q	Q				
29+10	0.0000	4.23	q	Q				
29+15	0.0000	4.18	q	Q				
29+20	0.0000	4.12	q	Q				
29+25	0.0000	4.07	q	Q				
29+30	0.0000	4.02	q	Q				
29+35	0.0000	3.97	q	Q				
29+40	0.0000	3.92	q	Q				
29+45	0.0000	3.88	q	Q				
29+50	0.0000	3.83	q	Q				
29+55	0.0000	3.79	q	Q				

30+ 0	0.0000	3.74	q	Q				
30+ 5	0.0000	3.70	q	Q				
30+10	0.0000	3.65	q	Q				
30+15	0.0000	3.61	q	Q				
30+20	0.0000	3.57	q	Q				
30+25	0.0000	3.52	q	Q				
30+30	0.0000	3.48	q	Q				
30+35	0.0000	3.44	q	Q				
30+40	0.0000	3.40	q	Q				
30+45	0.0000	3.36	q	Q				
30+50	0.0000	3.32	q	Q				
30+55	0.0000	3.28	q	Q				
31+ 0	0.0000	3.24	q	Q				
31+ 5	0.0000	3.20	q	Q				
31+10	0.0000	3.17	q	Q				
31+15	0.0000	3.13	q	Q				
31+20	0.0000	3.09	q	Q				
31+25	0.0000	3.05	q	Q				
31+30	0.0000	3.02	q	Q				
31+35	0.0000	2.98	q	Q				
31+40	0.0000	2.95	q	Q				
31+45	0.0000	2.91	q	Q				
31+50	0.0000	2.88	q	Q				
31+55	0.0000	2.84	q	Q				
32+ 0	0.0000	2.81	q	Q				
32+ 5	0.0000	2.78	q	Q				
32+10	0.0000	2.74	q	Q				
32+15	0.0000	2.71	q	Q				
32+20	0.0000	2.68	q	Q				
32+25	0.0000	2.65	q	Q				
32+30	0.0000	2.62	q	Q				
32+35	0.0000	2.58	q	Q				
32+40	0.0000	2.55	q	Q				
32+45	0.0000	2.52	q	Q				
32+50	0.0000	2.49	q	Q				
32+55	0.0000	2.46	q	Q				
33+ 0	0.0000	2.43	q	Q				
33+ 5	0.0000	2.41	q	Q				
33+10	0.0000	2.38	q	Q				
33+15	0.0000	2.35	q	Q				
33+20	0.0000	2.32	q	Q				
33+25	0.0000	2.30	q	Q				
33+30	0.0000	2.27	q	Q				
33+35	0.0000	2.25	q	Q				
33+40	0.0000	2.23	qQ					
33+45	0.0000	2.21	qQ					
33+50	0.0000	2.18	qQ					
33+55	0.0000	2.16	qQ					
34+ 0	0.0000	2.14	qQ					
34+ 5	0.0000	2.12	qQ					
34+10	0.0000	2.09	qQ					
34+15	0.0000	2.07	qQ					
34+20	0.0000	2.05	qQ					
34+25	0.0000	2.03	qQ					
34+30	0.0000	2.01	qQ					
34+35	0.0000	1.99	qQ					
34+40	0.0000	1.97	qQ					
34+45	0.0000	1.95	qQ					
34+50	0.0000	1.93	qQ					

34+55	0.0000	1.91	qQ				
35+ 0	0.0000	1.89	qQ				
35+ 5	0.0000	1.87	qQ				
35+10	0.0000	1.85	qQ				
35+15	0.0000	1.83	qQ				
35+20	0.0000	1.81	qQ				
35+25	0.0000	1.79	qQ				
35+30	0.0000	1.77	qQ				
35+35	0.0000	1.76	qQ				
35+40	0.0000	1.74	qQ				
35+45	0.0000	1.72	qQ				
35+50	0.0000	1.70	qQ				
35+55	0.0000	1.68	qQ				
36+ 0	0.0000	1.67	qQ				
36+ 5	0.0000	1.65	qQ				
36+10	0.0000	1.63	qQ				
36+15	0.0000	1.62	qQ				
36+20	0.0000	1.60	qQ				
36+25	0.0000	1.58	qQ				
36+30	0.0000	1.57	qQ				
36+35	0.0000	1.55	qQ				
36+40	0.0000	1.53	qQ				
36+45	0.0000	1.52	qQ				
36+50	0.0000	1.50	qQ				
36+55	0.0000	1.49	qQ				
37+ 0	0.0000	1.47	qQ				
37+ 5	0.0000	1.46	qQ				
37+10	0.0000	1.44	qQ				
37+15	0.0000	1.43	qQ				
37+20	0.0000	1.41	qQ				
37+25	0.0000	1.40	qQ				
37+30	0.0000	1.38	qQ				
37+35	0.0000	1.37	qQ				
37+40	0.0000	1.35	qQ				
37+45	0.0000	1.34	qQ				
37+50	0.0000	1.33	qQ				
37+55	0.0000	1.31	qQ				
38+ 0	0.0000	1.30	qQ				
38+ 5	0.0000	1.29	qQ				
38+10	0.0000	1.27	qQ				
38+15	0.0000	1.26	qQ				
38+20	0.0000	1.25	qQ				
38+25	0.0000	1.23	qQ				
38+30	0.0000	1.22	qQ				
38+35	0.0000	1.21	qQ				
38+40	0.0000	1.20	qQ				
38+45	0.0000	1.18	qQ				
38+50	0.0000	1.17	qQ				
38+55	0.0000	1.16	qQ				
39+ 0	0.0000	1.15	qQ				
39+ 5	0.0000	1.14	qQ				
39+10	0.0000	1.12	qQ				
39+15	0.0000	1.11	Q				
39+20	0.0000	1.10	Q				
39+25	0.0000	1.09	Q				
39+30	0.0000	1.08	Q				
39+35	0.0000	1.07	Q				
39+40	0.0000	1.06	Q				
39+45	0.0000	1.05	Q				

39+50	0.0000	1.03	Q				
39+55	0.0000	1.02	Q				
40+ 0	0.0000	1.01	Q				
40+ 5	0.0000	1.00	Q				
40+10	0.0000	0.99	Q				
40+15	0.0000	0.98	Q				
40+20	0.0000	0.97	Q				
40+25	0.0000	0.96	Q				
40+30	0.0000	0.95	Q				
40+35	0.0000	0.93	Q				
40+40	0.0000	0.92	Q				
40+45	0.0000	0.91	Q				
40+50	0.0000	0.89	Q				
40+55	0.0000	0.88	Q				
41+ 0	0.0000	0.87	Q				
41+ 5	0.0000	0.85	Q				
41+10	0.0000	0.84	Q				
41+15	0.0000	0.83	Q				
41+20	0.0000	0.82	Q				
41+25	0.0000	0.80	Q				
41+30	0.0000	0.79	Q				
41+35	0.0000	0.78	Q				
41+40	0.0000	0.77	Q				
41+45	0.0000	0.76	Q				
41+50	0.0000	0.75	Q				
41+55	0.0000	0.73	Q				
42+ 0	0.0000	0.72	Q				
42+ 5	0.0000	0.71	Q				
42+10	0.0000	0.70	Q				
42+15	0.0000	0.69	Q				
42+20	0.0000	0.68	Q				
42+25	0.0000	0.67	Q				
42+30	0.0000	0.66	Q				
42+35	0.0000	0.65	Q				
42+40	0.0000	0.64	Q				
42+45	0.0000	0.63	Q				
42+50	0.0000	0.62	Q				
42+55	0.0000	0.61	Q				
43+ 0	0.0000	0.60	Q				
43+ 5	0.0000	0.60	Q				
43+10	0.0000	0.59	Q				
43+15	0.0000	0.58	Q				
43+20	0.0000	0.57	Q				
43+25	0.0000	0.56	Q				
43+30	0.0000	0.55	Q				
43+35	0.0000	0.54	Q				
43+40	0.0000	0.54	Q				
43+45	0.0000	0.53	Q				
43+50	0.0000	0.52	Q				
43+55	0.0000	0.51	Q				
44+ 0	0.0000	0.50	Q				
44+ 5	0.0000	0.50	Q				
44+10	0.0000	0.49	Q				
44+15	0.0000	0.48	Q				
44+20	0.0000	0.48	Q				
44+25	0.0000	0.47	Q				
44+30	0.0000	0.46	Q				
44+35	0.0000	0.45	Q				
44+40	0.0000	0.45	Q				

44+45	0.0000	0.44	Q				
44+50	0.0000	0.43	Q				
44+55	0.0000	0.43	Q				
45+ 0	0.0000	0.42	Q				
45+ 5	0.0000	0.42	Q				
45+10	0.0000	0.41	Q				
45+15	0.0000	0.40	Q				
45+20	0.0000	0.40	Q				
45+25	0.0000	0.39	Q				
45+30	0.0000	0.39	Q				
45+35	0.0000	0.38	Q				
45+40	0.0000	0.37	Q				
45+45	0.0000	0.37	Q				
45+50	0.0000	0.36	Q				
45+55	0.0000	0.36	Q				
46+ 0	0.0000	0.35	Q				
46+ 5	0.0000	0.35	Q				
46+10	0.0000	0.34	Q				
46+15	0.0000	0.34	Q				
46+20	0.0000	0.33	Q				
46+25	0.0000	0.33	Q				
46+30	0.0000	0.32	Q				
46+35	0.0000	0.32	Q				
46+40	0.0000	0.31	Q				
46+45	0.0000	0.31	Q				
46+50	0.0000	0.30	Q				
46+55	0.0000	0.30	Q				
47+ 0	0.0000	0.29	Q				
47+ 5	0.0000	0.29	Q				
47+10	0.0000	0.29	Q				
47+15	0.0000	0.28	Q				
47+20	0.0000	0.28	Q				
47+25	0.0000	0.27	Q				
47+30	0.0000	0.27	Q				
47+35	0.0000	0.26	Q				
47+40	0.0000	0.26	Q				
47+45	0.0000	0.26	Q				
47+50	0.0000	0.25	Q				
47+55	0.0000	0.25	Q				
48+ 0	0.0000	0.25	Q				
48+ 5	0.0000	0.24	Q				
48+10	0.0000	0.24	Q				
48+15	0.0000	0.23	Q				
48+20	0.0000	0.23	Q				
48+25	0.0000	0.23	Q				
48+30	0.0000	0.22	Q				
48+35	0.0000	0.22	Q				
48+40	0.0000	0.22	Q				
48+45	0.0000	0.21	Q				
48+50	0.0000	0.21	Q				
48+55	0.0000	0.21	Q				
49+ 0	0.0000	0.20	Q				
49+ 5	0.0000	0.20	Q				
49+10	0.0000	0.20	Q				
49+15	0.0000	0.20	Q				
49+20	0.0000	0.19	Q				
49+25	0.0000	0.19	Q				
49+30	0.0000	0.19	Q				
49+35	0.0000	0.18	Q				

49+40	0.0000	0.18	Q				
49+45	0.0000	0.18	Q				
49+50	0.0000	0.18	Q				
49+55	0.0000	0.17	Q				
50+ 0	0.0000	0.17	Q				
50+ 5	0.0000	0.17	Q				
50+10	0.0000	0.17	Q				
50+15	0.0000	0.16	Q				
50+20	0.0000	0.16	Q				
50+25	0.0000	0.16	Q				
50+30	0.0000	0.16	Q				
50+35	0.0000	0.15	Q				
50+40	0.0000	0.15	Q				
50+45	0.0000	0.15	Q				
50+50	0.0000	0.15	Q				
50+55	0.0000	0.14	Q				
51+ 0	0.0000	0.14	Q				
51+ 5	0.0000	0.14	Q				
51+10	0.0000	0.14	Q				
51+15	0.0000	0.14	Q				
51+20	0.0000	0.13	Q				
51+25	0.0000	0.13	Q				
51+30	0.0000	0.13	Q				
51+35	0.0000	0.13	Q				
51+40	0.0000	0.13	Q				
51+45	0.0000	0.12	Q				
51+50	0.0000	0.12	Q				
51+55	0.0000	0.12	Q				
52+ 0	0.0000	0.12	Q				
52+ 5	0.0000	0.12	Q				
52+10	0.0000	0.12	Q				
52+15	0.0000	0.11	Q				
52+20	0.0000	0.11	Q				
52+25	0.0000	0.11	Q				
52+30	0.0000	0.11	Q				
52+35	0.0000	0.11	Q				
52+40	0.0000	0.11	Q				
52+45	0.0000	0.10	Q				
52+50	0.0000	0.10	Q				
52+55	0.0000	0.10	Q				
53+ 0	0.0000	0.10	Q				
53+ 5	0.0000	0.10	Q				
53+10	0.0000	0.10	Q				
53+15	0.0000	0.10	Q				
53+20	0.0000	0.09	Q				
53+25	0.0000	0.09	Q				
53+30	0.0000	0.09	Q				
53+35	0.0000	0.09	Q				
53+40	0.0000	0.09	Q				
53+45	0.0000	0.09	Q				
53+50	0.0000	0.09	Q				
53+55	0.0000	0.08	Q				
54+ 0	0.0000	0.08	Q				
54+ 5	0.0000	0.08	Q				
54+10	0.0000	0.08	Q				
54+15	0.0000	0.08	Q				
54+20	0.0000	0.08	Q				
54+25	0.0000	0.08	Q				
54+30	0.0000	0.08	Q				

54+35	0.0000	0.07	Q				
54+40	0.0000	0.07	Q				
54+45	0.0000	0.07	Q				
54+50	0.0000	0.07	Q				
54+55	0.0000	0.07	Q				
55+ 0	0.0000	0.07	Q				
55+ 5	0.0000	0.07	Q				
55+10	0.0000	0.07	Q				
55+15	0.0000	0.07	Q				
55+20	0.0000	0.07	Q				
55+25	0.0000	0.06	Q				
55+30	0.0000	0.06	Q				
55+35	0.0000	0.06	Q				
55+40	0.0000	0.06	Q				
55+45	0.0000	0.06	Q				
55+50	0.0000	0.06	Q				
55+55	0.0000	0.06	Q				
56+ 0	0.0000	0.06	Q				
56+ 5	0.0000	0.06	Q				
56+10	0.0000	0.06	Q				
56+15	0.0000	0.06	Q				
56+20	0.0000	0.05	Q				
56+25	0.0000	0.05	Q				
56+30	0.0000	0.05	Q				
56+35	0.0000	0.05	Q				
56+40	0.0000	0.05	Q				
56+45	0.0000	0.05	Q				
56+50	0.0000	0.05	Q				
56+55	0.0000	0.05	Q				
57+ 0	0.0000	0.05	Q				
57+ 5	0.0000	0.05	Q				
57+10	0.0000	0.05	Q				
57+15	0.0000	0.05	Q				
57+20	0.0000	0.05	Q				
57+25	0.0000	0.04	Q				
57+30	0.0000	0.04	Q				
57+35	0.0000	0.04	Q				
57+40	0.0000	0.04	Q				
57+45	0.0000	0.04	Q				
57+50	0.0000	0.04	Q				
57+55	0.0000	0.04	Q				
58+ 0	0.0000	0.04	Q				
58+ 5	0.0000	0.04	Q				
58+10	0.0000	0.04	Q				
58+15	0.0000	0.04	Q				
58+20	0.0000	0.04	Q				
58+25	0.0000	0.04	Q				
58+30	0.0000	0.04	Q				
58+35	0.0000	0.04	Q				
58+40	0.0000	0.04	Q				
58+45	0.0000	0.04	Q				
58+50	0.0000	0.03	Q				
58+55	0.0000	0.03	Q				
59+ 0	0.0000	0.03	Q				
59+ 5	0.0000	0.03	Q				
59+10	0.0000	0.03	Q				
59+15	0.0000	0.03	Q				
59+20	0.0000	0.03	Q				
59+25	0.0000	0.03	Q				

59+30	0.0000	0.03	Q				
59+35	0.0000	0.03	Q				
59+40	0.0000	0.03	Q				
59+45	0.0000	0.03	Q				
59+50	0.0000	0.03	Q				
59+55	0.0000	0.03	Q				
60+ 0	0.0000	0.03	Q				
60+ 5	0.0000	0.03	Q				
60+10	0.0000	0.03	Q				
60+15	0.0000	0.03	Q				
60+20	0.0000	0.03	Q				
60+25	0.0000	0.03	Q				
60+30	0.0000	0.03	Q				
60+35	0.0000	0.03	Q				
60+40	0.0000	0.02	Q				
60+45	0.0000	0.02	Q				
60+50	0.0000	0.02	Q				
60+55	0.0000	0.02	Q				
61+ 0	0.0000	0.02	Q				
61+ 5	0.0000	0.02	Q				
61+10	0.0000	0.02	Q				
61+15	0.0000	0.02	Q				
61+20	0.0000	0.02	Q				
61+25	0.0000	0.02	Q				
61+30	0.0000	0.02	Q				
61+35	0.0000	0.02	Q				
61+40	0.0000	0.02	Q				
61+45	0.0000	0.02	Q				
61+50	0.0000	0.02	Q				
61+55	0.0000	0.02	Q				
62+ 0	0.0000	0.02	Q				
62+ 5	0.0000	0.02	Q				
62+10	0.0000	0.02	Q				
62+15	0.0000	0.02	Q				
62+20	0.0000	0.02	Q				
62+25	0.0000	0.02	Q				
62+30	0.0000	0.02	Q				
62+35	0.0000	0.02	Q				
62+40	0.0000	0.02	Q				
62+45	0.0000	0.02	Q				
62+50	0.0000	0.02	Q				
62+55	0.0000	0.02	Q				
63+ 0	0.0000	0.02	Q				
63+ 5	0.0000	0.02	Q				
63+10	0.0000	0.02	Q				
63+15	0.0000	0.02	Q				
63+20	0.0000	0.02	Q				
63+25	0.0000	0.02	Q				
63+30	0.0000	0.01	Q				
63+35	0.0000	0.01	Q				
63+40	0.0000	0.01	Q				
63+45	0.0000	0.01	Q				
63+50	0.0000	0.01	Q				
63+55	0.0000	0.01	Q				
64+ 0	0.0000	0.01	Q				
64+ 5	0.0000	0.01	Q				
64+10	0.0000	0.01	Q				
64+15	0.0000	0.01	Q				
64+20	0.0000	0.01	Q				

64+25	0.0000	0.01	Q				
64+30	0.0000	0.01	Q				
64+35	0.0000	0.01	Q				
64+40	0.0000	0.01	Q				
64+45	0.0000	0.01	Q				
64+50	0.0000	0.01	Q				
64+55	0.0000	0.01	Q				
65+ 0	0.0000	0.01	Q				
65+ 5	0.0000	0.01	Q				
65+10	0.0000	0.01	Q				
65+15	0.0000	0.01	Q				
65+20	0.0000	0.01	Q				
65+25	0.0000	0.01	Q				
65+30	0.0000	0.01	Q				
65+35	0.0000	0.01	Q				
65+40	0.0000	0.01	Q				
65+45	0.0000	0.01	Q				
65+50	0.0000	0.01	Q				
65+55	0.0000	0.01	Q				
66+ 0	0.0000	0.01	Q				
66+ 5	0.0000	0.01	Q				
66+10	0.0000	0.01	Q				
66+15	0.0000	0.01	Q				
66+20	0.0000	0.01	Q				
66+25	0.0000	0.01	Q				
66+30	0.0000	0.01	Q				
66+35	0.0000	0.01	Q				
66+40	0.0000	0.01	Q				
66+45	0.0000	0.01	Q				
66+50	0.0000	0.01	Q				
66+55	0.0000	0.01	Q				
67+ 0	0.0000	0.01	Q				
67+ 5	0.0000	0.01	Q				
67+10	0.0000	0.01	Q				
67+15	0.0000	0.01	Q				
67+20	0.0000	0.01	Q				
67+25	0.0000	0.01	Q				
67+30	0.0000	0.01	Q				
67+35	0.0000	0.01	Q				
67+40	0.0000	0.01	Q				
67+45	0.0000	0.01	Q				
67+50	0.0000	0.01	Q				
67+55	0.0000	0.01	Q				
68+ 0	0.0000	0.01	Q				
68+ 5	0.0000	0.01	Q				
68+10	0.0000	0.01	Q				
68+15	0.0000	0.01	Q				
68+20	0.0000	0.01	Q				
68+25	0.0000	0.01	Q				
68+30	0.0000	0.01	Q				
68+35	0.0000	0.01	Q				
68+40	0.0000	0.01	Q				
68+45	0.0000	0.01	Q				
68+50	0.0000	0.01	Q				
68+55	0.0000	0.01	Q				
69+ 0	0.0000	0.01	Q				
69+ 5	0.0000	0.01	Q				
69+10	0.0000	0.01	Q				
69+15	0.0000	0.01	Q				

69+20	0.0000	0.01	Q				
69+25	0.0000	0.01	Q				
69+30	0.0000	0.01	Q				
69+35	0.0000	0.01	Q				
69+40	0.0000	0.00	Q				
69+45	0.0000	0.00	Q				
69+50	0.0000	0.00	Q				
69+55	0.0000	0.00	Q				
70+ 0	0.0000	0.00	Q				
70+ 5	0.0000	0.00	Q				
70+10	0.0000	0.00	Q				
70+15	0.0000	0.00	Q				
70+20	0.0000	0.00	Q				
70+25	0.0000	0.00	Q				
70+30	0.0000	0.00	Q				
70+35	0.0000	0.00	Q				
70+40	0.0000	0.00	Q				
70+45	0.0000	0.00	Q				
70+50	0.0000	0.00	Q				
70+55	0.0000	0.00	Q				
71+ 0	0.0000	0.00	Q				
71+ 5	0.0000	0.00	Q				
71+10	0.0000	0.00	Q				
71+15	0.0000	0.00	Q				
71+20	0.0000	0.00	Q				
71+25	0.0000	0.00	Q				
71+30	0.0000	0.00	Q				
71+35	0.0000	0.00	Q				
71+40	0.0000	0.00	Q				
71+45	0.0000	0.00	Q				
71+50	0.0000	0.00	Q				
71+55	0.0000	0.00	Q				
72+ 0	0.0000	0.00	Q				
72+ 5	0.0000	0.00	Q				
72+10	0.0000	0.00	Q				
72+15	0.0000	0.00	Q				
72+20	0.0000	0.00	Q				
72+25	0.0000	0.00	Q				
72+30	0.0000	0.00	Q				
72+35	0.0000	0.00	Q				
72+40	0.0000	0.00	Q				
72+45	0.0000	0.00	Q				
72+50	0.0000	0.00	Q				
72+55	0.0000	0.00	Q				
73+ 0	0.0000	0.00	Q				
73+ 5	0.0000	0.00	Q				
73+10	0.0000	0.00	Q				
73+15	0.0000	0.00	Q				
73+20	0.0000	0.00	Q				
73+25	0.0000	0.00	Q				
73+30	0.0000	0.00	Q				
73+35	0.0000	0.00	Q				
73+40	0.0000	0.00	Q				
73+45	0.0000	0.00	Q				
73+50	0.0000	0.00	Q				
73+55	0.0000	0.00	Q				
74+ 0	0.0000	0.00	Q				
74+ 5	0.0000	0.00	Q				
74+10	0.0000	0.00	Q				

74+15	0.0000	0.00	Q				
74+20	0.0000	0.00	Q				
74+25	0.0000	0.00	Q				
74+30	0.0000	0.00	Q				
74+35	0.0000	0.00	Q				
74+40	0.0000	0.00	Q				
74+45	0.0000	0.00	Q				
74+50	0.0000	0.00	Q				
74+55	0.0000	0.00	Q				
75+ 0	0.0000	0.00	Q				
75+ 5	0.0000	0.00	Q				
75+10	0.0000	0.00	Q				
75+15	0.0000	0.00	Q				
75+20	0.0000	0.00	Q				
75+25	0.0000	0.00	Q				
75+30	0.0000	0.00	Q				
75+35	0.0000	0.00	Q				
75+40	0.0000	0.00	Q				
75+45	0.0000	0.00	Q				
75+50	0.0000	0.00	Q				
75+55	0.0000	0.00	Q				
76+ 0	0.0000	0.00	Q				
76+ 5	0.0000	0.00	Q				
76+10	0.0000	0.00	Q				
76+15	0.0000	0.00	Q				
76+20	0.0000	0.00	Q				
76+25	0.0000	0.00	Q				
76+30	0.0000	0.00	Q				
76+35	0.0000	0.00	Q				
76+40	0.0000	0.00	Q				
76+45	0.0000	0.00	Q				
76+50	0.0000	0.00	Q				
76+55	0.0000	0.00	Q				
77+ 0	0.0000	0.00	Q				
77+ 5	0.0000	0.00	Q				
77+10	0.0000	0.00	Q				
77+15	0.0000	0.00	Q				
77+20	0.0000	0.00	Q				
77+25	0.0000	0.00	Q				
77+30	0.0000	0.00	Q				
77+35	0.0000	0.00	Q				
77+40	0.0000	0.00	Q				
77+45	0.0000	0.00	Q				
77+50	0.0000	0.00	Q				
77+55	0.0000	0.00	Q				
78+ 0	0.0000	0.00	Q				
78+ 5	0.0000	0.00	Q				
78+10	0.0000	0.00	Q				
78+15	0.0000	0.00	Q				
78+20	0.0000	0.00	Q				
78+25	0.0000	0.00	Q				
78+30	0.0000	0.00	Q				
78+35	0.0000	0.00	Q				

*****HYDROGRAPH DATA*****

Number of intervals = 943
 Time interval = 5.0 (Min.)
 Maximum/Peak flow rate = 44.862 (CFS)
 Total volume = 32.736 (Ac.Ft)

```

      Status of hydrographs being held in storage
      Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
Peak (CFS)      0.000    0.000    0.000    0.000    0.000
Vol (Ac.Ft)     0.000    0.000    0.000    0.000    0.000
*****

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Process from Point/Station      3.000 to Point/Station      5.000
**** STREAM ROUTING SCS CONVEX METHOD ****

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HYDROGRAPH STREAM ROUTING DATA:
Length of stream = 1142.00 (Ft.)
Elevation difference = 12.00 (Ft.)
Slope of channel = 0.010508 (Vert/Horiz)
Channel type - Pipe

```

```

Pipe length = 1142.00(Ft.)   Elevation difference = 12.00(Ft.)
Manning's N = 0.013   No. of pipes = 1
Pipe evaluation using mean flow rate of hydrograph
Required pipe flow = 13.579(CFS)
Nearest computed pipe diameter = 21.00(In.)
Calculated individual pipe flow = 13.579(CFS)
Normal flow depth in pipe = 14.68(In.)
Flow top width inside pipe = 19.26(In.)
Critical Depth = 1.37(Ft.)
Pipe flow velocity = 7.56(Ft/s)
Travel time through pipe = 2.52 min.

```

```

Pipe length = 1142.00(Ft.)   Elevation difference = 12.00(Ft.)
Manning's N = 0.013   No. of pipes = 1
Pipe evaluation using maximum flow rate of hydrograph
Required pipe flow = 44.862(CFS)
Nearest computed pipe diameter = 33.00(In.)
Calculated individual pipe flow = 44.862(CFS)
Normal flow depth in pipe = 22.90(In.)
Flow top width inside pipe = 30.42(In.)
Critical Depth = 2.22(Ft.)
Pipe flow velocity = 10.20(Ft/s)
Travel time through pipe = 1.87 min.

```

```

***** SCS CONVEX CHANNEL ROUTING *****
Convex method of stream routing data items:
Using equation: Outflow =
O(t+dt) = (1-c*)O(t+dt-dt*) + Input(c*)
      where c* = 1 - (1-c)^e and dt = c(length)/velocity
      c(v/v+1.7) = 0.8572   Travel time = 1.87 (min.)
      dt*(unit time interval) = 5.00(min.), e = 2.4176
      dt(routing time-step) = 1.60 (min.), c* = 0.9909

```

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Output hydrograph delayed by 0 unit time increments

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P R I N T O F S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals (CFS)

Time (h+m)	Out = O (CFS)	In = I	0	11.2	22.4	33.6	44.9
0+ 5	0.0098	0.01	O				
0+10	0.0859	0.12	O				
0+15	0.3151	0.41	O				
0+20	0.7080	0.85	O				
0+25	1.1816	1.34	IO				
0+30	1.6505	1.80	IO				
0+35	2.0757	2.21	IO				
0+40	2.4504	2.57	IO				
0+45	2.7782	2.88	IO				
0+50	3.0641	3.15	IO				
0+55	3.3139	3.39	OI				
1+ 0	3.5332	3.60	O				
1+ 5	3.7265	3.79	O				
1+10	3.8979	3.95	O				
1+15	4.0505	4.10	O				
1+20	4.1874	4.23	O				
1+25	4.3109	4.35	O				
1+30	4.4230	4.46	O				
1+35	4.5254	4.56	O				
1+40	4.6196	4.65	O				
1+45	4.7068	4.73	O				
1+50	4.7880	4.81	O				
1+55	4.8642	4.89	O				
2+ 0	4.9361	4.96	O				
2+ 5	5.0043	5.03	O				
2+10	5.0641	5.08	O				
2+15	5.1166	5.13	O				
2+20	5.1660	5.18	O				
2+25	5.2136	5.23	O				
2+30	5.2598	5.27	O				
2+35	5.3047	5.32	O				
2+40	5.3485	5.36	O				
2+45	5.3915	5.41	O				
2+50	5.4337	5.45	O				
2+55	5.4753	5.49	O				
3+ 0	5.5163	5.53	O				
3+ 5	5.5570	5.57	O				
3+10	5.5972	5.61	OI				
3+15	5.6372	5.65	O				
3+20	5.6770	5.69	O				
3+25	5.7165	5.73	O				
3+30	5.7559	5.77	O				
3+35	5.7952	5.81	O				
3+40	5.8345	5.85	O				
3+45	5.8736	5.89	O				
3+50	5.9127	5.93	O				
3+55	5.9519	5.96	O				
4+ 0	5.9910	6.00	O				
4+ 5	6.0301	6.04	O				
4+10	6.0693	6.08	O				
4+15	6.1086	6.12	O				

4+20	6.1479	6.16		O				
4+25	6.1873	6.20		O				
4+30	6.2267	6.24		O				
4+35	6.2663	6.28		O				
4+40	6.3060	6.32		O				
4+45	6.3458	6.36		O				
4+50	6.3857	6.40		O				
4+55	6.4257	6.44		O				
5+ 0	6.4659	6.48		O				
5+ 5	6.5062	6.52		O				
5+10	6.5467	6.56		O				
5+15	6.5874	6.60		O				
5+20	6.6282	6.64		O				
5+25	6.6692	6.68		O				
5+30	6.7103	6.72		O				
5+35	6.7517	6.77		O				
5+40	6.7933	6.81		O				
5+45	6.8350	6.85		O				
5+50	6.8770	6.89		O				
5+55	6.9192	6.93		O				
6+ 0	6.9617	6.98		O				
6+ 5	7.0044	7.02		O				
6+10	7.0473	7.06		O				
6+15	7.0905	7.10		O				
6+20	7.1339	7.15		O				
6+25	7.1777	7.19		O				
6+30	7.2217	7.24		O				
6+35	7.2660	7.28		O				
6+40	7.3106	7.33		O				
6+45	7.3555	7.37		O				
6+50	7.4007	7.42		O				
6+55	7.4462	7.46		O				
7+ 0	7.4921	7.51		O				
7+ 5	7.5384	7.55		O				
7+10	7.5850	7.60		O				
7+15	7.6320	7.65		O				
7+20	7.6795	7.70		O				
7+25	7.7294	7.75		O				
7+30	7.7806	7.80		O				
7+35	7.8322	7.85		O				
7+40	7.8843	7.90		O				
7+45	7.9367	7.95		O				
7+50	7.9896	8.01		O				
7+55	8.0429	8.06		O				
8+ 0	8.0967	8.11		O				
8+ 5	8.1509	8.17		O				
8+10	8.2057	8.22		O				
8+15	8.2609	8.28		O				
8+20	8.3167	8.34		O				
8+25	8.3730	8.39		O				
8+30	8.4299	8.45		O				
8+35	8.4873	8.51		O				
8+40	8.5453	8.56		O				
8+45	8.6040	8.62		O				
8+50	8.6633	8.68		O				
8+55	8.7232	8.74		O				
9+ 0	8.7838	8.80		O				
9+ 5	8.8452	8.87		O				
9+10	8.9072	8.93		O				

9+15	8.9700	8.99		OI					
9+20	9.0336	9.05		O					
9+25	9.0980	9.12		O					
9+30	9.1632	9.18		O					
9+35	9.2292	9.25		O					
9+40	9.2961	9.32		O					
9+45	9.3640	9.39		O					
9+50	9.4328	9.46		O					
9+55	9.5026	9.53		O					
10+ 0	9.5733	9.60		O					
10+ 5	9.6452	9.67		O					
10+10	9.7181	9.74		O					
10+15	9.7921	9.82		O					
10+20	9.8673	9.89		O					
10+25	9.9437	9.97		O					
10+30	10.0214	10.05		O					
10+35	10.1004	10.13		O					
10+40	10.1807	10.21		O					
10+45	10.2623	10.29		O					
10+50	10.3455	10.37		O					
10+55	10.4301	10.46		O					
11+ 0	10.5163	10.54		O					
11+ 5	10.6041	10.63		O					
11+10	10.6937	10.72		O					
11+15	10.7849	10.82		O					
11+20	10.8780	10.91		O					
11+25	10.9730	11.00		O					
11+30	11.0700	11.10		O					
11+35	11.1690	11.20		O					
11+40	11.2702	11.30		O					
11+45	11.3736	11.41		O					
11+50	11.4794	11.51		O					
11+55	11.5876	11.62		O					
12+ 0	11.6984	11.74		O					
12+ 5	11.8138	11.85		O					
12+10	11.9254	11.96		O					
12+15	12.0599	12.11		O					
12+20	12.2335	12.29		O					
12+25	12.4345	12.50		O					
12+30	12.6467	12.72		O					
12+35	12.8601	12.93		O					
12+40	13.0720	13.14		O					
12+45	13.2818	13.35		O					
12+50	13.4900	13.56		O					
12+55	13.6969	13.76		O					
13+ 0	13.9031	13.97		O					
13+ 5	14.1092	14.18		O					
13+10	14.3159	14.38		O					
13+15	14.5236	14.59		OI					
13+20	14.7330	14.80		O					
13+25	14.9446	15.01		O					
13+30	15.1589	15.23		O					
13+35	15.3765	15.45		O					
13+40	15.5981	15.67		O					
13+45	15.8241	15.90		O					
13+50	16.0553	16.13		O					
13+55	16.2924	16.37		O					
14+ 0	16.5359	16.62		O					
14+ 5	16.7868	16.87		OI					

14+10	17.0461	17.13			O			
14+15	17.3152	17.40			O			
14+20	17.5951	17.69			O			
14+25	17.8865	17.98			OI			
14+30	18.1903	18.29			O			
14+35	18.5075	18.61			O			
14+40	18.8397	18.95			O			
14+45	19.1885	19.31			O			
14+50	19.5397	19.65			O			
14+55	19.8923	20.01			O			
15+ 0	20.2620	20.39			O			
15+ 5	20.6570	20.79			O			
15+10	21.0811	21.22			O			
15+15	21.5388	21.69			O			
15+20	22.0357	22.20			O			
15+25	22.5723	22.75			O			
15+30	23.1008	23.27			O			
15+35	23.5485	23.68			OI			
15+40	23.9406	24.07			O			
15+45	24.3648	24.51			O			
15+50	24.9107	25.11			O			
15+55	25.6709	25.95			OI			
16+ 0	26.7824	27.19			OI			
16+ 5	28.6286	29.33			OI			
16+10	32.0783	33.42			OI			
16+15	37.1644	38.99			OI			
16+20	41.5689	42.84			OI			
16+25	43.9656	44.53			OI			
16+30	44.7476	44.86			OI			
16+35	44.6957	44.62			OI			
16+40	44.3194	44.17			OI			
16+45	43.8037	43.62			OI			
16+50	43.2025	43.00			OI			
16+55	42.5499	42.33			OI			
17+ 0	41.8677	41.64			OI			
17+ 5	41.1195	40.86			OI			
17+10	40.2187	39.90			OI			
17+15	39.2444	38.92			OI			
17+20	38.2771	37.96			OI			
17+25	37.3330	37.02			OI			
17+30	36.4149	36.12			OI			
17+35	35.5246	35.23			OI			
17+40	34.6632	34.38			OI			
17+45	33.8285	33.56			OI			
17+50	32.9798	32.70			OI			
17+55	32.1366	31.86			OI			
18+ 0	31.3259	31.06			OI			
18+ 5	30.5498	30.30			OI			
18+10	29.7985	29.55			OI			
18+15	29.0561	28.81			OI			
18+20	28.3176	28.08			OI			
18+25	27.5920	27.36			OI			
18+30	26.8909	26.66			OI			
18+35	26.2206	26.00			OI			
18+40	25.5250	25.29			OI			
18+45	24.8075	24.57			OI			
18+50	24.1143	23.89			OI			
18+55	23.4633	23.25			OI			
19+ 0	22.8539	22.66			OI			

19+ 5	22.2832	22.10			O		
19+10	21.7484	21.58			O		
19+15	21.2469	21.09			O		
19+20	20.7765	20.62			O		
19+25	20.3347	20.19			O		
19+30	19.9197	19.79			O		
19+35	19.5295	19.40			O		
19+40	19.1624	19.04			IO		
19+45	18.8166	18.71			O		
19+50	18.4908	18.39			O		
19+55	18.1834	18.08			O		
20+ 0	17.8932	17.80			O		
20+ 5	17.6189	17.53			O		
20+10	17.3595	17.28			O		
20+15	17.1139	17.03			O		
20+20	16.8811	16.81			IO		
20+25	16.6069	16.51			O		
20+30	16.2830	16.17			O		
20+35	15.9639	15.86			O		
20+40	15.6773	15.59			O		
20+45	15.4221	15.34			O		
20+50	15.1940	15.12			O		
20+55	14.9889	14.92			O		
21+ 0	14.8035	14.74			O		
21+ 5	14.6350	14.58			O		
21+10	14.4811	14.43			O		
21+15	14.3397	14.29			O		
21+20	14.2090	14.17			O		
21+25	14.0876	14.05			O		
21+30	13.9742	13.94			O		
21+35	13.8678	13.83			O		
21+40	13.7675	13.74			O		
21+45	13.6724	13.64			O		
21+50	13.5820	13.55			O		
21+55	13.4957	13.47			O		
22+ 0	13.4130	13.39			O		
22+ 5	13.3334	13.31			O		
22+10	13.2566	13.23			O		
22+15	13.1797	13.15			O		
22+20	13.1034	13.08			O		
22+25	13.0290	13.00			O		
22+30	12.9564	12.93			O		
22+35	12.8855	12.86			O		
22+40	12.8162	12.79			O		
22+45	12.7482	12.73			O		
22+50	12.6816	12.66			O		
22+55	12.6162	12.59			O		
23+ 0	12.5519	12.53			O		
23+ 5	12.4886	12.47			O		
23+10	12.4264	12.41			O		
23+15	12.3650	12.34			O		
23+20	12.3045	12.28			O		
23+25	12.2449	12.23			O		
23+30	12.1860	12.17			O		
23+35	12.1279	12.11			O		
23+40	12.0705	12.05			O		
23+45	12.0138	12.00			O		
23+50	11.9578	11.94			O		
23+55	11.9024	11.88			O		

24+ 0	11.8476	11.83			O					
24+ 5	11.7849	11.76			O					
24+10	11.6637	11.62			O					
24+15	11.4017	11.30			O					
24+20	10.9848	10.83			O					
24+25	10.4923	10.33			O					
24+30	10.0087	9.85			O					
24+35	9.5724	9.43			O					
24+40	9.1900	9.07			O					
24+45	8.8574	8.75			O					
24+50	8.5690	8.48			O					
24+55	8.3161	8.24			O					
25+ 0	8.0892	8.02			O					
25+ 5	7.8873	7.82		IO						
25+10	7.7087	7.65		O						
25+15	7.5500	7.50		O						
25+20	7.4080	7.36		O						
25+25	7.2803	7.24		O						
25+30	7.1647	7.13		O						
25+35	7.0594	7.03		O						
25+40	6.9628	6.93		O						
25+45	6.8738	6.85		O						
25+50	6.7911	6.76		O						
25+55	6.7139	6.69		O						
26+ 0	6.6413	6.62		O						
26+ 5	6.5727	6.55		O						
26+10	6.5076	6.49		O						
26+15	6.4454	6.43		O						
26+20	6.3858	6.37		O						
26+25	6.3284	6.31		O						
26+30	6.2729	6.25		O						
26+35	6.2191	6.20		O						
26+40	6.1667	6.15		O						
26+45	6.1157	6.10		O						
26+50	6.0658	6.05		O						
26+55	6.0169	6.00		O						
27+ 0	5.9578	5.94		O						
27+ 5	5.8840	5.86		O						
27+10	5.8065	5.78		O						
27+15	5.7302	5.71		O						
27+20	5.6552	5.63		O						
27+25	5.5814	5.56		O						
27+30	5.5055	5.48		O						
27+35	5.4322	5.41		O						
27+40	5.3622	5.34		O						
27+45	5.2934	5.27		O						
27+50	5.2254	5.20		O						
27+55	5.1584	5.14		O						
28+ 0	5.0922	5.07		O						
28+ 5	5.0269	5.01		O						
28+10	4.9624	4.94		O						
28+15	4.8987	4.88		O						
28+20	4.8359	4.82		O						
28+25	4.7738	4.75		O						
28+30	4.7126	4.69		O						
28+35	4.6521	4.63		O						
28+40	4.5924	4.57		O						
28+45	4.5335	4.51		O						
28+50	4.4753	4.46		O						

28+55	4.4179	4.40		O					
29+ 0	4.3612	4.34		O					
29+ 5	4.3053	4.29		O					
29+10	4.2500	4.23		O					
29+15	4.1955	4.18		O					
29+20	4.1417	4.12		O					
29+25	4.0885	4.07		O					
29+30	4.0361	4.02		O					
29+35	3.9865	3.97		O					
29+40	3.9390	3.92		O					
29+45	3.8923	3.88		O					
29+50	3.8461	3.83		O					
29+55	3.8005	3.79		O					
30+ 0	3.7554	3.74		O					
30+ 5	3.7109	3.70		O					
30+10	3.6669	3.65		O					
30+15	3.6234	3.61		O					
30+20	3.5805	3.57		O					
30+25	3.5380	3.52		O					
30+30	3.4961	3.48		O					
30+35	3.4546	3.44		O					
30+40	3.4136	3.40		O					
30+45	3.3732	3.36		IO					
30+50	3.3332	3.32		O					
30+55	3.2936	3.28		O					
31+ 0	3.2546	3.24		O					
31+ 5	3.2160	3.20		O					
31+10	3.1779	3.17		O					
31+15	3.1402	3.13		O					
31+20	3.1030	3.09		O					
31+25	3.0662	3.05		O					
31+30	3.0298	3.02		O					
31+35	2.9939	2.98		O					
31+40	2.9584	2.95		O					
31+45	2.9233	2.91		O					
31+50	2.8886	2.88		O					
31+55	2.8544	2.84		O					
32+ 0	2.8205	2.81		O					
32+ 5	2.7871	2.78		O					
32+10	2.7540	2.74		O					
32+15	2.7214	2.71		O					
32+20	2.6891	2.68		O					
32+25	2.6572	2.65		O					
32+30	2.6257	2.62		O					
32+35	2.5946	2.58		O					
32+40	2.5638	2.55		O					
32+45	2.5334	2.52		O					
32+50	2.5034	2.49		O					
32+55	2.4737	2.46		O					
33+ 0	2.4444	2.43		O					
33+ 5	2.4154	2.41		O					
33+10	2.3867	2.38		O					
33+15	2.3584	2.35		O					
33+20	2.3312	2.32		O					
33+25	2.3064	2.30		O					
33+30	2.2826	2.27		O					
33+35	2.2590	2.25		O					
33+40	2.2357	2.23		O					
33+45	2.2127	2.21		O					

33+50	2.1899	2.18	10				
33+55	2.1673	2.16	10				
34+ 0	2.1449	2.14	10				
34+ 5	2.1228	2.12	10				
34+10	2.1009	2.09	10				
34+15	2.0792	2.07	10				
34+20	2.0578	2.05	10				
34+25	2.0365	2.03	10				
34+30	2.0155	2.01	10				
34+35	1.9947	1.99	10				
34+40	1.9742	1.97	10				
34+45	1.9538	1.95	10				
34+50	1.9337	1.93	10				
34+55	1.9137	1.91	10				
35+ 0	1.8940	1.89	10				
35+ 5	1.8744	1.87	10				
35+10	1.8551	1.85	10				
35+15	1.8360	1.83	10				
35+20	1.8170	1.81	10				
35+25	1.7983	1.79	10				
35+30	1.7797	1.77	10				
35+35	1.7614	1.76	10				
35+40	1.7432	1.74	10				
35+45	1.7252	1.72	10				
35+50	1.7074	1.70	10				
35+55	1.6898	1.68	10				
36+ 0	1.6724	1.67	10				
36+ 5	1.6551	1.65	10				
36+10	1.6381	1.63	10				
36+15	1.6212	1.62	10				
36+20	1.6044	1.60	10				
36+25	1.5879	1.58	10				
36+30	1.5715	1.57	10				
36+35	1.5553	1.55	10				
36+40	1.5393	1.53	10				
36+45	1.5234	1.52	10				
36+50	1.5077	1.50	10				
36+55	1.4921	1.49	10				
37+ 0	1.4767	1.47	10				
37+ 5	1.4615	1.46	10				
37+10	1.4464	1.44	10				
37+15	1.4315	1.43	10				
37+20	1.4167	1.41	10				
37+25	1.4021	1.40	10				
37+30	1.3877	1.38	10				
37+35	1.3733	1.37	10				
37+40	1.3592	1.35	10				
37+45	1.3452	1.34	10				
37+50	1.3313	1.33	10				
37+55	1.3176	1.31	10				
38+ 0	1.3040	1.30	10				
38+ 5	1.2905	1.29	10				
38+10	1.2772	1.27	10				
38+15	1.2640	1.26	10				
38+20	1.2510	1.25	10				
38+25	1.2381	1.23	10				
38+30	1.2253	1.22	10				
38+35	1.2127	1.21	10				
38+40	1.2002	1.20	10				

38+45	1.1878	1.18	10				
38+50	1.1755	1.17	10				
38+55	1.1634	1.16	10				
39+ 0	1.1514	1.15	10				
39+ 5	1.1395	1.14	10				
39+10	1.1278	1.12	10				
39+15	1.1161	1.11	0				
39+20	1.1046	1.10	0				
39+25	1.0932	1.09	0				
39+30	1.0820	1.08	0				
39+35	1.0708	1.07	0				
39+40	1.0598	1.06	0				
39+45	1.0488	1.05	0				
39+50	1.0380	1.03	0				
39+55	1.0273	1.02	0				
40+ 0	1.0167	1.01	0				
40+ 5	1.0062	1.00	0				
40+10	0.9958	0.99	0				
40+15	0.9856	0.98	0				
40+20	0.9754	0.97	0				
40+25	0.9653	0.96	0				
40+30	0.9530	0.95	0				
40+35	0.9391	0.93	0				
40+40	0.9251	0.92	0				
40+45	0.9113	0.91	0				
40+50	0.8977	0.89	0				
40+55	0.8843	0.88	0				
41+ 0	0.8711	0.87	0				
41+ 5	0.8581	0.85	0				
41+10	0.8453	0.84	0				
41+15	0.8327	0.83	0				
41+20	0.8203	0.82	0				
41+25	0.8081	0.80	0				
41+30	0.7960	0.79	0				
41+35	0.7842	0.78	0				
41+40	0.7725	0.77	0				
41+45	0.7609	0.76	0				
41+50	0.7496	0.75	0				
41+55	0.7384	0.73	0				
42+ 0	0.7274	0.72	0				
42+ 5	0.7166	0.71	0				
42+10	0.7059	0.70	0				
42+15	0.6953	0.69	0				
42+20	0.6850	0.68	0				
42+25	0.6748	0.67	0				
42+30	0.6647	0.66	0				
42+35	0.6548	0.65	0				
42+40	0.6450	0.64	0				
42+45	0.6354	0.63	0				
42+50	0.6259	0.62	0				
42+55	0.6166	0.61	0				
43+ 0	0.6074	0.60	0				
43+ 5	0.5983	0.60	0				
43+10	0.5894	0.59	0				
43+15	0.5806	0.58	0				
43+20	0.5719	0.57	0				
43+25	0.5634	0.56	0				
43+30	0.5550	0.55	0				
43+35	0.5467	0.54	0				

43+40	0.5386	0.54	O				
43+45	0.5306	0.53	O				
43+50	0.5226	0.52	O				
43+55	0.5148	0.51	O				
44+ 0	0.5072	0.50	O				
44+ 5	0.4996	0.50	O				
44+10	0.4922	0.49	O				
44+15	0.4848	0.48	O				
44+20	0.4776	0.48	O				
44+25	0.4705	0.47	O				
44+30	0.4634	0.46	O				
44+35	0.4565	0.45	O				
44+40	0.4497	0.45	O				
44+45	0.4430	0.44	O				
44+50	0.4364	0.43	O				
44+55	0.4299	0.43	O				
45+ 0	0.4235	0.42	O				
45+ 5	0.4172	0.42	O				
45+10	0.4109	0.41	O				
45+15	0.4048	0.40	O				
45+20	0.3988	0.40	O				
45+25	0.3928	0.39	O				
45+30	0.3870	0.39	O				
45+35	0.3812	0.38	O				
45+40	0.3755	0.37	O				
45+45	0.3699	0.37	O				
45+50	0.3644	0.36	O				
45+55	0.3590	0.36	O				
46+ 0	0.3536	0.35	O				
46+ 5	0.3483	0.35	O				
46+10	0.3431	0.34	O				
46+15	0.3380	0.34	O				
46+20	0.3330	0.33	O				
46+25	0.3280	0.33	O				
46+30	0.3231	0.32	O				
46+35	0.3183	0.32	O				
46+40	0.3136	0.31	O				
46+45	0.3089	0.31	O				
46+50	0.3043	0.30	O				
46+55	0.2997	0.30	O				
47+ 0	0.2953	0.29	O				
47+ 5	0.2909	0.29	O				
47+10	0.2865	0.29	O				
47+15	0.2823	0.28	O				
47+20	0.2780	0.28	O				
47+25	0.2739	0.27	O				
47+30	0.2698	0.27	O				
47+35	0.2658	0.26	O				
47+40	0.2618	0.26	O				
47+45	0.2579	0.26	O				
47+50	0.2541	0.25	O				
47+55	0.2503	0.25	O				
48+ 0	0.2465	0.25	O				
48+ 5	0.2429	0.24	O				
48+10	0.2393	0.24	O				
48+15	0.2357	0.23	O				
48+20	0.2322	0.23	O				
48+25	0.2287	0.23	O				
48+30	0.2253	0.22	O				

48+35	0.2219	0.22	O				
48+40	0.2186	0.22	O				
48+45	0.2154	0.21	O				
48+50	0.2122	0.21	O				
48+55	0.2090	0.21	O				
49+ 0	0.2059	0.20	O				
49+ 5	0.2028	0.20	O				
49+10	0.1998	0.20	O				
49+15	0.1968	0.20	O				
49+20	0.1939	0.19	O				
49+25	0.1910	0.19	O				
49+30	0.1881	0.19	O				
49+35	0.1853	0.18	O				
49+40	0.1826	0.18	O				
49+45	0.1798	0.18	O				
49+50	0.1771	0.18	O				
49+55	0.1745	0.17	O				
50+ 0	0.1719	0.17	O				
50+ 5	0.1693	0.17	O				
50+10	0.1668	0.17	O				
50+15	0.1643	0.16	O				
50+20	0.1619	0.16	O				
50+25	0.1595	0.16	O				
50+30	0.1571	0.16	O				
50+35	0.1547	0.15	O				
50+40	0.1524	0.15	O				
50+45	0.1502	0.15	O				
50+50	0.1479	0.15	O				
50+55	0.1457	0.14	O				
51+ 0	0.1435	0.14	O				
51+ 5	0.1414	0.14	O				
51+10	0.1393	0.14	O				
51+15	0.1372	0.14	O				
51+20	0.1352	0.13	O				
51+25	0.1331	0.13	O				
51+30	0.1312	0.13	O				
51+35	0.1292	0.13	O				
51+40	0.1273	0.13	O				
51+45	0.1254	0.12	O				
51+50	0.1235	0.12	O				
51+55	0.1217	0.12	O				
52+ 0	0.1199	0.12	O				
52+ 5	0.1181	0.12	O				
52+10	0.1163	0.12	O				
52+15	0.1146	0.11	O				
52+20	0.1129	0.11	O				
52+25	0.1112	0.11	O				
52+30	0.1095	0.11	O				
52+35	0.1079	0.11	O				
52+40	0.1063	0.11	O				
52+45	0.1047	0.10	O				
52+50	0.1031	0.10	O				
52+55	0.1016	0.10	O				
53+ 0	0.1001	0.10	O				
53+ 5	0.0986	0.10	O				
53+10	0.0971	0.10	O				
53+15	0.0957	0.10	O				
53+20	0.0942	0.09	O				
53+25	0.0928	0.09	O				

53+30	0.0915	0.09	O				
53+35	0.0901	0.09	O				
53+40	0.0887	0.09	O				
53+45	0.0874	0.09	O				
53+50	0.0861	0.09	O				
53+55	0.0848	0.08	O				
54+ 0	0.0836	0.08	O				
54+ 5	0.0823	0.08	O				
54+10	0.0811	0.08	O				
54+15	0.0799	0.08	O				
54+20	0.0787	0.08	O				
54+25	0.0775	0.08	O				
54+30	0.0764	0.08	O				
54+35	0.0752	0.07	O				
54+40	0.0741	0.07	O				
54+45	0.0730	0.07	O				
54+50	0.0719	0.07	O				
54+55	0.0708	0.07	O				
55+ 0	0.0698	0.07	O				
55+ 5	0.0687	0.07	O				
55+10	0.0677	0.07	O				
55+15	0.0667	0.07	O				
55+20	0.0657	0.07	O				
55+25	0.0647	0.06	O				
55+30	0.0638	0.06	O				
55+35	0.0628	0.06	O				
55+40	0.0619	0.06	O				
55+45	0.0610	0.06	O				
55+50	0.0600	0.06	O				
55+55	0.0591	0.06	O				
56+ 0	0.0583	0.06	O				
56+ 5	0.0574	0.06	O				
56+10	0.0565	0.06	O				
56+15	0.0557	0.06	O				
56+20	0.0549	0.05	O				
56+25	0.0540	0.05	O				
56+30	0.0532	0.05	O				
56+35	0.0524	0.05	O				
56+40	0.0517	0.05	O				
56+45	0.0509	0.05	O				
56+50	0.0501	0.05	O				
56+55	0.0494	0.05	O				
57+ 0	0.0487	0.05	O				
57+ 5	0.0479	0.05	O				
57+10	0.0472	0.05	O				
57+15	0.0465	0.05	O				
57+20	0.0458	0.05	O				
57+25	0.0451	0.04	O				
57+30	0.0445	0.04	O				
57+35	0.0438	0.04	O				
57+40	0.0431	0.04	O				
57+45	0.0425	0.04	O				
57+50	0.0419	0.04	O				
57+55	0.0412	0.04	O				
58+ 0	0.0406	0.04	O				
58+ 5	0.0400	0.04	O				
58+10	0.0394	0.04	O				
58+15	0.0388	0.04	O				
58+20	0.0383	0.04	O				

58+25	0.0377	0.04	O				
58+30	0.0371	0.04	O				
58+35	0.0366	0.04	O				
58+40	0.0360	0.04	O				
58+45	0.0355	0.04	O				
58+50	0.0350	0.03	O				
58+55	0.0344	0.03	O				
59+ 0	0.0339	0.03	O				
59+ 5	0.0334	0.03	O				
59+10	0.0329	0.03	O				
59+15	0.0324	0.03	O				
59+20	0.0319	0.03	O				
59+25	0.0315	0.03	O				
59+30	0.0310	0.03	O				
59+35	0.0305	0.03	O				
59+40	0.0301	0.03	O				
59+45	0.0296	0.03	O				
59+50	0.0292	0.03	O				
59+55	0.0288	0.03	O				
60+ 0	0.0283	0.03	O				
60+ 5	0.0279	0.03	O				
60+10	0.0275	0.03	O				
60+15	0.0271	0.03	O				
60+20	0.0267	0.03	O				
60+25	0.0263	0.03	O				
60+30	0.0259	0.03	O				
60+35	0.0255	0.03	O				
60+40	0.0251	0.02	O				
60+45	0.0247	0.02	O				
60+50	0.0244	0.02	O				
60+55	0.0240	0.02	O				
61+ 0	0.0237	0.02	O				
61+ 5	0.0233	0.02	O				
61+10	0.0230	0.02	O				
61+15	0.0226	0.02	O				
61+20	0.0223	0.02	O				
61+25	0.0219	0.02	O				
61+30	0.0216	0.02	O				
61+35	0.0213	0.02	O				
61+40	0.0210	0.02	O				
61+45	0.0207	0.02	O				
61+50	0.0204	0.02	O				
61+55	0.0200	0.02	O				
62+ 0	0.0197	0.02	O				
62+ 5	0.0195	0.02	O				
62+10	0.0192	0.02	O				
62+15	0.0189	0.02	O				
62+20	0.0186	0.02	O				
62+25	0.0183	0.02	O				
62+30	0.0180	0.02	O				
62+35	0.0178	0.02	O				
62+40	0.0175	0.02	O				
62+45	0.0173	0.02	O				
62+50	0.0170	0.02	O				
62+55	0.0167	0.02	O				
63+ 0	0.0165	0.02	O				
63+ 5	0.0162	0.02	O				
63+10	0.0160	0.02	O				
63+15	0.0158	0.02	O				

63+20	0.0155	0.02	O				
63+25	0.0153	0.02	O				
63+30	0.0151	0.01	O				
63+35	0.0148	0.01	O				
63+40	0.0146	0.01	O				
63+45	0.0144	0.01	O				
63+50	0.0142	0.01	O				
63+55	0.0140	0.01	O				
64+ 0	0.0138	0.01	O				
64+ 5	0.0136	0.01	O				
64+10	0.0134	0.01	O				
64+15	0.0132	0.01	O				
64+20	0.0130	0.01	O				
64+25	0.0128	0.01	O				
64+30	0.0126	0.01	O				
64+35	0.0124	0.01	O				
64+40	0.0122	0.01	O				
64+45	0.0120	0.01	O				
64+50	0.0118	0.01	O				
64+55	0.0117	0.01	O				
65+ 0	0.0115	0.01	O				
65+ 5	0.0113	0.01	O				
65+10	0.0112	0.01	O				
65+15	0.0110	0.01	O				
65+20	0.0108	0.01	O				
65+25	0.0107	0.01	O				
65+30	0.0105	0.01	O				
65+35	0.0103	0.01	O				
65+40	0.0102	0.01	O				
65+45	0.0100	0.01	O				
65+50	0.0099	0.01	O				
65+55	0.0097	0.01	O				
66+ 0	0.0096	0.01	O				
66+ 5	0.0095	0.01	O				
66+10	0.0093	0.01	O				
66+15	0.0092	0.01	O				
66+20	0.0090	0.01	O				
66+25	0.0089	0.01	O				
66+30	0.0088	0.01	O				
66+35	0.0086	0.01	O				
66+40	0.0085	0.01	O				
66+45	0.0084	0.01	O				
66+50	0.0083	0.01	O				
66+55	0.0081	0.01	O				
67+ 0	0.0080	0.01	O				
67+ 5	0.0079	0.01	O				
67+10	0.0078	0.01	O				
67+15	0.0077	0.01	O				
67+20	0.0075	0.01	O				
67+25	0.0074	0.01	O				
67+30	0.0073	0.01	O				
67+35	0.0072	0.01	O				
67+40	0.0071	0.01	O				
67+45	0.0070	0.01	O				
67+50	0.0069	0.01	O				
67+55	0.0068	0.01	O				
68+ 0	0.0067	0.01	O				
68+ 5	0.0066	0.01	O				
68+10	0.0065	0.01	O				

68+15	0.0064	0.01	O				
68+20	0.0063	0.01	O				
68+25	0.0062	0.01	O				
68+30	0.0061	0.01	O				
68+35	0.0060	0.01	O				
68+40	0.0059	0.01	O				
68+45	0.0058	0.01	O				
68+50	0.0058	0.01	O				
68+55	0.0057	0.01	O				
69+ 0	0.0056	0.01	O				
69+ 5	0.0055	0.01	O				
69+10	0.0054	0.01	O				
69+15	0.0053	0.01	O				
69+20	0.0053	0.01	O				
69+25	0.0052	0.01	O				
69+30	0.0051	0.01	O				
69+35	0.0050	0.01	O				
69+40	0.0050	0.00	O				
69+45	0.0049	0.00	O				
69+50	0.0048	0.00	O				
69+55	0.0047	0.00	O				
70+ 0	0.0047	0.00	O				
70+ 5	0.0046	0.00	O				
70+10	0.0045	0.00	O				
70+15	0.0045	0.00	O				
70+20	0.0044	0.00	O				
70+25	0.0043	0.00	O				
70+30	0.0043	0.00	O				
70+35	0.0042	0.00	O				
70+40	0.0041	0.00	O				
70+45	0.0041	0.00	O				
70+50	0.0040	0.00	O				
70+55	0.0040	0.00	O				
71+ 0	0.0039	0.00	O				
71+ 5	0.0038	0.00	O				
71+10	0.0038	0.00	O				
71+15	0.0037	0.00	O				
71+20	0.0037	0.00	O				
71+25	0.0036	0.00	O				
71+30	0.0036	0.00	O				
71+35	0.0035	0.00	O				
71+40	0.0035	0.00	O				
71+45	0.0034	0.00	O				
71+50	0.0034	0.00	O				
71+55	0.0033	0.00	O				
72+ 0	0.0033	0.00	O				
72+ 5	0.0032	0.00	O				
72+10	0.0032	0.00	O				
72+15	0.0031	0.00	O				
72+20	0.0031	0.00	O				
72+25	0.0030	0.00	O				
72+30	0.0030	0.00	O				
72+35	0.0029	0.00	O				
72+40	0.0029	0.00	O				
72+45	0.0028	0.00	O				
72+50	0.0028	0.00	O				
72+55	0.0028	0.00	O				
73+ 0	0.0027	0.00	O				
73+ 5	0.0027	0.00	O				

73+10	0.0026	0.00	O				
73+15	0.0026	0.00	O				
73+20	0.0026	0.00	O				
73+25	0.0025	0.00	O				
73+30	0.0025	0.00	O				
73+35	0.0024	0.00	O				
73+40	0.0024	0.00	O				
73+45	0.0024	0.00	O				
73+50	0.0023	0.00	O				
73+55	0.0023	0.00	O				
74+ 0	0.0023	0.00	O				
74+ 5	0.0022	0.00	O				
74+10	0.0022	0.00	O				
74+15	0.0022	0.00	O				
74+20	0.0021	0.00	O				
74+25	0.0021	0.00	O				
74+30	0.0021	0.00	O				
74+35	0.0020	0.00	O				
74+40	0.0020	0.00	O				
74+45	0.0020	0.00	O				
74+50	0.0020	0.00	O				
74+55	0.0019	0.00	O				
75+ 0	0.0019	0.00	O				
75+ 5	0.0019	0.00	O				
75+10	0.0018	0.00	O				
75+15	0.0018	0.00	O				
75+20	0.0018	0.00	O				
75+25	0.0018	0.00	O				
75+30	0.0017	0.00	O				
75+35	0.0017	0.00	O				
75+40	0.0017	0.00	O				
75+45	0.0017	0.00	O				
75+50	0.0016	0.00	O				
75+55	0.0016	0.00	O				
76+ 0	0.0016	0.00	O				
76+ 5	0.0016	0.00	O				
76+10	0.0015	0.00	O				
76+15	0.0015	0.00	O				
76+20	0.0015	0.00	O				
76+25	0.0015	0.00	O				
76+30	0.0014	0.00	O				
76+35	0.0014	0.00	O				
76+40	0.0014	0.00	O				
76+45	0.0014	0.00	O				
76+50	0.0014	0.00	O				
76+55	0.0013	0.00	O				
77+ 0	0.0013	0.00	O				
77+ 5	0.0013	0.00	O				
77+10	0.0013	0.00	O				
77+15	0.0013	0.00	O				
77+20	0.0012	0.00	O				
77+25	0.0012	0.00	O				
77+30	0.0012	0.00	O				
77+35	0.0012	0.00	O				
77+40	0.0012	0.00	O				
77+45	0.0012	0.00	O				
77+50	0.0011	0.00	O				
77+55	0.0011	0.00	O				
78+ 0	0.0011	0.00	O				

78+ 5	0.0011	0.00	O				
78+10	0.0011	0.00	O				
78+15	0.0011	0.00	O				
78+20	0.0010	0.00	O				
78+25	0.0010	0.00	O				
78+30	0.0010	0.00	O				
78+35	0.0010	0.00	O				
78+40	0.0000	0.00	O				

*****HYDROGRAPH DATA*****

Number of intervals = 944
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 44.748 (CFS)
Total volume = 32.736 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

++++++
Process from Point/Station 18.000 to Point/Station 5.000
**** ADD/COMBINE/RECOVER HYDROGRAPHS ****

***** HYDROGRAPH INFORMATION *****

From study/file name: kimc100.rte

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P R I N T O F S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals (CFS)

Time(h+m)	Add q(CFS)	Tot. Q	0	14.2	28.4	42.6	56.9

0+ 5	0.0313	0.04	Q				
0+10	0.2036	0.29	Q				
0+15	0.4561	0.77	Q				
0+20	0.5808	1.29	Q				
0+25	0.6208	1.80	qQ				
0+30	0.6315	2.28	qQ				
0+35	0.6400	2.72	qQ				
0+40	0.6419	3.09	q Q				
0+45	0.6439	3.42	q Q				
0+50	0.6459	3.71	q Q				
0+55	0.6479	3.96	q Q				
1+ 0	0.6499	4.18	q Q				
1+ 5	0.6519	4.38	q Q				
1+10	0.6539	4.55	q Q				
1+15	0.6560	4.71	q Q				
1+20	0.6581	4.85	q Q				
1+25	0.6602	4.97	q Q				
1+30	0.6623	5.09	q Q				
1+35	0.6644	5.19	q Q				
1+40	0.6666	5.29	q Q				

1+45	0.6688	5.38	q	Q				
1+50	0.6709	5.46	q	Q				
1+55	0.6732	5.54	q	Q				
2+ 0	0.6754	5.61	q	Q				
2+ 5	0.6777	5.68	q	Q				
2+10	0.6799	5.74	q	Q				
2+15	0.6822	5.80	q	Q				
2+20	0.6845	5.85	q	Q				
2+25	0.6869	5.90	q	Q				
2+30	0.6892	5.95	q	Q				
2+35	0.6916	6.00	q	Q				
2+40	0.6940	6.04	q	Q				
2+45	0.6965	6.09	q	Q				
2+50	0.6989	6.13	q	Q				
2+55	0.7014	6.18	q	Q				
3+ 0	0.7039	6.22	q	Q				
3+ 5	0.7064	6.26	q	Q				
3+10	0.7089	6.31	q	Q				
3+15	0.7115	6.35	q	Q				
3+20	0.7141	6.39	q	Q				
3+25	0.7168	6.43	q	Q				
3+30	0.7194	6.48	q	Q				
3+35	0.7221	6.52	q	Q				
3+40	0.7248	6.56	q	Q				
3+45	0.7276	6.60	q	Q				
3+50	0.7303	6.64	q	Q				
3+55	0.7331	6.69	q	Q				
4+ 0	0.7359	6.73	q	Q				
4+ 5	0.7388	6.77	q	Q				
4+10	0.7417	6.81	q	Q				
4+15	0.7446	6.85	q	Q				
4+20	0.7476	6.90	q	Q				
4+25	0.7506	6.94	q	Q				
4+30	0.7536	6.98	q	Q				
4+35	0.7566	7.02	q	Q				
4+40	0.7597	7.07	q	Q				
4+45	0.7629	7.11	q	Q				
4+50	0.7660	7.15	q	Q				
4+55	0.7692	7.19	q	Q				
5+ 0	0.7724	7.24	q	Q				
5+ 5	0.7757	7.28	q	Q				
5+10	0.7790	7.33	q	Q				
5+15	0.7824	7.37	q	Q				
5+20	0.7857	7.41	q	Q				
5+25	0.7892	7.46	q	Q				
5+30	0.7926	7.50	q	Q				
5+35	0.7962	7.55	q	Q				
5+40	0.7997	7.59	q	Q				
5+45	0.8033	7.64	q	Q				
5+50	0.8069	7.68	q	Q				
5+55	0.8106	7.73	q	Q				
6+ 0	0.8143	7.78	q	Q				
6+ 5	0.8182	7.82	q	Q				
6+10	0.8220	7.87	q	Q				
6+15	0.8259	7.92	q	Q				
6+20	0.8298	7.96	q	Q				
6+25	0.8338	8.01	q	Q				
6+30	0.8378	8.06	q	Q				
6+35	0.8419	8.11	q	Q				

6+40	0.8460	8.16	q	Q				
6+45	0.8503	8.21	q	Q				
6+50	0.8545	8.26	q	Q				
6+55	0.8589	8.31	q	Q				
7+ 0	0.8632	8.36	q	Q				
7+ 5	0.8677	8.41	q	Q				
7+10	0.8722	8.46	q	Q				
7+15	0.8768	8.51	q	Q				
7+20	0.8814	8.56	q	Q				
7+25	0.8862	8.62	q	Q				
7+30	0.8909	8.67	q	Q				
7+35	0.8958	8.73	q	Q				
7+40	0.9007	8.78	q	Q				
7+45	0.9058	8.84	q	Q				
7+50	0.9108	8.90	q	Q				
7+55	0.9160	8.96	q	Q				
8+ 0	0.9212	9.02	q	Q				
8+ 5	0.9266	9.08	q	Q				
8+10	0.9319	9.14	q	Q				
8+15	0.9375	9.20	q	Q				
8+20	0.9430	9.26	q	Q				
8+25	0.9488	9.32	q	Q				
8+30	0.9545	9.38	q	Q				
8+35	0.9605	9.45	q	Q				
8+40	0.9664	9.51	q	Q				
8+45	0.9725	9.58	q	Q				
8+50	0.9787	9.64	q	Q				
8+55	0.9850	9.71	q	Q				
9+ 0	0.9914	9.78	q	Q				
9+ 5	0.9980	9.84	q	Q				
9+10	1.0046	9.91	q	Q				
9+15	1.0114	9.98	q	Q				
9+20	1.0183	10.05	q	Q				
9+25	1.0254	10.12	q	Q				
9+30	1.0325	10.20	q	Q				
9+35	1.0399	10.27	q	Q				
9+40	1.0473	10.34	q	Q				
9+45	1.0550	10.42	q	Q				
9+50	1.0626	10.50	q	Q				
9+55	1.0706	10.57	q	Q				
10+ 0	1.0786	10.65	q	Q				
10+ 5	1.0870	10.73	q	Q				
10+10	1.0953	10.81	q	Q				
10+15	1.1041	10.90	q	Q				
10+20	1.1128	10.98	q	Q				
10+25	1.1219	11.07	q	Q				
10+30	1.1310	11.15	q	Q				
10+35	1.1406	11.24	q	Q				
10+40	1.1501	11.33	q	Q				
10+45	1.1601	11.42	q	Q				
10+50	1.1701	11.52	q	Q				
10+55	1.1806	11.61	q	Q				
11+ 0	1.1911	11.71	q	Q				
11+ 5	1.2021	11.81	q	Q				
11+10	1.2131	11.91	q	Q				
11+15	1.2247	12.01	q	Q				
11+20	1.2363	12.11	q	Q				
11+25	1.2486	12.22	q	Q				
11+30	1.2608	12.33	q	Q				

11+35	1.2738	12.44	q	Q					
11+40	1.2867	12.56	q	Q					
11+45	1.3004	12.67	q	Q					
11+50	1.3141	12.79	q	Q					
11+55	1.3286	12.92	q	Q					
12+ 0	1.3432	13.04	q	Q					
12+ 5	1.3706	13.18	q	Q					
12+10	1.4521	13.38	lq	Q					
12+15	1.5651	13.62	lq	Q					
12+20	1.6292	13.86	lq	Q					
12+25	1.6616	14.10	lq	Q					
12+30	1.6830	14.33	lq	Q					
12+35	1.7045	14.56	lq	Q					
12+40	1.7237	14.80	lq	Q					
12+45	1.7441	15.03	lq	Q					
12+50	1.7648	15.25	lq	Q					
12+55	1.7867	15.48	lq	Q					
13+ 0	1.8089	15.71	lq	lQ					
13+ 5	1.8325	15.94	lq	lQ					
13+10	1.8566	16.17	lq	lQ					
13+15	1.8822	16.41	lq	lQ					
13+20	1.9083	16.64	lq	lQ					
13+25	1.9361	16.88	lq	lQ					
13+30	1.9646	17.12	lq	l Q					
13+35	1.9951	17.37	lq	l Q					
13+40	2.0263	17.62	lq	l Q					
13+45	2.0599	17.88	lq	l Q					
13+50	2.0944	18.15	lq	l Q					
13+55	2.1315	18.42	lq	l Q					
14+ 0	2.1698	18.71	lq	l Q					
14+ 5	2.2113	19.00	lq	l Q					
14+10	2.2545	19.30	lq	l Q					
14+15	2.3014	19.62	lq	l Q					
14+20	2.3502	19.95	lq	l Q					
14+25	2.4033	20.29	lq	l Q					
14+30	2.4589	20.65	lq	l Q					
14+35	2.5199	21.03	lq	l Q					
14+40	2.5843	21.42	lq	l Q					
14+45	2.6556	21.84	lq	l Q					
14+50	2.7316	22.27	lq	l Q					
14+55	2.8163	22.71	lq	l Q					
15+ 0	2.9078	23.17	l q	l Q					
15+ 5	3.0112	23.67	l q	l Q					
15+10	3.1264	24.21	l q	l Q					
15+15	3.2614	24.80	l q	l Q					
15+20	3.4161	25.45	l q	l Q					
15+25	3.5537	26.13	l q	l Q					
15+30	3.5167	26.62	l q	l Q					
15+35	3.4070	26.96	l q	l Q					
15+40	3.5328	27.47	l q	l Q					
15+45	3.8683	28.23	l q	l Q					
15+50	4.3803	29.29	l q	l Q					
15+55	5.1493	30.82	l q	l Q					
16+ 0	6.4980	33.28	l q	l Q					
16+ 5	9.8682	38.50	l q	l Q					
16+10	17.1244	49.20	l q	l Q					
16+15	19.6957	56.86	l q	l Q					
16+20	12.2181	53.79	l q	l Q					
16+25	6.8052	50.77	l q	l Q					

16+30	4.6096	49.36	q				Q	
16+35	4.1254	48.82	q				Q	
16+40	3.5191	47.84	q				Q	
16+45	3.2248	47.03	q				Q	
16+50	2.9847	46.19	q				Q	
16+55	2.7978	45.35	q				Q	
17+ 0	2.6377	44.51	q				Q	
17+ 5	2.5031	43.62	q				Q	
17+10	2.3877	42.61	q				Q	
17+15	2.2870	41.53	q				Q	
17+20	2.1984	40.48	q				Q	
17+25	2.1196	39.45	q				Q	
17+30	2.0489	38.46	q				Q	
17+35	1.9850	37.51	q				Q	
17+40	1.9267	36.59	q				Q	
17+45	1.8734	35.70	q				Q	
17+50	1.8243	34.80	q				Q	
17+55	1.7790	33.92	q				Q	
18+ 0	1.7369	33.06	q				Q	
18+ 5	1.6857	32.24	q				Q	
18+10	1.5832	31.38	q				Q	
18+15	1.4527	30.51	q				Q	
18+20	1.3737	29.69	q			Q		
18+25	1.3293	28.92	q			Q		
18+30	1.2979	28.19	q			Q		
18+35	1.2690	27.49	q			Q		
18+40	1.2441	26.77	q			Q		
18+45	1.2204	26.03	q			Q		
18+50	1.1980	25.31	q			Q		
18+55	1.1766	24.64	q			Q		
19+ 0	1.1563	24.01	q			Q		
19+ 5	1.1370	23.42	q			Q		
19+10	1.1185	22.87	q			Q		
19+15	1.1008	22.35	q			Q		
19+20	1.0838	21.86	q			Q		
19+25	1.0676	21.40	q			Q		
19+30	1.0520	20.97	q			Q		
19+35	1.0370	20.57	q			Q		
19+40	1.0227	20.19	q			Q		
19+45	1.0088	19.83	q			Q		
19+50	0.9954	19.49	q			Q		
19+55	0.9826	19.17	q			Q		
20+ 0	0.9702	18.86	q			Q		
20+ 5	0.9582	18.58	q			Q		
20+10	0.9466	18.31	q		Q			
20+15	0.9354	18.05	q		Q			
20+20	0.9245	17.81	q		Q			
20+25	0.9140	17.52	q		Q			
20+30	0.9038	17.19	q		Q			
20+35	0.8939	16.86	q		Q			
20+40	0.8843	16.56	q		Q			
20+45	0.8750	16.30	q		Q			
20+50	0.8660	16.06	q		Q			
20+55	0.8572	15.85	q		Q			
21+ 0	0.8486	15.65	q		Q			
21+ 5	0.8403	15.48	q	Q				
21+10	0.8322	15.31	q	Q				
21+15	0.8243	15.16	q	Q				
21+20	0.8167	15.03	q	Q				

21+25	0.8092	14.90	q	Q			
21+30	0.8019	14.78	q	Q			
21+35	0.7947	14.66	q	Q			
21+40	0.7878	14.56	q	Q			
21+45	0.7810	14.45	q	Q			
21+50	0.7744	14.36	q	Q			
21+55	0.7679	14.26	q	Q			
22+ 0	0.7616	14.17	q	Q			
22+ 5	0.7554	14.09	q	Q			
22+10	0.7494	14.01	q	Q			
22+15	0.7435	13.92	q	Q			
22+20	0.7377	13.84	q	Q			
22+25	0.7320	13.76	q	Q			
22+30	0.7265	13.68	q	Q			
22+35	0.7210	13.61	q	Q			
22+40	0.7157	13.53	q	Q			
22+45	0.7105	13.46	q	Q			
22+50	0.7054	13.39	q	Q			
22+55	0.7004	13.32	q	Q			
23+ 0	0.6955	13.25	q	Q			
23+ 5	0.6907	13.18	q	Q			
23+10	0.6859	13.11	q	Q			
23+15	0.6813	13.05	q	Q			
23+20	0.6767	12.98	q	Q			
23+25	0.6723	12.92	q	Q			
23+30	0.6679	12.85	q	Q			
23+35	0.6636	12.79	q	Q			
23+40	0.6593	12.73	q	Q			
23+45	0.6552	12.67	q	Q			
23+50	0.6511	12.61	q	Q			
23+55	0.6471	12.55	q	Q			
24+ 0	0.6431	12.49	q	Q			
24+ 5	0.6080	12.39	q	Q			
24+10	0.4324	12.10	q	Q			
24+15	0.1784	11.58	q	Q			
24+20	0.0540	11.04	q	Q			
24+25	0.0155	10.51	q	Q			
24+30	0.0066	10.02	q	Q			
24+35	0.0000	9.57	q	Q			
24+40	0.0000	9.19	q	Q			
24+45	0.0000	8.86	q	Q			
24+50	0.0000	8.57	q	Q			
24+55	0.0000	8.32	q	Q			
25+ 0	0.0000	8.09	q	Q			
25+ 5	0.0000	7.89	q	Q			
25+10	0.0000	7.71	q	Q			
25+15	0.0000	7.55	q	Q			
25+20	0.0000	7.41	q	Q			
25+25	0.0000	7.28	q	Q			
25+30	0.0000	7.16	q	Q			
25+35	0.0000	7.06	q	Q			
25+40	0.0000	6.96	q	Q			
25+45	0.0000	6.87	q	Q			
25+50	0.0000	6.79	q	Q			
25+55	0.0000	6.71	q	Q			
26+ 0	0.0000	6.64	q	Q			
26+ 5	0.0000	6.57	q	Q			
26+10	0.0000	6.51	q	Q			
26+15	0.0000	6.45	q	Q			

26+20	0.0000	6.39	q	Q				
26+25	0.0000	6.33	q	Q				
26+30	0.0000	6.27	q	Q				
26+35	0.0000	6.22	q	Q				
26+40	0.0000	6.17	q	Q				
26+45	0.0000	6.12	q	Q				
26+50	0.0000	6.07	q	Q				
26+55	0.0000	6.02	q	Q				
27+ 0	0.0000	5.96	q	Q				
27+ 5	0.0000	5.88	q	Q				
27+10	0.0000	5.81	q	Q				
27+15	0.0000	5.73	q	Q				
27+20	0.0000	5.66	q	Q				
27+25	0.0000	5.58	q	Q				
27+30	0.0000	5.51	q	Q				
27+35	0.0000	5.43	q	Q				
27+40	0.0000	5.36	q	Q				
27+45	0.0000	5.29	q	Q				
27+50	0.0000	5.23	q	Q				
27+55	0.0000	5.16	q	Q				
28+ 0	0.0000	5.09	q	Q				
28+ 5	0.0000	5.03	q	Q				
28+10	0.0000	4.96	q	Q				
28+15	0.0000	4.90	q	Q				
28+20	0.0000	4.84	q	Q				
28+25	0.0000	4.77	q	Q				
28+30	0.0000	4.71	q	Q				
28+35	0.0000	4.65	q	Q				
28+40	0.0000	4.59	q	Q				
28+45	0.0000	4.53	q	Q				
28+50	0.0000	4.48	q	Q				
28+55	0.0000	4.42	q	Q				
29+ 0	0.0000	4.36	q	Q				
29+ 5	0.0000	4.31	q	Q				
29+10	0.0000	4.25	q	Q				
29+15	0.0000	4.20	q	Q				
29+20	0.0000	4.14	q	Q				
29+25	0.0000	4.09	q	Q				
29+30	0.0000	4.04	q	Q				
29+35	0.0000	3.99	q	Q				
29+40	0.0000	3.94	q	Q				
29+45	0.0000	3.89	q	Q				
29+50	0.0000	3.85	q	Q				
29+55	0.0000	3.80	q	Q				
30+ 0	0.0000	3.76	q	Q				
30+ 5	0.0000	3.71	q	Q				
30+10	0.0000	3.67	q	Q				
30+15	0.0000	3.62	q	Q				
30+20	0.0000	3.58	q	Q				
30+25	0.0000	3.54	q	Q				
30+30	0.0000	3.50	q	Q				
30+35	0.0000	3.45	q	Q				
30+40	0.0000	3.41	q	Q				
30+45	0.0000	3.37	q	Q				
30+50	0.0000	3.33	q	Q				
30+55	0.0000	3.29	q	Q				
31+ 0	0.0000	3.25	q	Q				
31+ 5	0.0000	3.22	q	Q				
31+10	0.0000	3.18	q	Q				

31+15	0.0000	3.14	q Q				
31+20	0.0000	3.10	q Q				
31+25	0.0000	3.07	q Q				
31+30	0.0000	3.03	q Q				
31+35	0.0000	2.99	q Q				
31+40	0.0000	2.96	q Q				
31+45	0.0000	2.92	q Q				
31+50	0.0000	2.89	q Q				
31+55	0.0000	2.85	q Q				
32+ 0	0.0000	2.82	qQ				
32+ 5	0.0000	2.79	qQ				
32+10	0.0000	2.75	qQ				
32+15	0.0000	2.72	qQ				
32+20	0.0000	2.69	qQ				
32+25	0.0000	2.66	qQ				
32+30	0.0000	2.63	qQ				
32+35	0.0000	2.59	qQ				
32+40	0.0000	2.56	qQ				
32+45	0.0000	2.53	qQ				
32+50	0.0000	2.50	qQ				
32+55	0.0000	2.47	qQ				
33+ 0	0.0000	2.44	qQ				
33+ 5	0.0000	2.42	qQ				
33+10	0.0000	2.39	qQ				
33+15	0.0000	2.36	qQ				
33+20	0.0000	2.33	qQ				
33+25	0.0000	2.31	qQ				
33+30	0.0000	2.28	qQ				
33+35	0.0000	2.26	qQ				
33+40	0.0000	2.24	qQ				
33+45	0.0000	2.21	qQ				
33+50	0.0000	2.19	qQ				
33+55	0.0000	2.17	qQ				
34+ 0	0.0000	2.14	qQ				
34+ 5	0.0000	2.12	qQ				
34+10	0.0000	2.10	qQ				
34+15	0.0000	2.08	qQ				
34+20	0.0000	2.06	qQ				
34+25	0.0000	2.04	qQ				
34+30	0.0000	2.02	qQ				
34+35	0.0000	1.99	qQ				
34+40	0.0000	1.97	qQ				
34+45	0.0000	1.95	qQ				
34+50	0.0000	1.93	qQ				
34+55	0.0000	1.91	qQ				
35+ 0	0.0000	1.89	qQ				
35+ 5	0.0000	1.87	qQ				
35+10	0.0000	1.86	qQ				
35+15	0.0000	1.84	qQ				
35+20	0.0000	1.82	qQ				
35+25	0.0000	1.80	qQ				
35+30	0.0000	1.78	qQ				
35+35	0.0000	1.76	qQ				
35+40	0.0000	1.74	qQ				
35+45	0.0000	1.73	qQ				
35+50	0.0000	1.71	qQ				
35+55	0.0000	1.69	qQ				
36+ 0	0.0000	1.67	qQ				
36+ 5	0.0000	1.66	qQ				

36+10	0.0000	1.64	qQ				
36+15	0.0000	1.62	qQ				
36+20	0.0000	1.60	qQ				
36+25	0.0000	1.59	qQ				
36+30	0.0000	1.57	qQ				
36+35	0.0000	1.56	qQ				
36+40	0.0000	1.54	qQ				
36+45	0.0000	1.52	qQ				
36+50	0.0000	1.51	qQ				
36+55	0.0000	1.49	qQ				
37+ 0	0.0000	1.48	qQ				
37+ 5	0.0000	1.46	qQ				
37+10	0.0000	1.45	qQ				
37+15	0.0000	1.43	qQ				
37+20	0.0000	1.42	Q				
37+25	0.0000	1.40	Q				
37+30	0.0000	1.39	Q				
37+35	0.0000	1.37	Q				
37+40	0.0000	1.36	Q				
37+45	0.0000	1.35	Q				
37+50	0.0000	1.33	Q				
37+55	0.0000	1.32	Q				
38+ 0	0.0000	1.30	Q				
38+ 5	0.0000	1.29	Q				
38+10	0.0000	1.28	Q				
38+15	0.0000	1.26	Q				
38+20	0.0000	1.25	Q				
38+25	0.0000	1.24	Q				
38+30	0.0000	1.23	Q				
38+35	0.0000	1.21	Q				
38+40	0.0000	1.20	Q				
38+45	0.0000	1.19	Q				
38+50	0.0000	1.18	Q				
38+55	0.0000	1.16	Q				
39+ 0	0.0000	1.15	Q				
39+ 5	0.0000	1.14	Q				
39+10	0.0000	1.13	Q				
39+15	0.0000	1.12	Q				
39+20	0.0000	1.10	Q				
39+25	0.0000	1.09	Q				
39+30	0.0000	1.08	Q				
39+35	0.0000	1.07	Q				
39+40	0.0000	1.06	Q				
39+45	0.0000	1.05	Q				
39+50	0.0000	1.04	Q				
39+55	0.0000	1.03	Q				
40+ 0	0.0000	1.02	Q				
40+ 5	0.0000	1.01	Q				
40+10	0.0000	1.00	Q				
40+15	0.0000	0.99	Q				
40+20	0.0000	0.98	Q				
40+25	0.0000	0.97	Q				
40+30	0.0000	0.95	Q				
40+35	0.0000	0.94	Q				
40+40	0.0000	0.93	Q				
40+45	0.0000	0.91	Q				
40+50	0.0000	0.90	Q				
40+55	0.0000	0.88	Q				
41+ 0	0.0000	0.87	Q				

41+ 5	0.0000	0.86	Q				
41+10	0.0000	0.85	Q				
41+15	0.0000	0.83	Q				
41+20	0.0000	0.82	Q				
41+25	0.0000	0.81	Q				
41+30	0.0000	0.80	Q				
41+35	0.0000	0.78	Q				
41+40	0.0000	0.77	Q				
41+45	0.0000	0.76	Q				
41+50	0.0000	0.75	Q				
41+55	0.0000	0.74	Q				
42+ 0	0.0000	0.73	Q				
42+ 5	0.0000	0.72	Q				
42+10	0.0000	0.71	Q				
42+15	0.0000	0.70	Q				
42+20	0.0000	0.68	Q				
42+25	0.0000	0.67	Q				
42+30	0.0000	0.66	Q				
42+35	0.0000	0.65	Q				
42+40	0.0000	0.65	Q				
42+45	0.0000	0.64	Q				
42+50	0.0000	0.63	Q				
42+55	0.0000	0.62	Q				
43+ 0	0.0000	0.61	Q				
43+ 5	0.0000	0.60	Q				
43+10	0.0000	0.59	Q				
43+15	0.0000	0.58	Q				
43+20	0.0000	0.57	Q				
43+25	0.0000	0.56	Q				
43+30	0.0000	0.56	Q				
43+35	0.0000	0.55	Q				
43+40	0.0000	0.54	Q				
43+45	0.0000	0.53	Q				
43+50	0.0000	0.52	Q				
43+55	0.0000	0.51	Q				
44+ 0	0.0000	0.51	Q				
44+ 5	0.0000	0.50	Q				
44+10	0.0000	0.49	Q				
44+15	0.0000	0.48	Q				
44+20	0.0000	0.48	Q				
44+25	0.0000	0.47	Q				
44+30	0.0000	0.46	Q				
44+35	0.0000	0.46	Q				
44+40	0.0000	0.45	Q				
44+45	0.0000	0.44	Q				
44+50	0.0000	0.44	Q				
44+55	0.0000	0.43	Q				
45+ 0	0.0000	0.42	Q				
45+ 5	0.0000	0.42	Q				
45+10	0.0000	0.41	Q				
45+15	0.0000	0.40	Q				
45+20	0.0000	0.40	Q				
45+25	0.0000	0.39	Q				
45+30	0.0000	0.39	Q				
45+35	0.0000	0.38	Q				
45+40	0.0000	0.38	Q				
45+45	0.0000	0.37	Q				
45+50	0.0000	0.36	Q				
45+55	0.0000	0.36	Q				

46+ 0	0.0000	0.35	Q				
46+ 5	0.0000	0.35	Q				
46+10	0.0000	0.34	Q				
46+15	0.0000	0.34	Q				
46+20	0.0000	0.33	Q				
46+25	0.0000	0.33	Q				
46+30	0.0000	0.32	Q				
46+35	0.0000	0.32	Q				
46+40	0.0000	0.31	Q				
46+45	0.0000	0.31	Q				
46+50	0.0000	0.30	Q				
46+55	0.0000	0.30	Q				
47+ 0	0.0000	0.30	Q				
47+ 5	0.0000	0.29	Q				
47+10	0.0000	0.29	Q				
47+15	0.0000	0.28	Q				
47+20	0.0000	0.28	Q				
47+25	0.0000	0.27	Q				
47+30	0.0000	0.27	Q				
47+35	0.0000	0.27	Q				
47+40	0.0000	0.26	Q				
47+45	0.0000	0.26	Q				
47+50	0.0000	0.25	Q				
47+55	0.0000	0.25	Q				
48+ 0	0.0000	0.25	Q				
48+ 5	0.0000	0.24	Q				
48+10	0.0000	0.24	Q				
48+15	0.0000	0.24	Q				
48+20	0.0000	0.23	Q				
48+25	0.0000	0.23	Q				
48+30	0.0000	0.23	Q				
48+35	0.0000	0.22	Q				
48+40	0.0000	0.22	Q				
48+45	0.0000	0.22	Q				
48+50	0.0000	0.21	Q				
48+55	0.0000	0.21	Q				
49+ 0	0.0000	0.21	Q				
49+ 5	0.0000	0.20	Q				
49+10	0.0000	0.20	Q				
49+15	0.0000	0.20	Q				
49+20	0.0000	0.19	Q				
49+25	0.0000	0.19	Q				
49+30	0.0000	0.19	Q				
49+35	0.0000	0.19	Q				
49+40	0.0000	0.18	Q				
49+45	0.0000	0.18	Q				
49+50	0.0000	0.18	Q				
49+55	0.0000	0.17	Q				
50+ 0	0.0000	0.17	Q				
50+ 5	0.0000	0.17	Q				
50+10	0.0000	0.17	Q				
50+15	0.0000	0.16	Q				
50+20	0.0000	0.16	Q				
50+25	0.0000	0.16	Q				
50+30	0.0000	0.16	Q				
50+35	0.0000	0.15	Q				
50+40	0.0000	0.15	Q				
50+45	0.0000	0.15	Q				
50+50	0.0000	0.15	Q				

50+55	0.0000	0.15	Q				
51+ 0	0.0000	0.14	Q				
51+ 5	0.0000	0.14	Q				
51+10	0.0000	0.14	Q				
51+15	0.0000	0.14	Q				
51+20	0.0000	0.14	Q				
51+25	0.0000	0.13	Q				
51+30	0.0000	0.13	Q				
51+35	0.0000	0.13	Q				
51+40	0.0000	0.13	Q				
51+45	0.0000	0.13	Q				
51+50	0.0000	0.12	Q				
51+55	0.0000	0.12	Q				
52+ 0	0.0000	0.12	Q				
52+ 5	0.0000	0.12	Q				
52+10	0.0000	0.12	Q				
52+15	0.0000	0.11	Q				
52+20	0.0000	0.11	Q				
52+25	0.0000	0.11	Q				
52+30	0.0000	0.11	Q				
52+35	0.0000	0.11	Q				
52+40	0.0000	0.11	Q				
52+45	0.0000	0.10	Q				
52+50	0.0000	0.10	Q				
52+55	0.0000	0.10	Q				
53+ 0	0.0000	0.10	Q				
53+ 5	0.0000	0.10	Q				
53+10	0.0000	0.10	Q				
53+15	0.0000	0.10	Q				
53+20	0.0000	0.09	Q				
53+25	0.0000	0.09	Q				
53+30	0.0000	0.09	Q				
53+35	0.0000	0.09	Q				
53+40	0.0000	0.09	Q				
53+45	0.0000	0.09	Q				
53+50	0.0000	0.09	Q				
53+55	0.0000	0.08	Q				
54+ 0	0.0000	0.08	Q				
54+ 5	0.0000	0.08	Q				
54+10	0.0000	0.08	Q				
54+15	0.0000	0.08	Q				
54+20	0.0000	0.08	Q				
54+25	0.0000	0.08	Q				
54+30	0.0000	0.08	Q				
54+35	0.0000	0.08	Q				
54+40	0.0000	0.07	Q				
54+45	0.0000	0.07	Q				
54+50	0.0000	0.07	Q				
54+55	0.0000	0.07	Q				
55+ 0	0.0000	0.07	Q				
55+ 5	0.0000	0.07	Q				
55+10	0.0000	0.07	Q				
55+15	0.0000	0.07	Q				
55+20	0.0000	0.07	Q				
55+25	0.0000	0.06	Q				
55+30	0.0000	0.06	Q				
55+35	0.0000	0.06	Q				
55+40	0.0000	0.06	Q				
55+45	0.0000	0.06	Q				

55+50	0.0000	0.06	Q				
55+55	0.0000	0.06	Q				
56+ 0	0.0000	0.06	Q				
56+ 5	0.0000	0.06	Q				
56+10	0.0000	0.06	Q				
56+15	0.0000	0.06	Q				
56+20	0.0000	0.05	Q				
56+25	0.0000	0.05	Q				
56+30	0.0000	0.05	Q				
56+35	0.0000	0.05	Q				
56+40	0.0000	0.05	Q				
56+45	0.0000	0.05	Q				
56+50	0.0000	0.05	Q				
56+55	0.0000	0.05	Q				
57+ 0	0.0000	0.05	Q				
57+ 5	0.0000	0.05	Q				
57+10	0.0000	0.05	Q				
57+15	0.0000	0.05	Q				
57+20	0.0000	0.05	Q				
57+25	0.0000	0.05	Q				
57+30	0.0000	0.04	Q				
57+35	0.0000	0.04	Q				
57+40	0.0000	0.04	Q				
57+45	0.0000	0.04	Q				
57+50	0.0000	0.04	Q				
57+55	0.0000	0.04	Q				
58+ 0	0.0000	0.04	Q				
58+ 5	0.0000	0.04	Q				
58+10	0.0000	0.04	Q				
58+15	0.0000	0.04	Q				
58+20	0.0000	0.04	Q				
58+25	0.0000	0.04	Q				
58+30	0.0000	0.04	Q				
58+35	0.0000	0.04	Q				
58+40	0.0000	0.04	Q				
58+45	0.0000	0.04	Q				
58+50	0.0000	0.03	Q				
58+55	0.0000	0.03	Q				
59+ 0	0.0000	0.03	Q				
59+ 5	0.0000	0.03	Q				
59+10	0.0000	0.03	Q				
59+15	0.0000	0.03	Q				
59+20	0.0000	0.03	Q				
59+25	0.0000	0.03	Q				
59+30	0.0000	0.03	Q				
59+35	0.0000	0.03	Q				
59+40	0.0000	0.03	Q				
59+45	0.0000	0.03	Q				
59+50	0.0000	0.03	Q				
59+55	0.0000	0.03	Q				
60+ 0	0.0000	0.03	Q				
60+ 5	0.0000	0.03	Q				
60+10	0.0000	0.03	Q				
60+15	0.0000	0.03	Q				
60+20	0.0000	0.03	Q				
60+25	0.0000	0.03	Q				
60+30	0.0000	0.03	Q				
60+35	0.0000	0.03	Q				
60+40	0.0000	0.03	Q				

60+45	0.0000	0.02	Q				
60+50	0.0000	0.02	Q				
60+55	0.0000	0.02	Q				
61+ 0	0.0000	0.02	Q				
61+ 5	0.0000	0.02	Q				
61+10	0.0000	0.02	Q				
61+15	0.0000	0.02	Q				
61+20	0.0000	0.02	Q				
61+25	0.0000	0.02	Q				
61+30	0.0000	0.02	Q				
61+35	0.0000	0.02	Q				
61+40	0.0000	0.02	Q				
61+45	0.0000	0.02	Q				
61+50	0.0000	0.02	Q				
61+55	0.0000	0.02	Q				
62+ 0	0.0000	0.02	Q				
62+ 5	0.0000	0.02	Q				
62+10	0.0000	0.02	Q				
62+15	0.0000	0.02	Q				
62+20	0.0000	0.02	Q				
62+25	0.0000	0.02	Q				
62+30	0.0000	0.02	Q				
62+35	0.0000	0.02	Q				
62+40	0.0000	0.02	Q				
62+45	0.0000	0.02	Q				
62+50	0.0000	0.02	Q				
62+55	0.0000	0.02	Q				
63+ 0	0.0000	0.02	Q				
63+ 5	0.0000	0.02	Q				
63+10	0.0000	0.02	Q				
63+15	0.0000	0.02	Q				
63+20	0.0000	0.02	Q				
63+25	0.0000	0.02	Q				
63+30	0.0000	0.02	Q				
63+35	0.0000	0.01	Q				
63+40	0.0000	0.01	Q				
63+45	0.0000	0.01	Q				
63+50	0.0000	0.01	Q				
63+55	0.0000	0.01	Q				
64+ 0	0.0000	0.01	Q				
64+ 5	0.0000	0.01	Q				
64+10	0.0000	0.01	Q				
64+15	0.0000	0.01	Q				
64+20	0.0000	0.01	Q				
64+25	0.0000	0.01	Q				
64+30	0.0000	0.01	Q				
64+35	0.0000	0.01	Q				
64+40	0.0000	0.01	Q				
64+45	0.0000	0.01	Q				
64+50	0.0000	0.01	Q				
64+55	0.0000	0.01	Q				
65+ 0	0.0000	0.01	Q				
65+ 5	0.0000	0.01	Q				
65+10	0.0000	0.01	Q				
65+15	0.0000	0.01	Q				
65+20	0.0000	0.01	Q				
65+25	0.0000	0.01	Q				
65+30	0.0000	0.01	Q				
65+35	0.0000	0.01	Q				

65+40	0.0000	0.01	Q				
65+45	0.0000	0.01	Q				
65+50	0.0000	0.01	Q				
65+55	0.0000	0.01	Q				
66+ 0	0.0000	0.01	Q				
66+ 5	0.0000	0.01	Q				
66+10	0.0000	0.01	Q				
66+15	0.0000	0.01	Q				
66+20	0.0000	0.01	Q				
66+25	0.0000	0.01	Q				
66+30	0.0000	0.01	Q				
66+35	0.0000	0.01	Q				
66+40	0.0000	0.01	Q				
66+45	0.0000	0.01	Q				
66+50	0.0000	0.01	Q				
66+55	0.0000	0.01	Q				
67+ 0	0.0000	0.01	Q				
67+ 5	0.0000	0.01	Q				
67+10	0.0000	0.01	Q				
67+15	0.0000	0.01	Q				
67+20	0.0000	0.01	Q				
67+25	0.0000	0.01	Q				
67+30	0.0000	0.01	Q				
67+35	0.0000	0.01	Q				
67+40	0.0000	0.01	Q				
67+45	0.0000	0.01	Q				
67+50	0.0000	0.01	Q				
67+55	0.0000	0.01	Q				
68+ 0	0.0000	0.01	Q				
68+ 5	0.0000	0.01	Q				
68+10	0.0000	0.01	Q				
68+15	0.0000	0.01	Q				
68+20	0.0000	0.01	Q				
68+25	0.0000	0.01	Q				
68+30	0.0000	0.01	Q				
68+35	0.0000	0.01	Q				
68+40	0.0000	0.01	Q				
68+45	0.0000	0.01	Q				
68+50	0.0000	0.01	Q				
68+55	0.0000	0.01	Q				
69+ 0	0.0000	0.01	Q				
69+ 5	0.0000	0.01	Q				
69+10	0.0000	0.01	Q				
69+15	0.0000	0.01	Q				
69+20	0.0000	0.01	Q				
69+25	0.0000	0.01	Q				
69+30	0.0000	0.01	Q				
69+35	0.0000	0.01	Q				
69+40	0.0000	0.00	Q				
69+45	0.0000	0.00	Q				
69+50	0.0000	0.00	Q				
69+55	0.0000	0.00	Q				
70+ 0	0.0000	0.00	Q				
70+ 5	0.0000	0.00	Q				
70+10	0.0000	0.00	Q				
70+15	0.0000	0.00	Q				
70+20	0.0000	0.00	Q				
70+25	0.0000	0.00	Q				
70+30	0.0000	0.00	Q				

70+35	0.0000	0.00	Q				
70+40	0.0000	0.00	Q				
70+45	0.0000	0.00	Q				
70+50	0.0000	0.00	Q				
70+55	0.0000	0.00	Q				
71+ 0	0.0000	0.00	Q				
71+ 5	0.0000	0.00	Q				
71+10	0.0000	0.00	Q				
71+15	0.0000	0.00	Q				
71+20	0.0000	0.00	Q				
71+25	0.0000	0.00	Q				
71+30	0.0000	0.00	Q				
71+35	0.0000	0.00	Q				
71+40	0.0000	0.00	Q				
71+45	0.0000	0.00	Q				
71+50	0.0000	0.00	Q				
71+55	0.0000	0.00	Q				
72+ 0	0.0000	0.00	Q				
72+ 5	0.0000	0.00	Q				
72+10	0.0000	0.00	Q				
72+15	0.0000	0.00	Q				
72+20	0.0000	0.00	Q				
72+25	0.0000	0.00	Q				
72+30	0.0000	0.00	Q				
72+35	0.0000	0.00	Q				
72+40	0.0000	0.00	Q				
72+45	0.0000	0.00	Q				
72+50	0.0000	0.00	Q				
72+55	0.0000	0.00	Q				
73+ 0	0.0000	0.00	Q				
73+ 5	0.0000	0.00	Q				
73+10	0.0000	0.00	Q				
73+15	0.0000	0.00	Q				
73+20	0.0000	0.00	Q				
73+25	0.0000	0.00	Q				
73+30	0.0000	0.00	Q				
73+35	0.0000	0.00	Q				
73+40	0.0000	0.00	Q				
73+45	0.0000	0.00	Q				
73+50	0.0000	0.00	Q				
73+55	0.0000	0.00	Q				
74+ 0	0.0000	0.00	Q				
74+ 5	0.0000	0.00	Q				
74+10	0.0000	0.00	Q				
74+15	0.0000	0.00	Q				
74+20	0.0000	0.00	Q				
74+25	0.0000	0.00	Q				
74+30	0.0000	0.00	Q				
74+35	0.0000	0.00	Q				
74+40	0.0000	0.00	Q				
74+45	0.0000	0.00	Q				
74+50	0.0000	0.00	Q				
74+55	0.0000	0.00	Q				
75+ 0	0.0000	0.00	Q				
75+ 5	0.0000	0.00	Q				
75+10	0.0000	0.00	Q				
75+15	0.0000	0.00	Q				
75+20	0.0000	0.00	Q				
75+25	0.0000	0.00	Q				

75+30	0.0000	0.00	Q				
75+35	0.0000	0.00	Q				
75+40	0.0000	0.00	Q				
75+45	0.0000	0.00	Q				
75+50	0.0000	0.00	Q				
75+55	0.0000	0.00	Q				
76+ 0	0.0000	0.00	Q				
76+ 5	0.0000	0.00	Q				
76+10	0.0000	0.00	Q				
76+15	0.0000	0.00	Q				
76+20	0.0000	0.00	Q				
76+25	0.0000	0.00	Q				
76+30	0.0000	0.00	Q				
76+35	0.0000	0.00	Q				
76+40	0.0000	0.00	Q				
76+45	0.0000	0.00	Q				
76+50	0.0000	0.00	Q				
76+55	0.0000	0.00	Q				
77+ 0	0.0000	0.00	Q				
77+ 5	0.0000	0.00	Q				
77+10	0.0000	0.00	Q				
77+15	0.0000	0.00	Q				
77+20	0.0000	0.00	Q				
77+25	0.0000	0.00	Q				
77+30	0.0000	0.00	Q				
77+35	0.0000	0.00	Q				
77+40	0.0000	0.00	Q				
77+45	0.0000	0.00	Q				
77+50	0.0000	0.00	Q				
77+55	0.0000	0.00	Q				
78+ 0	0.0000	0.00	Q				
78+ 5	0.0000	0.00	Q				
78+10	0.0000	0.00	Q				
78+15	0.0000	0.00	Q				
78+20	0.0000	0.00	Q				
78+25	0.0000	0.00	Q				
78+30	0.0000	0.00	Q				
78+35	0.0000	0.00	Q				
78+40	0.0000	0.00	Q				

*****HYDROGRAPH DATA*****

Number of intervals = 944

Time interval = 5.0 (Min.)

Maximum/Peak flow rate = 56.860 (CFS)

Total volume = 35.666 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

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Process from Point/Station 5.000 to Point/Station 6.000

**** STREAM ROUTING SCS CONVEX METHOD ****

HYDROGRAPH STREAM ROUTING DATA:

Length of stream = 320.00 (Ft.)
 Elevation difference = 3.20 (Ft.)
 Slope of channel = 0.010000 (Vert/Horiz)
 Channel type - Pipe

Pipe length = 320.00(Ft.) Elevation difference = 3.20(Ft.)
 Manning's N = 0.013 No. of pipes = 1
 Pipe evaluation using mean flow rate of hydrograph
 Required pipe flow = 14.844(CFS)
 Nearest computed pipe diameter = 21.00(In.)
 Calculated individual pipe flow = 14.844(CFS)
 Normal flow depth in pipe = 16.13(In.)
 Flow top width inside pipe = 17.73(In.)
 Critical Depth = 1.43(Ft.)
 Pipe flow velocity = 7.49(Ft/s)
 Travel time through pipe = 0.71 min.

Pipe length = 320.00(Ft.) Elevation difference = 3.20(Ft.)
 Manning's N = 0.013 No. of pipes = 1
 Pipe evaluation using maximum flow rate of hydrograph
 Required pipe flow = 56.860(CFS)
 Nearest computed pipe diameter = 36.00(In.)
 Calculated individual pipe flow = 56.860(CFS)
 Normal flow depth in pipe = 25.55(In.)
 Flow top width inside pipe = 32.68(In.)
 Critical Depth = 2.44(Ft.)
 Pipe flow velocity = 10.60(Ft/s)
 Travel time through pipe = 0.50 min.

***** SCS CONVEX CHANNEL ROUTING *****

Convex method of stream routing data items:

Using equation: Outflow =

$$O(t+dt) = (1-c^*)O(t+dt-dt^*) + \text{Input}(c^*)$$

where $c^* = 1 - (1-c)^e$ and $dt = c(\text{length})/\text{velocity}$

$c(v/v+1.7) = 0.8617$ Travel time = 0.50 (min.)

$dt^*(\text{unit time interval}) = 5.00(\text{min.}), e = 8.0184$

$dt(\text{routing time-step}) = 0.43 (\text{min.}), c^* = 1.0000$

Output hydrograph delayed by 0 unit time increments

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P R I N T O F S T O R M

R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals (CFS)

Time(h+m)	Out = O(CFS)	In = I	0	14.2	28.4	42.6	56.9
0+ 5	0.0376	0.04	O				
0+10	0.2680	0.29	O				
0+15	0.7294	0.77	O				
0+20	1.2440	1.29	O				
0+25	1.7579	1.80	O				
0+30	2.2404	2.28	O				

0+35	2.6781	2.72	O				
0+40	3.0597	3.09	O				
0+45	3.3935	3.42	O				
0+50	3.6850	3.71	O				
0+55	3.9400	3.96	O				
1+ 0	4.1639	4.18	O				
1+ 5	4.3615	4.38	O				
1+10	4.5367	4.55	O				
1+15	4.6931	4.71	O				
1+20	4.8334	4.85	O				
1+25	4.9602	4.97	O				
1+30	5.0754	5.09	O				
1+35	5.1808	5.19	O				
1+40	5.2778	5.29	O				
1+45	5.3678	5.38	O				
1+50	5.4517	5.46	O				
1+55	5.5306	5.54	O				
2+ 0	5.6050	5.61	O				
2+ 5	5.6758	5.68	O				
2+10	5.7386	5.74	O				
2+15	5.7941	5.80	O				
2+20	5.8460	5.85	O				
2+25	5.8962	5.90	O				
2+30	5.9448	5.95	O				
2+35	5.9922	6.00	O				
2+40	6.0385	6.04	O				
2+45	6.0840	6.09	O				
2+50	6.1287	6.13	O				
2+55	6.1728	6.18	O				
3+ 0	6.2164	6.22	O				
3+ 5	6.2596	6.26	O				
3+10	6.3025	6.31	O				
3+15	6.3451	6.35	O				
3+20	6.3874	6.39	O				
3+25	6.4296	6.43	O				
3+30	6.4717	6.48	O				
3+35	6.5137	6.52	O				
3+40	6.5556	6.56	O				
3+45	6.5975	6.60	O				
3+50	6.6394	6.64	O				
3+55	6.6814	6.69	O				
4+ 0	6.7233	6.73	O				
4+ 5	6.7653	6.77	O				
4+10	6.8074	6.81	O				
4+15	6.8496	6.85	O				
4+20	6.8918	6.90	O				
4+25	6.9342	6.94	O				
4+30	6.9766	6.98	O				
4+35	7.0193	7.02	O				
4+40	7.0620	7.07	O				
4+45	7.1049	7.11	OI				
4+50	7.1479	7.15	O				
4+55	7.1912	7.19	O				
5+ 0	7.2345	7.24	O				
5+ 5	7.2781	7.28	O				
5+10	7.3219	7.33	O				
5+15	7.3659	7.37	O				
5+20	7.4100	7.41	O				
5+25	7.4545	7.46	O				

5+30	7.4991	7.50		O				
5+35	7.5440	7.55		O				
5+40	7.5890	7.59		O				
5+45	7.6344	7.64		O				
5+50	7.6800	7.68		O				
5+55	7.7259	7.73		O				
6+ 0	7.7720	7.78		O				
6+ 5	7.8185	7.82		O				
6+10	7.8652	7.87		O				
6+15	7.9123	7.92		O				
6+20	7.9596	7.96		O				
6+25	8.0073	8.01		O				
6+30	8.0553	8.06		O				
6+35	8.1037	8.11		O				
6+40	8.1524	8.16		O				
6+45	8.2015	8.21		O				
6+50	8.2509	8.26		O				
6+55	8.3008	8.31		O				
7+ 0	8.3510	8.36		O				
7+ 5	8.4017	8.41		O				
7+10	8.4527	8.46		O				
7+15	8.5043	8.51		O				
7+20	8.5563	8.56		O				
7+25	8.6108	8.62		O				
7+30	8.6667	8.67		O				
7+35	8.7232	8.73		O				
7+40	8.7800	8.78		O				
7+45	8.8375	8.84		O				
7+50	8.8954	8.90		O				
7+55	8.9538	8.96		O				
8+ 0	9.0128	9.02		O				
8+ 5	9.0724	9.08		O				
8+10	9.1324	9.14		O				
8+15	9.1932	9.20		O				
8+20	9.2544	9.26		O				
8+25	9.3164	9.32		O				
8+30	9.3789	9.38		O				
8+35	9.4423	9.45		O				
8+40	9.5062	9.51		O				
8+45	9.5709	9.58		O				
8+50	9.6363	9.64		O				
8+55	9.7025	9.71		O				
9+ 0	9.7694	9.78		O				
9+ 5	9.8373	9.84		O				
9+10	9.9058	9.91		O				
9+15	9.9754	9.98		O				
9+20	10.0457	10.05		O				
9+25	10.1171	10.12		O				
9+30	10.1894	10.20		O				
9+35	10.2627	10.27		O				
9+40	10.3369	10.34		O				
9+45	10.4124	10.42		O				
9+50	10.4888	10.50		O				
9+55	10.5665	10.57		O				
10+ 0	10.6452	10.65		O				
10+ 5	10.7252	10.73		O				
10+10	10.8064	10.81		O				
10+15	10.8890	10.90		O				
10+20	10.9728	10.98		O				

10+25	11.0582	11.07		O					
10+30	11.1449	11.15		O					
10+35	11.2332	11.24		O					
10+40	11.3229	11.33		O					
10+45	11.4145	11.42		O					
10+50	11.5075	11.52		O					
10+55	11.6024	11.61		O					
11+ 0	11.6990	11.71		O					
11+ 5	11.7977	11.81		O					
11+10	11.8981	11.91		O					
11+15	12.0007	12.01		O					
11+20	12.1053	12.11		O					
11+25	12.2123	12.22		O					
11+30	12.3213	12.33		O					
11+35	12.4330	12.44		O					
11+40	12.5470	12.56		O					
11+45	12.6639	12.67		O					
11+50	12.7832	12.79		OI					
11+55	12.9056	12.92		O					
12+ 0	13.0308	13.04		O					
12+ 5	13.1721	13.18		O					
12+10	13.3608	13.38		O					
12+15	13.6035	13.62		O					
12+20	13.8421	13.86		O					
12+25	14.0759	14.10		O					
12+30	14.3094	14.33		O					
12+35	14.5442	14.56		O					
12+40	14.7757	14.80		O					
12+45	15.0060	15.03		O					
12+50	15.2349	15.25		O					
12+55	15.4637	15.48		O					
13+ 0	15.6922	15.71		O					
13+ 5	15.9219	15.94		O					
13+10	16.1525	16.17		O					
13+15	16.3856	16.41		O					
13+20	16.6209	16.64		O					
13+25	16.8599	16.88		O					
13+30	17.1024	17.12		O					
13+35	17.3501	17.37		O					
13+40	17.6025	17.62		O					
13+45	17.8615	17.88		O					
13+50	18.1267	18.15		O					
13+55	18.4001	18.42		O					
14+ 0	18.6813	18.71		O					
14+ 5	18.9727	19.00		O					
14+10	19.2744	19.30		O					
14+15	19.5892	19.62		O					
14+20	19.9168	19.95		O					
14+25	20.2599	20.29		O					
14+30	20.6180	20.65		O					
14+35	20.9945	21.03		O					
14+40	21.3896	21.42		O					
14+45	21.8076	21.84		O					
14+50	22.2342	22.27		O					
14+55	22.6706	22.71		O					
15+ 0	23.1298	23.17		O					
15+ 5	23.6250	23.67		O					
15+10	24.1607	24.21		OI					
15+15	24.7488	24.80		O					

15+20	25.3953	25.45			o			
15+25	26.0676	26.13			o			
15+30	26.5748	26.62			o			
15+35	26.9262	26.96			o			
15+40	27.4285	27.47			o			
15+45	28.1672	28.23			o			
15+50	29.1992	29.29			o			
15+55	30.6876	30.82			o			
16+ 0	33.0670	33.28				o		
16+ 5	38.0443	38.50					o	
16+10	48.2740	49.20					o	
16+15	56.1959	56.86						o
16+20	54.0536	53.79						o
16+25	51.0324	50.77						o
16+30	49.4798	49.36						o
16+35	48.8675	48.82						o
16+40	47.9237	47.84						o
16+45	47.0987	47.03						o
16+50	46.2602	46.19						o
16+55	45.4205	45.35						o
17+ 0	44.5785	44.51						o
17+ 5	43.6992	43.62						o
17+10	42.6946	42.61						o
17+15	41.6247	41.53						o
17+20	40.5671	40.48						o
17+25	39.5414	39.45						o
17+30	38.5496	38.46						o
17+35	37.5924	37.51						o
17+40	36.6697	36.59						o
17+45	35.7789	35.70						o
17+50	34.8820	34.80						o
17+55	33.9927	33.92						o
18+ 0	33.1368	33.06						o
18+ 5	32.3073	32.24						o
18+10	31.4557	31.38						o
18+15	30.5845	30.51						o
18+20	29.7622	29.69						o
18+25	28.9880	28.92						o
18+30	28.2524	28.19						o
18+35	27.5503	27.49						o
18+40	26.8315	26.77						o
18+45	26.0922	26.03						o
18+50	25.3744	25.31						o
18+55	24.6983	24.64						o
19+ 0	24.0649	24.01						o
19+ 5	23.4713	23.42						o
19+10	22.9148	22.87						o
19+15	22.3927	22.35						o
19+20	21.9026	21.86						o
19+25	21.4421	21.40						o
19+30	21.0091	20.97						o
19+35	20.6017	20.57						o
19+40	20.2181	20.19						o
19+45	19.8566	19.83						o
19+50	19.5157	19.49						o
19+55	19.1938	19.17						o
20+ 0	18.8896	18.86						o
20+ 5	18.6019	18.58						o
20+10	18.3296	18.31						o

20+15	18.0715	18.05			O			
20+20	17.8268	17.81			O			
20+25	17.5456	17.52			O			
20+30	17.2157	17.19			O			
20+35	16.8864	16.86			O			
20+40	16.5873	16.56			O			
20+45	16.3201	16.30			O			
20+50	16.0805	16.06			O			
20+55	15.8646	15.85			O			
21+ 0	15.6689	15.65			O			
21+ 5	15.4907	15.48			O			
21+10	15.3274	15.31			O			
21+15	15.1769	15.16			O			
21+20	15.0376	15.03			O			
21+25	14.9079	14.90			O			
21+30	14.7865	14.78			O			
21+35	14.6724	14.66			O			
21+40	14.5646	14.56			O			
21+45	14.4623	14.45			O			
21+50	14.3649	14.36			O			
21+55	14.2717	14.26			O			
22+ 0	14.1823	14.17			O			
22+ 5	14.0962	14.09			O			
22+10	14.0132	14.01			O			
22+15	13.9303	13.92			O			
22+20	13.8482	13.84			O			
22+25	13.7679	13.76			O			
22+30	13.6896	13.68			O			
22+35	13.6132	13.61			O			
22+40	13.5384	13.53			O			
22+45	13.4651	13.46			O			
22+50	13.3932	13.39			O			
22+55	13.3227	13.32			O			
23+ 0	13.2534	13.25			O			
23+ 5	13.1852	13.18			O			
23+10	13.1181	13.11			O			
23+15	13.0520	13.05			O			
23+20	12.9869	12.98			O			
23+25	12.9227	12.92			O			
23+30	12.8594	12.85			O			
23+35	12.7969	12.79			O			
23+40	12.7352	12.73			O			
23+45	12.6743	12.67			O			
23+50	12.6141	12.61			O			
23+55	12.5546	12.55			O			
24+ 0	12.4958	12.49			O			
24+ 5	12.4013	12.39			O			
24+10	12.1219	12.10			O			
24+15	11.6249	11.58			O			
24+20	11.0858	11.04			O			
24+25	10.5539	10.51			O			
24+30	10.0580	10.02			O			
24+35	9.6109	9.57			O			
24+40	9.2232	9.19			O			
24+45	8.8862	8.86			O			
24+50	8.5940	8.57			O			
24+55	8.3380	8.32			O			
25+ 0	8.1088	8.09			O			
25+ 5	7.9048	7.89			O			

25+10	7.7242	7.71		O					
25+15	7.5637	7.55		O					
25+20	7.4203	7.41		O					
25+25	7.2913	7.28		O					
25+30	7.1747	7.16		O					
25+35	7.0685	7.06		O					
25+40	6.9712	6.96		O					
25+45	6.8815	6.87		O					
25+50	6.7983	6.79		O					
25+55	6.7206	6.71		O					
26+ 0	6.6476	6.64		O					
26+ 5	6.5787	6.57		O					
26+10	6.5132	6.51		O					
26+15	6.4508	6.45		O					
26+20	6.3909	6.39		O					
26+25	6.3333	6.33		O					
26+30	6.2777	6.27		O					
26+35	6.2237	6.22		O					
26+40	6.1713	6.17		O					
26+45	6.1201	6.12		O					
26+50	6.0701	6.07		O					
26+55	6.0211	6.02		O					
27+ 0	5.9629	5.96		O					
27+ 5	5.8904	5.88		O					
27+10	5.8132	5.81		O					
27+15	5.7369	5.73		O					
27+20	5.6618	5.66		O					
27+25	5.5878	5.58		O					
27+30	5.5121	5.51		O					
27+35	5.4386	5.43		O					
27+40	5.3682	5.36		O					
27+45	5.2993	5.29		O					
27+50	5.2313	5.23		O					
27+55	5.1642	5.16		O					
28+ 0	5.0980	5.09		O					
28+ 5	5.0325	5.03		O					
28+10	4.9680	4.96		O					
28+15	4.9042	4.90		O					
28+20	4.8413	4.84		O					
28+25	4.7792	4.77		O					
28+30	4.7179	4.71		O					
28+35	4.6573	4.65		O					
28+40	4.5976	4.59		O					
28+45	4.5386	4.53		O					
28+50	4.4804	4.48		O					
28+55	4.4229	4.42		O					
29+ 0	4.3661	4.36		O					
29+ 5	4.3101	4.31		O					
29+10	4.2548	4.25		O					
29+15	4.2002	4.20		O					
29+20	4.1463	4.14		O					
29+25	4.0931	4.09		O					
29+30	4.0406	4.04		O					
29+35	3.9908	3.99		O					
29+40	3.9431	3.94		O					
29+45	3.8963	3.89		O					
29+50	3.8501	3.85		O					
29+55	3.8045	3.80		O					
30+ 0	3.7593	3.76		O					

30+ 5	3.7148	3.71	O				
30+10	3.6707	3.67	O				
30+15	3.6272	3.62	O				
30+20	3.5842	3.58	O				
30+25	3.5417	3.54	O				
30+30	3.4997	3.50	O				
30+35	3.4582	3.45	O				
30+40	3.4172	3.41	O				
30+45	3.3767	3.37	O				
30+50	3.3366	3.33	O				
30+55	3.2971	3.29	O				
31+ 0	3.2580	3.25	O				
31+ 5	3.2193	3.22	O				
31+10	3.1812	3.18	O				
31+15	3.1435	3.14	O				
31+20	3.1062	3.10	O				
31+25	3.0693	3.07	O				
31+30	3.0330	3.03	O				
31+35	2.9970	2.99	O				
31+40	2.9615	2.96	O				
31+45	2.9263	2.92	O				
31+50	2.8916	2.89	O				
31+55	2.8574	2.85	O				
32+ 0	2.8235	2.82	O				
32+ 5	2.7900	2.79	O				
32+10	2.7569	2.75	O				
32+15	2.7242	2.72	O				
32+20	2.6919	2.69	O				
32+25	2.6600	2.66	O				
32+30	2.6285	2.63	O				
32+35	2.5973	2.59	O				
32+40	2.5665	2.56	O				
32+45	2.5361	2.53	O				
32+50	2.5060	2.50	O				
32+55	2.4763	2.47	O				
33+ 0	2.4469	2.44	O				
33+ 5	2.4179	2.42	O				
33+10	2.3892	2.39	O				
33+15	2.3609	2.36	O				
33+20	2.3336	2.33	O				
33+25	2.3085	2.31	O				
33+30	2.2846	2.28	O				
33+35	2.2611	2.26	O				
33+40	2.2378	2.24	O				
33+45	2.2147	2.21	O				
33+50	2.1918	2.19	O				
33+55	2.1692	2.17	O				
34+ 0	2.1468	2.14	O				
34+ 5	2.1247	2.12	O				
34+10	2.1028	2.10	O				
34+15	2.0811	2.08	O				
34+20	2.0596	2.06	O				
34+25	2.0384	2.04	O				
34+30	2.0174	2.02	O				
34+35	1.9966	1.99	O				
34+40	1.9760	1.97	O				
34+45	1.9556	1.95	O				
34+50	1.9354	1.93	O				
34+55	1.9154	1.91	O				

35+ 0	1.8957	1.89	10				
35+ 5	1.8761	1.87	10				
35+10	1.8568	1.86	10				
35+15	1.8376	1.84	10				
35+20	1.8187	1.82	10				
35+25	1.7999	1.80	10				
35+30	1.7813	1.78	10				
35+35	1.7630	1.76	10				
35+40	1.7448	1.74	10				
35+45	1.7268	1.73	10				
35+50	1.7090	1.71	10				
35+55	1.6913	1.69	10				
36+ 0	1.6739	1.67	10				
36+ 5	1.6566	1.66	10				
36+10	1.6395	1.64	10				
36+15	1.6226	1.62	10				
36+20	1.6059	1.60	10				
36+25	1.5893	1.59	10				
36+30	1.5729	1.57	10				
36+35	1.5567	1.56	10				
36+40	1.5407	1.54	10				
36+45	1.5248	1.52	10				
36+50	1.5090	1.51	10				
36+55	1.4935	1.49	10				
37+ 0	1.4781	1.48	10				
37+ 5	1.4628	1.46	10				
37+10	1.4477	1.45	10				
37+15	1.4328	1.43	10				
37+20	1.4180	1.42	0				
37+25	1.4034	1.40	0				
37+30	1.3889	1.39	0				
37+35	1.3746	1.37	0				
37+40	1.3604	1.36	0				
37+45	1.3464	1.35	0				
37+50	1.3325	1.33	0				
37+55	1.3187	1.32	0				
38+ 0	1.3051	1.30	0				
38+ 5	1.2917	1.29	0				
38+10	1.2784	1.28	0				
38+15	1.2652	1.26	0				
38+20	1.2521	1.25	0				
38+25	1.2392	1.24	0				
38+30	1.2264	1.23	0				
38+35	1.2138	1.21	0				
38+40	1.2013	1.20	0				
38+45	1.1889	1.19	0				
38+50	1.1766	1.18	0				
38+55	1.1645	1.16	0				
39+ 0	1.1524	1.15	0				
39+ 5	1.1406	1.14	0				
39+10	1.1288	1.13	0				
39+15	1.1172	1.12	0				
39+20	1.1056	1.10	0				
39+25	1.0942	1.09	0				
39+30	1.0829	1.08	0				
39+35	1.0718	1.07	0				
39+40	1.0607	1.06	0				
39+45	1.0498	1.05	0				
39+50	1.0389	1.04	0				

39+55	1.0282	1.03	O				
40+ 0	1.0176	1.02	O				
40+ 5	1.0071	1.01	O				
40+10	0.9967	1.00	O				
40+15	0.9865	0.99	O				
40+20	0.9763	0.98	O				
40+25	0.9662	0.97	O				
40+30	0.9541	0.95	O				
40+35	0.9403	0.94	O				
40+40	0.9263	0.93	O				
40+45	0.9125	0.91	O				
40+50	0.8989	0.90	O				
40+55	0.8855	0.88	O				
41+ 0	0.8723	0.87	O				
41+ 5	0.8593	0.86	O				
41+10	0.8465	0.85	O				
41+15	0.8338	0.83	O				
41+20	0.8214	0.82	O				
41+25	0.8091	0.81	O				
41+30	0.7971	0.80	O				
41+35	0.7852	0.78	O				
41+40	0.7735	0.77	O				
41+45	0.7619	0.76	O				
41+50	0.7506	0.75	O				
41+55	0.7394	0.74	O				
42+ 0	0.7284	0.73	O				
42+ 5	0.7175	0.72	O				
42+10	0.7068	0.71	O				
42+15	0.6963	0.70	O				
42+20	0.6859	0.68	O				
42+25	0.6756	0.67	O				
42+30	0.6656	0.66	O				
42+35	0.6556	0.65	O				
42+40	0.6459	0.65	O				
42+45	0.6362	0.64	O				
42+50	0.6267	0.63	O				
42+55	0.6174	0.62	O				
43+ 0	0.6082	0.61	O				
43+ 5	0.5991	0.60	O				
43+10	0.5902	0.59	O				
43+15	0.5814	0.58	O				
43+20	0.5727	0.57	O				
43+25	0.5642	0.56	O				
43+30	0.5557	0.56	O				
43+35	0.5475	0.55	O				
43+40	0.5393	0.54	O				
43+45	0.5312	0.53	O				
43+50	0.5233	0.52	O				
43+55	0.5155	0.51	O				
44+ 0	0.5078	0.51	O				
44+ 5	0.5003	0.50	O				
44+10	0.4928	0.49	O				
44+15	0.4854	0.48	O				
44+20	0.4782	0.48	O				
44+25	0.4711	0.47	O				
44+30	0.4640	0.46	O				
44+35	0.4571	0.46	O				
44+40	0.4503	0.45	O				
44+45	0.4436	0.44	O				

44+50	0.4370	0.44	O				
44+55	0.4305	0.43	O				
45+ 0	0.4240	0.42	O				
45+ 5	0.4177	0.42	O				
45+10	0.4115	0.41	O				
45+15	0.4054	0.40	O				
45+20	0.3993	0.40	O				
45+25	0.3933	0.39	O				
45+30	0.3875	0.39	O				
45+35	0.3817	0.38	O				
45+40	0.3760	0.38	O				
45+45	0.3704	0.37	O				
45+50	0.3649	0.36	O				
45+55	0.3594	0.36	O				
46+ 0	0.3541	0.35	O				
46+ 5	0.3488	0.35	O				
46+10	0.3436	0.34	O				
46+15	0.3385	0.34	O				
46+20	0.3334	0.33	O				
46+25	0.3284	0.33	O				
46+30	0.3235	0.32	O				
46+35	0.3187	0.32	O				
46+40	0.3140	0.31	O				
46+45	0.3093	0.31	O				
46+50	0.3047	0.30	O				
46+55	0.3001	0.30	O				
47+ 0	0.2957	0.30	O				
47+ 5	0.2912	0.29	O				
47+10	0.2869	0.29	O				
47+15	0.2826	0.28	O				
47+20	0.2784	0.28	O				
47+25	0.2743	0.27	O				
47+30	0.2702	0.27	O				
47+35	0.2661	0.27	O				
47+40	0.2622	0.26	O				
47+45	0.2583	0.26	O				
47+50	0.2544	0.25	O				
47+55	0.2506	0.25	O				
48+ 0	0.2469	0.25	O				
48+ 5	0.2432	0.24	O				
48+10	0.2396	0.24	O				
48+15	0.2360	0.24	O				
48+20	0.2325	0.23	O				
48+25	0.2290	0.23	O				
48+30	0.2256	0.23	O				
48+35	0.2222	0.22	O				
48+40	0.2189	0.22	O				
48+45	0.2156	0.22	O				
48+50	0.2124	0.21	O				
48+55	0.2093	0.21	O				
49+ 0	0.2061	0.21	O				
49+ 5	0.2031	0.20	O				
49+10	0.2000	0.20	O				
49+15	0.1971	0.20	O				
49+20	0.1941	0.19	O				
49+25	0.1912	0.19	O				
49+30	0.1884	0.19	O				
49+35	0.1856	0.19	O				
49+40	0.1828	0.18	O				

49+45	0.1801	0.18	O				
49+50	0.1774	0.18	O				
49+55	0.1747	0.17	O				
50+ 0	0.1721	0.17	O				
50+ 5	0.1696	0.17	O				
50+10	0.1670	0.17	O				
50+15	0.1645	0.16	O				
50+20	0.1621	0.16	O				
50+25	0.1597	0.16	O				
50+30	0.1573	0.16	O				
50+35	0.1549	0.15	O				
50+40	0.1526	0.15	O				
50+45	0.1504	0.15	O				
50+50	0.1481	0.15	O				
50+55	0.1459	0.15	O				
51+ 0	0.1437	0.14	O				
51+ 5	0.1416	0.14	O				
51+10	0.1395	0.14	O				
51+15	0.1374	0.14	O				
51+20	0.1353	0.14	O				
51+25	0.1333	0.13	O				
51+30	0.1313	0.13	O				
51+35	0.1294	0.13	O				
51+40	0.1274	0.13	O				
51+45	0.1255	0.13	O				
51+50	0.1237	0.12	O				
51+55	0.1218	0.12	O				
52+ 0	0.1200	0.12	O				
52+ 5	0.1182	0.12	O				
52+10	0.1165	0.12	O				
52+15	0.1147	0.11	O				
52+20	0.1130	0.11	O				
52+25	0.1113	0.11	O				
52+30	0.1097	0.11	O				
52+35	0.1080	0.11	O				
52+40	0.1064	0.11	O				
52+45	0.1048	0.10	O				
52+50	0.1033	0.10	O				
52+55	0.1017	0.10	O				
53+ 0	0.1002	0.10	O				
53+ 5	0.0987	0.10	O				
53+10	0.0972	0.10	O				
53+15	0.0958	0.10	O				
53+20	0.0944	0.09	O				
53+25	0.0930	0.09	O				
53+30	0.0916	0.09	O				
53+35	0.0902	0.09	O				
53+40	0.0889	0.09	O				
53+45	0.0875	0.09	O				
53+50	0.0862	0.09	O				
53+55	0.0849	0.08	O				
54+ 0	0.0837	0.08	O				
54+ 5	0.0824	0.08	O				
54+10	0.0812	0.08	O				
54+15	0.0800	0.08	O				
54+20	0.0788	0.08	O				
54+25	0.0776	0.08	O				
54+30	0.0765	0.08	O				
54+35	0.0753	0.08	O				

54+40	0.0742	0.07	O				
54+45	0.0731	0.07	O				
54+50	0.0720	0.07	O				
54+55	0.0709	0.07	O				
55+ 0	0.0699	0.07	O				
55+ 5	0.0688	0.07	O				
55+10	0.0678	0.07	O				
55+15	0.0668	0.07	O				
55+20	0.0658	0.07	O				
55+25	0.0648	0.06	O				
55+30	0.0638	0.06	O				
55+35	0.0629	0.06	O				
55+40	0.0620	0.06	O				
55+45	0.0610	0.06	O				
55+50	0.0601	0.06	O				
55+55	0.0592	0.06	O				
56+ 0	0.0583	0.06	O				
56+ 5	0.0575	0.06	O				
56+10	0.0566	0.06	O				
56+15	0.0558	0.06	O				
56+20	0.0549	0.05	O				
56+25	0.0541	0.05	O				
56+30	0.0533	0.05	O				
56+35	0.0525	0.05	O				
56+40	0.0517	0.05	O				
56+45	0.0510	0.05	O				
56+50	0.0502	0.05	O				
56+55	0.0495	0.05	O				
57+ 0	0.0487	0.05	O				
57+ 5	0.0480	0.05	O				
57+10	0.0473	0.05	O				
57+15	0.0466	0.05	O				
57+20	0.0459	0.05	O				
57+25	0.0452	0.05	O				
57+30	0.0445	0.04	O				
57+35	0.0439	0.04	O				
57+40	0.0432	0.04	O				
57+45	0.0426	0.04	O				
57+50	0.0419	0.04	O				
57+55	0.0413	0.04	O				
58+ 0	0.0407	0.04	O				
58+ 5	0.0401	0.04	O				
58+10	0.0395	0.04	O				
58+15	0.0389	0.04	O				
58+20	0.0383	0.04	O				
58+25	0.0377	0.04	O				
58+30	0.0372	0.04	O				
58+35	0.0366	0.04	O				
58+40	0.0361	0.04	O				
58+45	0.0355	0.04	O				
58+50	0.0350	0.03	O				
58+55	0.0345	0.03	O				
59+ 0	0.0340	0.03	O				
59+ 5	0.0335	0.03	O				
59+10	0.0330	0.03	O				
59+15	0.0325	0.03	O				
59+20	0.0320	0.03	O				
59+25	0.0315	0.03	O				
59+30	0.0310	0.03	O				

59+35	0.0306	0.03	O				
59+40	0.0301	0.03	O				
59+45	0.0297	0.03	O				
59+50	0.0292	0.03	O				
59+55	0.0288	0.03	O				
60+ 0	0.0284	0.03	O				
60+ 5	0.0279	0.03	O				
60+10	0.0275	0.03	O				
60+15	0.0271	0.03	O				
60+20	0.0267	0.03	O				
60+25	0.0263	0.03	O				
60+30	0.0259	0.03	O				
60+35	0.0255	0.03	O				
60+40	0.0251	0.03	O				
60+45	0.0248	0.02	O				
60+50	0.0244	0.02	O				
60+55	0.0240	0.02	O				
61+ 0	0.0237	0.02	O				
61+ 5	0.0233	0.02	O				
61+10	0.0230	0.02	O				
61+15	0.0226	0.02	O				
61+20	0.0223	0.02	O				
61+25	0.0220	0.02	O				
61+30	0.0216	0.02	O				
61+35	0.0213	0.02	O				
61+40	0.0210	0.02	O				
61+45	0.0207	0.02	O				
61+50	0.0204	0.02	O				
61+55	0.0201	0.02	O				
62+ 0	0.0198	0.02	O				
62+ 5	0.0195	0.02	O				
62+10	0.0192	0.02	O				
62+15	0.0189	0.02	O				
62+20	0.0186	0.02	O				
62+25	0.0183	0.02	O				
62+30	0.0181	0.02	O				
62+35	0.0178	0.02	O				
62+40	0.0175	0.02	O				
62+45	0.0173	0.02	O				
62+50	0.0170	0.02	O				
62+55	0.0168	0.02	O				
63+ 0	0.0165	0.02	O				
63+ 5	0.0163	0.02	O				
63+10	0.0160	0.02	O				
63+15	0.0158	0.02	O				
63+20	0.0155	0.02	O				
63+25	0.0153	0.02	O				
63+30	0.0151	0.02	O				
63+35	0.0149	0.01	O				
63+40	0.0146	0.01	O				
63+45	0.0144	0.01	O				
63+50	0.0142	0.01	O				
63+55	0.0140	0.01	O				
64+ 0	0.0138	0.01	O				
64+ 5	0.0136	0.01	O				
64+10	0.0134	0.01	O				
64+15	0.0132	0.01	O				
64+20	0.0130	0.01	O				
64+25	0.0128	0.01	O				

64+30	0.0126	0.01	O				
64+35	0.0124	0.01	O				
64+40	0.0122	0.01	O				
64+45	0.0120	0.01	O				
64+50	0.0119	0.01	O				
64+55	0.0117	0.01	O				
65+ 0	0.0115	0.01	O				
65+ 5	0.0113	0.01	O				
65+10	0.0112	0.01	O				
65+15	0.0110	0.01	O				
65+20	0.0108	0.01	O				
65+25	0.0107	0.01	O				
65+30	0.0105	0.01	O				
65+35	0.0104	0.01	O				
65+40	0.0102	0.01	O				
65+45	0.0101	0.01	O				
65+50	0.0099	0.01	O				
65+55	0.0098	0.01	O				
66+ 0	0.0096	0.01	O				
66+ 5	0.0095	0.01	O				
66+10	0.0093	0.01	O				
66+15	0.0092	0.01	O				
66+20	0.0091	0.01	O				
66+25	0.0089	0.01	O				
66+30	0.0088	0.01	O				
66+35	0.0087	0.01	O				
66+40	0.0085	0.01	O				
66+45	0.0084	0.01	O				
66+50	0.0083	0.01	O				
66+55	0.0081	0.01	O				
67+ 0	0.0080	0.01	O				
67+ 5	0.0079	0.01	O				
67+10	0.0078	0.01	O				
67+15	0.0077	0.01	O				
67+20	0.0076	0.01	O				
67+25	0.0074	0.01	O				
67+30	0.0073	0.01	O				
67+35	0.0072	0.01	O				
67+40	0.0071	0.01	O				
67+45	0.0070	0.01	O				
67+50	0.0069	0.01	O				
67+55	0.0068	0.01	O				
68+ 0	0.0067	0.01	O				
68+ 5	0.0066	0.01	O				
68+10	0.0065	0.01	O				
68+15	0.0064	0.01	O				
68+20	0.0063	0.01	O				
68+25	0.0062	0.01	O				
68+30	0.0061	0.01	O				
68+35	0.0060	0.01	O				
68+40	0.0059	0.01	O				
68+45	0.0059	0.01	O				
68+50	0.0058	0.01	O				
68+55	0.0057	0.01	O				
69+ 0	0.0056	0.01	O				
69+ 5	0.0055	0.01	O				
69+10	0.0054	0.01	O				
69+15	0.0054	0.01	O				
69+20	0.0053	0.01	O				

69+25	0.0052	0.01	O				
69+30	0.0051	0.01	O				
69+35	0.0050	0.01	O				
69+40	0.0050	0.00	O				
69+45	0.0049	0.00	O				
69+50	0.0048	0.00	O				
69+55	0.0047	0.00	O				
70+ 0	0.0047	0.00	O				
70+ 5	0.0046	0.00	O				
70+10	0.0045	0.00	O				
70+15	0.0045	0.00	O				
70+20	0.0044	0.00	O				
70+25	0.0043	0.00	O				
70+30	0.0043	0.00	O				
70+35	0.0042	0.00	O				
70+40	0.0041	0.00	O				
70+45	0.0041	0.00	O				
70+50	0.0040	0.00	O				
70+55	0.0040	0.00	O				
71+ 0	0.0039	0.00	O				
71+ 5	0.0038	0.00	O				
71+10	0.0038	0.00	O				
71+15	0.0037	0.00	O				
71+20	0.0037	0.00	O				
71+25	0.0036	0.00	O				
71+30	0.0036	0.00	O				
71+35	0.0035	0.00	O				
71+40	0.0035	0.00	O				
71+45	0.0034	0.00	O				
71+50	0.0034	0.00	O				
71+55	0.0033	0.00	O				
72+ 0	0.0033	0.00	O				
72+ 5	0.0032	0.00	O				
72+10	0.0032	0.00	O				
72+15	0.0031	0.00	O				
72+20	0.0031	0.00	O				
72+25	0.0030	0.00	O				
72+30	0.0030	0.00	O				
72+35	0.0029	0.00	O				
72+40	0.0029	0.00	O				
72+45	0.0028	0.00	O				
72+50	0.0028	0.00	O				
72+55	0.0028	0.00	O				
73+ 0	0.0027	0.00	O				
73+ 5	0.0027	0.00	O				
73+10	0.0026	0.00	O				
73+15	0.0026	0.00	O				
73+20	0.0026	0.00	O				
73+25	0.0025	0.00	O				
73+30	0.0025	0.00	O				
73+35	0.0024	0.00	O				
73+40	0.0024	0.00	O				
73+45	0.0024	0.00	O				
73+50	0.0023	0.00	O				
73+55	0.0023	0.00	O				
74+ 0	0.0023	0.00	O				
74+ 5	0.0022	0.00	O				
74+10	0.0022	0.00	O				
74+15	0.0022	0.00	O				

74+20	0.0021	0.00	O				
74+25	0.0021	0.00	O				
74+30	0.0021	0.00	O				
74+35	0.0020	0.00	O				
74+40	0.0020	0.00	O				
74+45	0.0020	0.00	O				
74+50	0.0020	0.00	O				
74+55	0.0019	0.00	O				
75+ 0	0.0019	0.00	O				
75+ 5	0.0019	0.00	O				
75+10	0.0018	0.00	O				
75+15	0.0018	0.00	O				
75+20	0.0018	0.00	O				
75+25	0.0018	0.00	O				
75+30	0.0017	0.00	O				
75+35	0.0017	0.00	O				
75+40	0.0017	0.00	O				
75+45	0.0017	0.00	O				
75+50	0.0016	0.00	O				
75+55	0.0016	0.00	O				
76+ 0	0.0016	0.00	O				
76+ 5	0.0016	0.00	O				
76+10	0.0015	0.00	O				
76+15	0.0015	0.00	O				
76+20	0.0015	0.00	O				
76+25	0.0015	0.00	O				
76+30	0.0014	0.00	O				
76+35	0.0014	0.00	O				
76+40	0.0014	0.00	O				
76+45	0.0014	0.00	O				
76+50	0.0014	0.00	O				
76+55	0.0013	0.00	O				
77+ 0	0.0013	0.00	O				
77+ 5	0.0013	0.00	O				
77+10	0.0013	0.00	O				
77+15	0.0013	0.00	O				
77+20	0.0012	0.00	O				
77+25	0.0012	0.00	O				
77+30	0.0012	0.00	O				
77+35	0.0012	0.00	O				
77+40	0.0012	0.00	O				
77+45	0.0012	0.00	O				
77+50	0.0011	0.00	O				
77+55	0.0011	0.00	O				
78+ 0	0.0011	0.00	O				
78+ 5	0.0011	0.00	O				
78+10	0.0011	0.00	O				
78+15	0.0011	0.00	O				
78+20	0.0010	0.00	O				
78+25	0.0010	0.00	O				
78+30	0.0010	0.00	O				
78+35	0.0010	0.00	O				
78+40	0.0001	0.00	O				
78+45	0.0000	0.00	O				

*****HYDROGRAPH DATA*****

Number of intervals = 945

Time interval = 5.0 (Min.)

Maximum/Peak flow rate = 56.196 (CFS)

Total volume = 35.666 (Ac.Ft)
 Status of hydrographs being held in storage
 Stream 1 Stream 2 Stream 3 Stream 4 Stream 5
 Peak (CFS) 0.000 0.000 0.000 0.000 0.000
 Vol (Ac.Ft) 0.000 0.000 0.000 0.000 0.000

 ++++++
 Process from Point/Station 19.000 to Point/Station 6.000
 **** ADD/COMBINE/RECOVER HYDROGRAPHS ****

***** HYDROGRAPH INFORMATION *****

From study/file name: kimcx100.rte
 ++++++
 P R I N T O F S T O R M
 R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals (CFS)

Time(h+m)	Add q(CFS)	Tot. Q	0	18.9	37.7	56.6	75.4
0+ 5	0.0336	0.07	Q				
0+10	0.2173	0.49	Q				
0+15	0.4672	1.20	Q				
0+20	0.5743	1.82	Q				
0+25	0.6064	2.36	qQ				
0+30	0.6153	2.86	qQ				
0+35	0.6219	3.30	qQ				
0+40	0.6238	3.68	qQ				
0+45	0.6257	4.02	q Q				
0+50	0.6276	4.31	q Q				
0+55	0.6295	4.57	q Q				
1+ 0	0.6315	4.80	q Q				
1+ 5	0.6335	4.99	q Q				
1+10	0.6354	5.17	q Q				
1+15	0.6374	5.33	q Q				
1+20	0.6394	5.47	q Q				
1+25	0.6415	5.60	q Q				
1+30	0.6435	5.72	q Q				
1+35	0.6456	5.83	q Q				
1+40	0.6477	5.93	q Q				
1+45	0.6498	6.02	q Q				
1+50	0.6519	6.10	q Q				
1+55	0.6541	6.18	q Q				
2+ 0	0.6563	6.26	q Q				
2+ 5	0.6585	6.33	q Q				
2+10	0.6607	6.40	q Q				
2+15	0.6629	6.46	q Q				
2+20	0.6651	6.51	q Q				
2+25	0.6674	6.56	q Q				
2+30	0.6697	6.61	q Q				
2+35	0.6721	6.66	q Q				
2+40	0.6744	6.71	q Q				
2+45	0.6768	6.76	q Q				

2+50	0.6791	6.81	q	Q				
2+55	0.6816	6.85	q	Q				
3+ 0	0.6840	6.90	q	Q				
3+ 5	0.6864	6.95	q	Q				
3+10	0.6889	6.99	q	Q				
3+15	0.6914	7.04	q	Q				
3+20	0.6939	7.08	q	Q				
3+25	0.6965	7.13	q	Q				
3+30	0.6991	7.17	q	Q				
3+35	0.7017	7.22	q	Q				
3+40	0.7043	7.26	q	Q				
3+45	0.7070	7.30	q	Q				
3+50	0.7097	7.35	q	Q				
3+55	0.7124	7.39	q	Q				
4+ 0	0.7151	7.44	q	Q				
4+ 5	0.7180	7.48	q	Q				
4+10	0.7207	7.53	q	Q				
4+15	0.7236	7.57	q	Q				
4+20	0.7264	7.62	q	Q				
4+25	0.7294	7.66	q	Q				
4+30	0.7323	7.71	q	Q				
4+35	0.7353	7.75	q	Q				
4+40	0.7383	7.80	q	Q				
4+45	0.7413	7.85	q	Q				
4+50	0.7444	7.89	q	Q				
4+55	0.7475	7.94	q	Q				
5+ 0	0.7506	7.99	q	Q				
5+ 5	0.7538	8.03	q	Q				
5+10	0.7570	8.08	q	Q				
5+15	0.7603	8.13	q	Q				
5+20	0.7635	8.17	q	Q				
5+25	0.7669	8.22	q	Q				
5+30	0.7703	8.27	q	Q				
5+35	0.7737	8.32	q	Q				
5+40	0.7771	8.37	q	Q				
5+45	0.7807	8.42	q	Q				
5+50	0.7842	8.46	q	Q				
5+55	0.7878	8.51	q	Q				
6+ 0	0.7914	8.56	q	Q				
6+ 5	0.7951	8.61	q	Q				
6+10	0.7988	8.66	q	Q				
6+15	0.8026	8.71	q	Q				
6+20	0.8064	8.77	q	Q				
6+25	0.8103	8.82	q	Q				
6+30	0.8142	8.87	q	Q				
6+35	0.8182	8.92	q	Q				
6+40	0.8222	8.97	q	Q				
6+45	0.8264	9.03	q	Q				
6+50	0.8305	9.08	q	Q				
6+55	0.8347	9.14	q	Q				
7+ 0	0.8390	9.19	q	Q				
7+ 5	0.8433	9.25	q	Q				
7+10	0.8477	9.30	q	Q				
7+15	0.8522	9.36	q	Q				
7+20	0.8566	9.41	q	Q				
7+25	0.8613	9.47	q	Q				
7+30	0.8659	9.53	q	Q				
7+35	0.8707	9.59	q	Q				
7+40	0.8754	9.66	q	Q				

7+45	0.8803	9.72	q	Q				
7+50	0.8852	9.78	q	Q				
7+55	0.8903	9.84	q	Q				
8+ 0	0.8953	9.91	q	Q				
8+ 5	0.9006	9.97	q	Q				
8+10	0.9058	10.04	q	Q				
8+15	0.9112	10.10	q	Q				
8+20	0.9166	10.17	q	Q				
8+25	0.9222	10.24	q	Q				
8+30	0.9278	10.31	q	Q				
8+35	0.9335	10.38	q	Q				
8+40	0.9393	10.45	q	Q				
8+45	0.9453	10.52	q	Q				
8+50	0.9513	10.59	q	Q				
8+55	0.9575	10.66	q	Q				
9+ 0	0.9636	10.73	q	Q				
9+ 5	0.9701	10.81	q	Q				
9+10	0.9765	10.88	q	Q				
9+15	0.9831	10.96	q	Q				
9+20	0.9898	11.04	q	Q				
9+25	0.9967	11.11	q	Q				
9+30	1.0036	11.19	q	Q				
9+35	1.0108	11.27	q	Q				
9+40	1.0180	11.35	q	Q				
9+45	1.0255	11.44	q	Q				
9+50	1.0330	11.52	q	Q				
9+55	1.0408	11.61	q	Q				
10+ 0	1.0486	11.69	q	Q				
10+ 5	1.0567	11.78	q	Q				
10+10	1.0648	11.87	q	Q				
10+15	1.0733	11.96	q	Q				
10+20	1.0818	12.05	q	Q				
10+25	1.0907	12.15	q	Q				
10+30	1.0995	12.24	q	Q				
10+35	1.1088	12.34	q	Q				
10+40	1.1181	12.44	q	Q				
10+45	1.1278	12.54	q	Q				
10+50	1.1376	12.65	q	Q				
10+55	1.1478	12.75	q	Q				
11+ 0	1.1580	12.86	q	Q				
11+ 5	1.1687	12.97	q	Q				
11+10	1.1795	13.08	q	Q				
11+15	1.1908	13.19	q	Q				
11+20	1.2021	13.31	q	Q				
11+25	1.2140	13.43	q	Q				
11+30	1.2260	13.55	q	Q				
11+35	1.2385	13.67	q	Q				
11+40	1.2512	13.80	q	Q				
11+45	1.2645	13.93	q	Q				
11+50	1.2779	14.06	q	Q				
11+55	1.2920	14.20	q	Q				
12+ 0	1.3062	14.34	q	Q				
12+ 5	1.3341	14.51	q	Q				
12+10	1.4196	14.78	q	Q				
12+15	1.5312	15.13	q	Q				
12+20	1.5880	15.43	q	Q				
12+25	1.6170	15.69	q	Q				
12+30	1.6372	15.95	q	Q				
12+35	1.6575	16.20	q	Q				

12+40	1.6763	16.45	q	Q							
12+45	1.6962	16.70	q	Q							
12+50	1.7163	16.95	q	Q							
12+55	1.7376	17.20	q	Q							
13+ 0	1.7593	17.45	q	Q							
13+ 5	1.7824	17.70	q	Q							
13+10	1.8058	17.96	q	Q							
13+15	1.8308	18.22	q	Q							
13+20	1.8563	18.48	q	Q							
13+25	1.8834	18.74	q	Q							
13+30	1.9112	19.01	q	Q							
13+35	1.9409	19.29	q	Q							
13+40	1.9715	19.57	q	Q							
13+45	2.0041	19.87	q	Q							
13+50	2.0378	20.16	q	Q							
13+55	2.0740	20.47	q	Q							
14+ 0	2.1115	20.79	q	Q							
14+ 5	2.1520	21.12	q	Q							
14+10	2.1942	21.47	q	Q							
14+15	2.2401	21.83	q	Q							
14+20	2.2878	22.20	q	Q							
14+25	2.3396	22.60	q	Q							
14+30	2.3940	23.01	q	Q							
14+35	2.4536	23.45	q	Q							
14+40	2.5168	23.91	q	Q							
14+45	2.5864	24.39	q	Q							
14+50	2.6609	24.90	q	Q							
14+55	2.7439	25.41	q	Q							
15+ 0	2.8336	25.96	q	Q							
15+ 5	2.9350	26.56	q	Q							
15+10	3.0484	27.21	q	Q							
15+15	3.1812	27.93	q	Q							
15+20	3.3338	28.73	q	Q							
15+25	3.4652	29.53	q	Q							
15+30	3.4092	29.98	q	Q							
15+35	3.2994	30.23	q	Q							
15+40	3.4480	30.88	q	Q							
15+45	3.7914	31.96	q	Q							
15+50	4.3059	33.51	q	Q							
15+55	5.0792	35.77	q	Q							
16+ 0	6.4518	39.52	q	Q							
16+ 5	9.9285	47.97	q	Q							
16+10	17.4312	65.71	q	Q							
16+15	19.2269	75.42	q	Q							
16+20	11.0643	65.12	q	Q							
16+25	6.1589	57.19	q	Q							
16+30	4.3296	53.81	q	Q							
16+35	3.8990	52.77	q	Q							
16+40	3.3859	51.31	q	Q							
16+45	3.1050	50.20	q	Q							
16+50	2.8781	49.14	q	Q							
16+55	2.6991	48.12	q	Q							
17+ 0	2.5469	47.13	q	Q							
17+ 5	2.4186	46.12	q	Q							
17+10	2.3083	45.00	q	Q							
17+15	2.2119	43.84	q	Q							
17+20	2.1270	42.69	q	Q							
17+25	2.0514	41.59	q	Q							
17+30	1.9835	40.53	q	Q							

17+35	1.9220	39.51	lq			Q			
17+40	1.8660	38.54	q			Q			
17+45	1.8147	37.59	q			Q			
17+50	1.7674	36.65	q			Q			
17+55	1.7237	35.72	q			Q			
18+ 0	1.6831	34.82	q			Q			
18+ 5	1.6325	33.94	q			Q			
18+10	1.5269	32.98	q			Q			
18+15	1.3986	31.98	q			Q			
18+20	1.3275	31.09	q			Q			
18+25	1.2872	30.28	q			Q			
18+30	1.2574	29.51	q			Q			
18+35	1.2301	28.78	q			Q			
18+40	1.2060	28.04	q			Q			
18+45	1.1832	27.28	q			Q			
18+50	1.1615	26.54	q			Q			
18+55	1.1409	25.84	q			Q			
19+ 0	1.1213	25.19	q			Q			
19+ 5	1.1025	24.57	q			Q			
19+10	1.0847	24.00	q			Q			
19+15	1.0676	23.46	q			Q			
19+20	1.0512	22.95	q			Q			
19+25	1.0355	22.48	q		Q				
19+30	1.0204	22.03	q		Q				
19+35	1.0059	21.61	q		Q				
19+40	0.9920	21.21	q		Q				
19+45	0.9786	20.84	q		Q				
19+50	0.9657	20.48	q		Q				
19+55	0.9532	20.15	q		Q				
20+ 0	0.9412	19.83	q		Q				
20+ 5	0.9296	19.53	q		Q				
20+10	0.9184	19.25	q		Q				
20+15	0.9075	18.98	q		Q				
20+20	0.8970	18.72	q		Q				
20+25	0.8868	18.43	q		Q				
20+30	0.8769	18.09	q		Q				
20+35	0.8674	17.75	q		Q				
20+40	0.8581	17.45	q		Q				
20+45	0.8491	17.17	q		Q				
20+50	0.8403	16.92	q		Q				
20+55	0.8318	16.70	q		Q				
21+ 0	0.8235	16.49	q		Q				
21+ 5	0.8155	16.31	q		Q				
21+10	0.8076	16.13	q		Q				
21+15	0.8000	15.98	q		Q				
21+20	0.7925	15.83	q		Q				
21+25	0.7853	15.69	q		Q				
21+30	0.7782	15.56	q		Q				
21+35	0.7713	15.44	q		Q				
21+40	0.7646	15.33	q		Q				
21+45	0.7580	15.22	q		Q				
21+50	0.7516	15.12	q		Q				
21+55	0.7453	15.02	q		Q				
22+ 0	0.7392	14.92	q		Q				
22+ 5	0.7332	14.83	q		Q				
22+10	0.7273	14.74	q		Q				
22+15	0.7216	14.65	q		Q				
22+20	0.7160	14.56	q		Q				
22+25	0.7105	14.48	q		Q				

22+30	0.7051	14.39	q	Q					
22+35	0.6999	14.31	q	Q					
22+40	0.6947	14.23	q	Q					
22+45	0.6897	14.15	q	Q					
22+50	0.6847	14.08	q	Q					
22+55	0.6799	14.00	q	Q					
23+ 0	0.6751	13.93	q	Q					
23+ 5	0.6704	13.86	q	Q					
23+10	0.6658	13.78	q	Q					
23+15	0.6613	13.71	q	Q					
23+20	0.6569	13.64	q	Q					
23+25	0.6526	13.58	q	Q					
23+30	0.6483	13.51	q	Q					
23+35	0.6442	13.44	q	Q					
23+40	0.6401	13.38	q	Q					
23+45	0.6360	13.31	q	Q					
23+50	0.6321	13.25	q	Q					
23+55	0.6282	13.18	q	Q					
24+ 0	0.6243	13.12	q	Q					
24+ 5	0.5870	12.99	q	Q					
24+10	0.4003	12.52	q	Q					
24+15	0.1489	11.77	q	Q					
24+20	0.0425	11.13	q	Q					
24+25	0.0119	10.57	q	Q					
24+30	0.0048	10.06	q	Q					
24+35	0.0000	9.61	q	Q					
24+40	0.0000	9.22	q	Q					
24+45	0.0000	8.89	q	Q					
24+50	0.0000	8.59	q	Q					
24+55	0.0000	8.34	q	Q					
25+ 0	0.0000	8.11	q	Q					
25+ 5	0.0000	7.90	q	Q					
25+10	0.0000	7.72	q	Q					
25+15	0.0000	7.56	q	Q					
25+20	0.0000	7.42	q	Q					
25+25	0.0000	7.29	q	Q					
25+30	0.0000	7.17	q	Q					
25+35	0.0000	7.07	q	Q					
25+40	0.0000	6.97	q	Q					
25+45	0.0000	6.88	q	Q					
25+50	0.0000	6.80	q	Q					
25+55	0.0000	6.72	q	Q					
26+ 0	0.0000	6.65	q	Q					
26+ 5	0.0000	6.58	q	Q					
26+10	0.0000	6.51	q	Q					
26+15	0.0000	6.45	q	Q					
26+20	0.0000	6.39	q	Q					
26+25	0.0000	6.33	q	Q					
26+30	0.0000	6.28	q	Q					
26+35	0.0000	6.22	q	Q					
26+40	0.0000	6.17	q	Q					
26+45	0.0000	6.12	q	Q					
26+50	0.0000	6.07	q	Q					
26+55	0.0000	6.02	q	Q					
27+ 0	0.0000	5.96	q	Q					
27+ 5	0.0000	5.89	q	Q					
27+10	0.0000	5.81	q	Q					
27+15	0.0000	5.74	q	Q					
27+20	0.0000	5.66	q	Q					

27+25	0.0000	5.59	q Q				
27+30	0.0000	5.51	q Q				
27+35	0.0000	5.44	q Q				
27+40	0.0000	5.37	q Q				
27+45	0.0000	5.30	q Q				
27+50	0.0000	5.23	q Q				
27+55	0.0000	5.16	q Q				
28+ 0	0.0000	5.10	q Q				
28+ 5	0.0000	5.03	q Q				
28+10	0.0000	4.97	q Q				
28+15	0.0000	4.90	q Q				
28+20	0.0000	4.84	q Q				
28+25	0.0000	4.78	q Q				
28+30	0.0000	4.72	q Q				
28+35	0.0000	4.66	q Q				
28+40	0.0000	4.60	q Q				
28+45	0.0000	4.54	q Q				
28+50	0.0000	4.48	q Q				
28+55	0.0000	4.42	q Q				
29+ 0	0.0000	4.37	q Q				
29+ 5	0.0000	4.31	q Q				
29+10	0.0000	4.25	q Q				
29+15	0.0000	4.20	q Q				
29+20	0.0000	4.15	q Q				
29+25	0.0000	4.09	q Q				
29+30	0.0000	4.04	q Q				
29+35	0.0000	3.99	q Q				
29+40	0.0000	3.94	q Q				
29+45	0.0000	3.90	q Q				
29+50	0.0000	3.85	q Q				
29+55	0.0000	3.80	q Q				
30+ 0	0.0000	3.76	qQ				
30+ 5	0.0000	3.71	qQ				
30+10	0.0000	3.67	qQ				
30+15	0.0000	3.63	qQ				
30+20	0.0000	3.58	qQ				
30+25	0.0000	3.54	qQ				
30+30	0.0000	3.50	qQ				
30+35	0.0000	3.46	qQ				
30+40	0.0000	3.42	qQ				
30+45	0.0000	3.38	qQ				
30+50	0.0000	3.34	qQ				
30+55	0.0000	3.30	qQ				
31+ 0	0.0000	3.26	qQ				
31+ 5	0.0000	3.22	qQ				
31+10	0.0000	3.18	qQ				
31+15	0.0000	3.14	qQ				
31+20	0.0000	3.11	qQ				
31+25	0.0000	3.07	qQ				
31+30	0.0000	3.03	qQ				
31+35	0.0000	3.00	qQ				
31+40	0.0000	2.96	qQ				
31+45	0.0000	2.93	qQ				
31+50	0.0000	2.89	qQ				
31+55	0.0000	2.86	qQ				
32+ 0	0.0000	2.82	qQ				
32+ 5	0.0000	2.79	qQ				
32+10	0.0000	2.76	qQ				
32+15	0.0000	2.72	qQ				

32+20	0.0000	2.69	qQ				
32+25	0.0000	2.66	qQ				
32+30	0.0000	2.63	qQ				
32+35	0.0000	2.60	qQ				
32+40	0.0000	2.57	qQ				
32+45	0.0000	2.54	qQ				
32+50	0.0000	2.51	qQ				
32+55	0.0000	2.48	qQ				
33+ 0	0.0000	2.45	qQ				
33+ 5	0.0000	2.42	qQ				
33+10	0.0000	2.39	qQ				
33+15	0.0000	2.36	qQ				
33+20	0.0000	2.33	qQ				
33+25	0.0000	2.31	qQ				
33+30	0.0000	2.28	qQ				
33+35	0.0000	2.26	qQ				
33+40	0.0000	2.24	qQ				
33+45	0.0000	2.21	qQ				
33+50	0.0000	2.19	qQ				
33+55	0.0000	2.17	qQ				
34+ 0	0.0000	2.15	qQ				
34+ 5	0.0000	2.12	qQ				
34+10	0.0000	2.10	qQ				
34+15	0.0000	2.08	qQ				
34+20	0.0000	2.06	qQ				
34+25	0.0000	2.04	qQ				
34+30	0.0000	2.02	qQ				
34+35	0.0000	2.00	qQ				
34+40	0.0000	1.98	qQ				
34+45	0.0000	1.96	qQ				
34+50	0.0000	1.94	qQ				
34+55	0.0000	1.92	qQ				
35+ 0	0.0000	1.90	qQ				
35+ 5	0.0000	1.88	Q				
35+10	0.0000	1.86	Q				
35+15	0.0000	1.84	Q				
35+20	0.0000	1.82	Q				
35+25	0.0000	1.80	Q				
35+30	0.0000	1.78	Q				
35+35	0.0000	1.76	Q				
35+40	0.0000	1.74	Q				
35+45	0.0000	1.73	Q				
35+50	0.0000	1.71	Q				
35+55	0.0000	1.69	Q				
36+ 0	0.0000	1.67	Q				
36+ 5	0.0000	1.66	Q				
36+10	0.0000	1.64	Q				
36+15	0.0000	1.62	Q				
36+20	0.0000	1.61	Q				
36+25	0.0000	1.59	Q				
36+30	0.0000	1.57	Q				
36+35	0.0000	1.56	Q				
36+40	0.0000	1.54	Q				
36+45	0.0000	1.52	Q				
36+50	0.0000	1.51	Q				
36+55	0.0000	1.49	Q				
37+ 0	0.0000	1.48	Q				
37+ 5	0.0000	1.46	Q				
37+10	0.0000	1.45	Q				

37+15	0.0000	1.43	Q				
37+20	0.0000	1.42	Q				
37+25	0.0000	1.40	Q				
37+30	0.0000	1.39	Q				
37+35	0.0000	1.37	Q				
37+40	0.0000	1.36	Q				
37+45	0.0000	1.35	Q				
37+50	0.0000	1.33	Q				
37+55	0.0000	1.32	Q				
38+ 0	0.0000	1.31	Q				
38+ 5	0.0000	1.29	Q				
38+10	0.0000	1.28	Q				
38+15	0.0000	1.27	Q				
38+20	0.0000	1.25	Q				
38+25	0.0000	1.24	Q				
38+30	0.0000	1.23	Q				
38+35	0.0000	1.21	Q				
38+40	0.0000	1.20	Q				
38+45	0.0000	1.19	Q				
38+50	0.0000	1.18	Q				
38+55	0.0000	1.16	Q				
39+ 0	0.0000	1.15	Q				
39+ 5	0.0000	1.14	Q				
39+10	0.0000	1.13	Q				
39+15	0.0000	1.12	Q				
39+20	0.0000	1.11	Q				
39+25	0.0000	1.09	Q				
39+30	0.0000	1.08	Q				
39+35	0.0000	1.07	Q				
39+40	0.0000	1.06	Q				
39+45	0.0000	1.05	Q				
39+50	0.0000	1.04	Q				
39+55	0.0000	1.03	Q				
40+ 0	0.0000	1.02	Q				
40+ 5	0.0000	1.01	Q				
40+10	0.0000	1.00	Q				
40+15	0.0000	0.99	Q				
40+20	0.0000	0.98	Q				
40+25	0.0000	0.97	Q				
40+30	0.0000	0.95	Q				
40+35	0.0000	0.94	Q				
40+40	0.0000	0.93	Q				
40+45	0.0000	0.91	Q				
40+50	0.0000	0.90	Q				
40+55	0.0000	0.89	Q				
41+ 0	0.0000	0.87	Q				
41+ 5	0.0000	0.86	Q				
41+10	0.0000	0.85	Q				
41+15	0.0000	0.83	Q				
41+20	0.0000	0.82	Q				
41+25	0.0000	0.81	Q				
41+30	0.0000	0.80	Q				
41+35	0.0000	0.79	Q				
41+40	0.0000	0.77	Q				
41+45	0.0000	0.76	Q				
41+50	0.0000	0.75	Q				
41+55	0.0000	0.74	Q				
42+ 0	0.0000	0.73	Q				
42+ 5	0.0000	0.72	Q				

42+10	0.0000	0.71	Q				
42+15	0.0000	0.70	Q				
42+20	0.0000	0.69	Q				
42+25	0.0000	0.68	Q				
42+30	0.0000	0.67	Q				
42+35	0.0000	0.66	Q				
42+40	0.0000	0.65	Q				
42+45	0.0000	0.64	Q				
42+50	0.0000	0.63	Q				
42+55	0.0000	0.62	Q				
43+ 0	0.0000	0.61	Q				
43+ 5	0.0000	0.60	Q				
43+10	0.0000	0.59	Q				
43+15	0.0000	0.58	Q				
43+20	0.0000	0.57	Q				
43+25	0.0000	0.56	Q				
43+30	0.0000	0.56	Q				
43+35	0.0000	0.55	Q				
43+40	0.0000	0.54	Q				
43+45	0.0000	0.53	Q				
43+50	0.0000	0.52	Q				
43+55	0.0000	0.52	Q				
44+ 0	0.0000	0.51	Q				
44+ 5	0.0000	0.50	Q				
44+10	0.0000	0.49	Q				
44+15	0.0000	0.49	Q				
44+20	0.0000	0.48	Q				
44+25	0.0000	0.47	Q				
44+30	0.0000	0.46	Q				
44+35	0.0000	0.46	Q				
44+40	0.0000	0.45	Q				
44+45	0.0000	0.44	Q				
44+50	0.0000	0.44	Q				
44+55	0.0000	0.43	Q				
45+ 0	0.0000	0.42	Q				
45+ 5	0.0000	0.42	Q				
45+10	0.0000	0.41	Q				
45+15	0.0000	0.41	Q				
45+20	0.0000	0.40	Q				
45+25	0.0000	0.39	Q				
45+30	0.0000	0.39	Q				
45+35	0.0000	0.38	Q				
45+40	0.0000	0.38	Q				
45+45	0.0000	0.37	Q				
45+50	0.0000	0.36	Q				
45+55	0.0000	0.36	Q				
46+ 0	0.0000	0.35	Q				
46+ 5	0.0000	0.35	Q				
46+10	0.0000	0.34	Q				
46+15	0.0000	0.34	Q				
46+20	0.0000	0.33	Q				
46+25	0.0000	0.33	Q				
46+30	0.0000	0.32	Q				
46+35	0.0000	0.32	Q				
46+40	0.0000	0.31	Q				
46+45	0.0000	0.31	Q				
46+50	0.0000	0.30	Q				
46+55	0.0000	0.30	Q				
47+ 0	0.0000	0.30	Q				

47+ 5	0.0000	0.29	Q				
47+10	0.0000	0.29	Q				
47+15	0.0000	0.28	Q				
47+20	0.0000	0.28	Q				
47+25	0.0000	0.27	Q				
47+30	0.0000	0.27	Q				
47+35	0.0000	0.27	Q				
47+40	0.0000	0.26	Q				
47+45	0.0000	0.26	Q				
47+50	0.0000	0.25	Q				
47+55	0.0000	0.25	Q				
48+ 0	0.0000	0.25	Q				
48+ 5	0.0000	0.24	Q				
48+10	0.0000	0.24	Q				
48+15	0.0000	0.24	Q				
48+20	0.0000	0.23	Q				
48+25	0.0000	0.23	Q				
48+30	0.0000	0.23	Q				
48+35	0.0000	0.22	Q				
48+40	0.0000	0.22	Q				
48+45	0.0000	0.22	Q				
48+50	0.0000	0.21	Q				
48+55	0.0000	0.21	Q				
49+ 0	0.0000	0.21	Q				
49+ 5	0.0000	0.20	Q				
49+10	0.0000	0.20	Q				
49+15	0.0000	0.20	Q				
49+20	0.0000	0.19	Q				
49+25	0.0000	0.19	Q				
49+30	0.0000	0.19	Q				
49+35	0.0000	0.19	Q				
49+40	0.0000	0.18	Q				
49+45	0.0000	0.18	Q				
49+50	0.0000	0.18	Q				
49+55	0.0000	0.17	Q				
50+ 0	0.0000	0.17	Q				
50+ 5	0.0000	0.17	Q				
50+10	0.0000	0.17	Q				
50+15	0.0000	0.16	Q				
50+20	0.0000	0.16	Q				
50+25	0.0000	0.16	Q				
50+30	0.0000	0.16	Q				
50+35	0.0000	0.15	Q				
50+40	0.0000	0.15	Q				
50+45	0.0000	0.15	Q				
50+50	0.0000	0.15	Q				
50+55	0.0000	0.15	Q				
51+ 0	0.0000	0.14	Q				
51+ 5	0.0000	0.14	Q				
51+10	0.0000	0.14	Q				
51+15	0.0000	0.14	Q				
51+20	0.0000	0.14	Q				
51+25	0.0000	0.13	Q				
51+30	0.0000	0.13	Q				
51+35	0.0000	0.13	Q				
51+40	0.0000	0.13	Q				
51+45	0.0000	0.13	Q				
51+50	0.0000	0.12	Q				
51+55	0.0000	0.12	Q				

52+ 0	0.0000	0.12	Q				
52+ 5	0.0000	0.12	Q				
52+10	0.0000	0.12	Q				
52+15	0.0000	0.11	Q				
52+20	0.0000	0.11	Q				
52+25	0.0000	0.11	Q				
52+30	0.0000	0.11	Q				
52+35	0.0000	0.11	Q				
52+40	0.0000	0.11	Q				
52+45	0.0000	0.10	Q				
52+50	0.0000	0.10	Q				
52+55	0.0000	0.10	Q				
53+ 0	0.0000	0.10	Q				
53+ 5	0.0000	0.10	Q				
53+10	0.0000	0.10	Q				
53+15	0.0000	0.10	Q				
53+20	0.0000	0.09	Q				
53+25	0.0000	0.09	Q				
53+30	0.0000	0.09	Q				
53+35	0.0000	0.09	Q				
53+40	0.0000	0.09	Q				
53+45	0.0000	0.09	Q				
53+50	0.0000	0.09	Q				
53+55	0.0000	0.08	Q				
54+ 0	0.0000	0.08	Q				
54+ 5	0.0000	0.08	Q				
54+10	0.0000	0.08	Q				
54+15	0.0000	0.08	Q				
54+20	0.0000	0.08	Q				
54+25	0.0000	0.08	Q				
54+30	0.0000	0.08	Q				
54+35	0.0000	0.08	Q				
54+40	0.0000	0.07	Q				
54+45	0.0000	0.07	Q				
54+50	0.0000	0.07	Q				
54+55	0.0000	0.07	Q				
55+ 0	0.0000	0.07	Q				
55+ 5	0.0000	0.07	Q				
55+10	0.0000	0.07	Q				
55+15	0.0000	0.07	Q				
55+20	0.0000	0.07	Q				
55+25	0.0000	0.06	Q				
55+30	0.0000	0.06	Q				
55+35	0.0000	0.06	Q				
55+40	0.0000	0.06	Q				
55+45	0.0000	0.06	Q				
55+50	0.0000	0.06	Q				
55+55	0.0000	0.06	Q				
56+ 0	0.0000	0.06	Q				
56+ 5	0.0000	0.06	Q				
56+10	0.0000	0.06	Q				
56+15	0.0000	0.06	Q				
56+20	0.0000	0.05	Q				
56+25	0.0000	0.05	Q				
56+30	0.0000	0.05	Q				
56+35	0.0000	0.05	Q				
56+40	0.0000	0.05	Q				
56+45	0.0000	0.05	Q				
56+50	0.0000	0.05	Q				

56+55	0.0000	0.05	Q				
57+ 0	0.0000	0.05	Q				
57+ 5	0.0000	0.05	Q				
57+10	0.0000	0.05	Q				
57+15	0.0000	0.05	Q				
57+20	0.0000	0.05	Q				
57+25	0.0000	0.05	Q				
57+30	0.0000	0.04	Q				
57+35	0.0000	0.04	Q				
57+40	0.0000	0.04	Q				
57+45	0.0000	0.04	Q				
57+50	0.0000	0.04	Q				
57+55	0.0000	0.04	Q				
58+ 0	0.0000	0.04	Q				
58+ 5	0.0000	0.04	Q				
58+10	0.0000	0.04	Q				
58+15	0.0000	0.04	Q				
58+20	0.0000	0.04	Q				
58+25	0.0000	0.04	Q				
58+30	0.0000	0.04	Q				
58+35	0.0000	0.04	Q				
58+40	0.0000	0.04	Q				
58+45	0.0000	0.04	Q				
58+50	0.0000	0.04	Q				
58+55	0.0000	0.03	Q				
59+ 0	0.0000	0.03	Q				
59+ 5	0.0000	0.03	Q				
59+10	0.0000	0.03	Q				
59+15	0.0000	0.03	Q				
59+20	0.0000	0.03	Q				
59+25	0.0000	0.03	Q				
59+30	0.0000	0.03	Q				
59+35	0.0000	0.03	Q				
59+40	0.0000	0.03	Q				
59+45	0.0000	0.03	Q				
59+50	0.0000	0.03	Q				
59+55	0.0000	0.03	Q				
60+ 0	0.0000	0.03	Q				
60+ 5	0.0000	0.03	Q				
60+10	0.0000	0.03	Q				
60+15	0.0000	0.03	Q				
60+20	0.0000	0.03	Q				
60+25	0.0000	0.03	Q				
60+30	0.0000	0.03	Q				
60+35	0.0000	0.03	Q				
60+40	0.0000	0.03	Q				
60+45	0.0000	0.02	Q				
60+50	0.0000	0.02	Q				
60+55	0.0000	0.02	Q				
61+ 0	0.0000	0.02	Q				
61+ 5	0.0000	0.02	Q				
61+10	0.0000	0.02	Q				
61+15	0.0000	0.02	Q				
61+20	0.0000	0.02	Q				
61+25	0.0000	0.02	Q				
61+30	0.0000	0.02	Q				
61+35	0.0000	0.02	Q				
61+40	0.0000	0.02	Q				
61+45	0.0000	0.02	Q				

61+50	0.0000	0.02	Q				
61+55	0.0000	0.02	Q				
62+ 0	0.0000	0.02	Q				
62+ 5	0.0000	0.02	Q				
62+10	0.0000	0.02	Q				
62+15	0.0000	0.02	Q				
62+20	0.0000	0.02	Q				
62+25	0.0000	0.02	Q				
62+30	0.0000	0.02	Q				
62+35	0.0000	0.02	Q				
62+40	0.0000	0.02	Q				
62+45	0.0000	0.02	Q				
62+50	0.0000	0.02	Q				
62+55	0.0000	0.02	Q				
63+ 0	0.0000	0.02	Q				
63+ 5	0.0000	0.02	Q				
63+10	0.0000	0.02	Q				
63+15	0.0000	0.02	Q				
63+20	0.0000	0.02	Q				
63+25	0.0000	0.02	Q				
63+30	0.0000	0.02	Q				
63+35	0.0000	0.01	Q				
63+40	0.0000	0.01	Q				
63+45	0.0000	0.01	Q				
63+50	0.0000	0.01	Q				
63+55	0.0000	0.01	Q				
64+ 0	0.0000	0.01	Q				
64+ 5	0.0000	0.01	Q				
64+10	0.0000	0.01	Q				
64+15	0.0000	0.01	Q				
64+20	0.0000	0.01	Q				
64+25	0.0000	0.01	Q				
64+30	0.0000	0.01	Q				
64+35	0.0000	0.01	Q				
64+40	0.0000	0.01	Q				
64+45	0.0000	0.01	Q				
64+50	0.0000	0.01	Q				
64+55	0.0000	0.01	Q				
65+ 0	0.0000	0.01	Q				
65+ 5	0.0000	0.01	Q				
65+10	0.0000	0.01	Q				
65+15	0.0000	0.01	Q				
65+20	0.0000	0.01	Q				
65+25	0.0000	0.01	Q				
65+30	0.0000	0.01	Q				
65+35	0.0000	0.01	Q				
65+40	0.0000	0.01	Q				
65+45	0.0000	0.01	Q				
65+50	0.0000	0.01	Q				
65+55	0.0000	0.01	Q				
66+ 0	0.0000	0.01	Q				
66+ 5	0.0000	0.01	Q				
66+10	0.0000	0.01	Q				
66+15	0.0000	0.01	Q				
66+20	0.0000	0.01	Q				
66+25	0.0000	0.01	Q				
66+30	0.0000	0.01	Q				
66+35	0.0000	0.01	Q				
66+40	0.0000	0.01	Q				

66+45	0.0000	0.01	Q				
66+50	0.0000	0.01	Q				
66+55	0.0000	0.01	Q				
67+ 0	0.0000	0.01	Q				
67+ 5	0.0000	0.01	Q				
67+10	0.0000	0.01	Q				
67+15	0.0000	0.01	Q				
67+20	0.0000	0.01	Q				
67+25	0.0000	0.01	Q				
67+30	0.0000	0.01	Q				
67+35	0.0000	0.01	Q				
67+40	0.0000	0.01	Q				
67+45	0.0000	0.01	Q				
67+50	0.0000	0.01	Q				
67+55	0.0000	0.01	Q				
68+ 0	0.0000	0.01	Q				
68+ 5	0.0000	0.01	Q				
68+10	0.0000	0.01	Q				
68+15	0.0000	0.01	Q				
68+20	0.0000	0.01	Q				
68+25	0.0000	0.01	Q				
68+30	0.0000	0.01	Q				
68+35	0.0000	0.01	Q				
68+40	0.0000	0.01	Q				
68+45	0.0000	0.01	Q				
68+50	0.0000	0.01	Q				
68+55	0.0000	0.01	Q				
69+ 0	0.0000	0.01	Q				
69+ 5	0.0000	0.01	Q				
69+10	0.0000	0.01	Q				
69+15	0.0000	0.01	Q				
69+20	0.0000	0.01	Q				
69+25	0.0000	0.01	Q				
69+30	0.0000	0.01	Q				
69+35	0.0000	0.01	Q				
69+40	0.0000	0.00	Q				
69+45	0.0000	0.00	Q				
69+50	0.0000	0.00	Q				
69+55	0.0000	0.00	Q				
70+ 0	0.0000	0.00	Q				
70+ 5	0.0000	0.00	Q				
70+10	0.0000	0.00	Q				
70+15	0.0000	0.00	Q				
70+20	0.0000	0.00	Q				
70+25	0.0000	0.00	Q				
70+30	0.0000	0.00	Q				
70+35	0.0000	0.00	Q				
70+40	0.0000	0.00	Q				
70+45	0.0000	0.00	Q				
70+50	0.0000	0.00	Q				
70+55	0.0000	0.00	Q				
71+ 0	0.0000	0.00	Q				
71+ 5	0.0000	0.00	Q				
71+10	0.0000	0.00	Q				
71+15	0.0000	0.00	Q				
71+20	0.0000	0.00	Q				
71+25	0.0000	0.00	Q				
71+30	0.0000	0.00	Q				
71+35	0.0000	0.00	Q				

71+40	0.0000	0.00	Q				
71+45	0.0000	0.00	Q				
71+50	0.0000	0.00	Q				
71+55	0.0000	0.00	Q				
72+ 0	0.0000	0.00	Q				
72+ 5	0.0000	0.00	Q				
72+10	0.0000	0.00	Q				
72+15	0.0000	0.00	Q				
72+20	0.0000	0.00	Q				
72+25	0.0000	0.00	Q				
72+30	0.0000	0.00	Q				
72+35	0.0000	0.00	Q				
72+40	0.0000	0.00	Q				
72+45	0.0000	0.00	Q				
72+50	0.0000	0.00	Q				
72+55	0.0000	0.00	Q				
73+ 0	0.0000	0.00	Q				
73+ 5	0.0000	0.00	Q				
73+10	0.0000	0.00	Q				
73+15	0.0000	0.00	Q				
73+20	0.0000	0.00	Q				
73+25	0.0000	0.00	Q				
73+30	0.0000	0.00	Q				
73+35	0.0000	0.00	Q				
73+40	0.0000	0.00	Q				
73+45	0.0000	0.00	Q				
73+50	0.0000	0.00	Q				
73+55	0.0000	0.00	Q				
74+ 0	0.0000	0.00	Q				
74+ 5	0.0000	0.00	Q				
74+10	0.0000	0.00	Q				
74+15	0.0000	0.00	Q				
74+20	0.0000	0.00	Q				
74+25	0.0000	0.00	Q				
74+30	0.0000	0.00	Q				
74+35	0.0000	0.00	Q				
74+40	0.0000	0.00	Q				
74+45	0.0000	0.00	Q				
74+50	0.0000	0.00	Q				
74+55	0.0000	0.00	Q				
75+ 0	0.0000	0.00	Q				
75+ 5	0.0000	0.00	Q				
75+10	0.0000	0.00	Q				
75+15	0.0000	0.00	Q				
75+20	0.0000	0.00	Q				
75+25	0.0000	0.00	Q				
75+30	0.0000	0.00	Q				
75+35	0.0000	0.00	Q				
75+40	0.0000	0.00	Q				
75+45	0.0000	0.00	Q				
75+50	0.0000	0.00	Q				
75+55	0.0000	0.00	Q				
76+ 0	0.0000	0.00	Q				
76+ 5	0.0000	0.00	Q				
76+10	0.0000	0.00	Q				
76+15	0.0000	0.00	Q				
76+20	0.0000	0.00	Q				
76+25	0.0000	0.00	Q				
76+30	0.0000	0.00	Q				

76+35	0.0000	0.00	Q				
76+40	0.0000	0.00	Q				
76+45	0.0000	0.00	Q				
76+50	0.0000	0.00	Q				
76+55	0.0000	0.00	Q				
77+ 0	0.0000	0.00	Q				
77+ 5	0.0000	0.00	Q				
77+10	0.0000	0.00	Q				
77+15	0.0000	0.00	Q				
77+20	0.0000	0.00	Q				
77+25	0.0000	0.00	Q				
77+30	0.0000	0.00	Q				
77+35	0.0000	0.00	Q				
77+40	0.0000	0.00	Q				
77+45	0.0000	0.00	Q				
77+50	0.0000	0.00	Q				
77+55	0.0000	0.00	Q				
78+ 0	0.0000	0.00	Q				
78+ 5	0.0000	0.00	Q				
78+10	0.0000	0.00	Q				
78+15	0.0000	0.00	Q				
78+20	0.0000	0.00	Q				
78+25	0.0000	0.00	Q				
78+30	0.0000	0.00	Q				
78+35	0.0000	0.00	Q				
78+40	0.0000	0.00	Q				
78+45	0.0000	0.00	Q				

*****HYDROGRAPH DATA*****

Number of intervals = 945

Time interval = 5.0 (Min.)

Maximum/Peak flow rate = 75.423 (CFS)

Total volume = 38.512 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

+++++

Process from Point/Station 19.000 to Point/Station 6.000

**** STORE OR DELETE CURRENT HYDROGRAPH ****

Current stream hydrograph of 5.0 minute intervals has been stored as stream number 1 with a starting time of 0.00 hours and ending time of 36.00 hours With a total volume of 37.60 (Ac.Ft)

*****HYDROGRAPH DATA*****

Number of intervals = 0

Time interval = 0.0 (Min.)

Maximum/Peak flow rate = 0.000 (CFS)

Total volume = 0.000 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	75.423	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	37.604	0.000	0.000	0.000	0.000

++++++
Process from Point/Station 7.000 to Point/Station 6.000
**** ADD/COMBINE/RECOVER HYDROGRAPHS ****

***** HYDROGRAPH INFORMATION *****

From study/file name: kimcc100.rte
++++++
 P R I N T O F S T O R M
 R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals (CFS)

Time (h+m)	Add q(CFS)	Tot. Q	0	15.7	31.4	47.1	62.8
0+ 5	0.1551	0.16	Q				
0+10	0.9157	0.92	Q				
0+15	1.4458	1.45	Q				
0+20	1.5556	1.56	Q				
0+25	1.5850	1.59	Q				
0+30	1.5899	1.59	Q				
0+35	1.5946	1.59	Q				
0+40	1.5996	1.60	Q				
0+45	1.6043	1.60	Q				
0+50	1.6093	1.61	Q				
0+55	1.6141	1.61	Q				
1+ 0	1.6193	1.62	Q				
1+ 5	1.6242	1.62	Q				
1+10	1.6294	1.63	Q				
1+15	1.6344	1.63	Q				
1+20	1.6397	1.64	Q				
1+25	1.6448	1.64	Q				
1+30	1.6502	1.65	Q				
1+35	1.6554	1.66	Q				
1+40	1.6609	1.66	Q				
1+45	1.6661	1.67	Q				
1+50	1.6718	1.67	Q				
1+55	1.6771	1.68	Q				
2+ 0	1.6828	1.68	Q				
2+ 5	1.6883	1.69	Q				
2+10	1.6941	1.69	Q				
2+15	1.6996	1.70	Q				
2+20	1.7056	1.71	Q				
2+25	1.7112	1.71	Q				
2+30	1.7173	1.72	Q				
2+35	1.7230	1.72	Q				
2+40	1.7292	1.73	Q				
2+45	1.7351	1.74	Q				
2+50	1.7414	1.74	Q				
2+55	1.7474	1.75	Q				
3+ 0	1.7538	1.75	Q				
3+ 5	1.7599	1.76	Q				
3+10	1.7664	1.77	Q				

3+15	1.7726	1.77	IQ				
3+20	1.7794	1.78	IQ				
3+25	1.7857	1.79	IQ				
3+30	1.7925	1.79	IQ				
3+35	1.7990	1.80	IQ				
3+40	1.8060	1.81	IQ				
3+45	1.8126	1.81	IQ				
3+50	1.8197	1.82	IQ				
3+55	1.8264	1.83	IQ				
4+ 0	1.8337	1.83	IQ				
4+ 5	1.8406	1.84	IQ				
4+10	1.8480	1.85	IQ				
4+15	1.8551	1.86	IQ				
4+20	1.8627	1.86	IQ				
4+25	1.8699	1.87	IQ				
4+30	1.8776	1.88	IQ				
4+35	1.8850	1.88	IQ				
4+40	1.8929	1.89	IQ				
4+45	1.9005	1.90	IQ				
4+50	1.9086	1.91	IQ				
4+55	1.9163	1.92	IQ				
5+ 0	1.9246	1.92	IQ				
5+ 5	1.9325	1.93	IQ				
5+10	1.9410	1.94	IQ				
5+15	1.9491	1.95	IQ				
5+20	1.9578	1.96	IQ				
5+25	1.9660	1.97	IQ				
5+30	1.9750	1.97	IQ				
5+35	1.9834	1.98	IQ				
5+40	1.9926	1.99	IQ				
5+45	2.0013	2.00	IQ				
5+50	2.0107	2.01	IQ				
5+55	2.0196	2.02	IQ				
6+ 0	2.0292	2.03	IQ				
6+ 5	2.0383	2.04	IQ				
6+10	2.0482	2.05	IQ				
6+15	2.0576	2.06	IQ				
6+20	2.0677	2.07	IQ				
6+25	2.0773	2.08	IQ				
6+30	2.0877	2.09	IQ				
6+35	2.0976	2.10	IQ				
6+40	2.1083	2.11	IQ				
6+45	2.1185	2.12	IQ				
6+50	2.1295	2.13	IQ				
6+55	2.1399	2.14	IQ				
7+ 0	2.1512	2.15	IQ				
7+ 5	2.1619	2.16	IQ				
7+10	2.1736	2.17	IQ				
7+15	2.1846	2.18	IQ				
7+20	2.1966	2.20	IQ				
7+25	2.2080	2.21	IQ				
7+30	2.2203	2.22	IQ				
7+35	2.2320	2.23	IQ				
7+40	2.2448	2.24	IQ				
7+45	2.2568	2.26	IQ				
7+50	2.2700	2.27	IQ				
7+55	2.2824	2.28	IQ				
8+ 0	2.2960	2.30	IQ				
8+ 5	2.3088	2.31	IQ				

8+10	2.3228	2.32	Q				
8+15	2.3361	2.34	Q				
8+20	2.3505	2.35	Q				
8+25	2.3643	2.36	Q				
8+30	2.3792	2.38	Q				
8+35	2.3934	2.39	Q				
8+40	2.4089	2.41	Q				
8+45	2.4236	2.42	Q				
8+50	2.4396	2.44	Q				
8+55	2.4548	2.45	Q				
9+ 0	2.4714	2.47	Q				
9+ 5	2.4872	2.49	Q				
9+10	2.5044	2.50	Q				
9+15	2.5207	2.52	Q				
9+20	2.5386	2.54	Q				
9+25	2.5556	2.56	Q				
9+30	2.5742	2.57	Q				
9+35	2.5918	2.59	Q				
9+40	2.6112	2.61	Q				
9+45	2.6295	2.63	Q				
9+50	2.6497	2.65	Q				
9+55	2.6688	2.67	Q				
10+ 0	2.6898	2.69	Q				
10+ 5	2.7097	2.71	Q				
10+10	2.7316	2.73	Q				
10+15	2.7525	2.75	Q				
10+20	2.7753	2.78	Q				
10+25	2.7971	2.80	Q				
10+30	2.8210	2.82	Q				
10+35	2.8438	2.84	Q				
10+40	2.8688	2.87	Q				
10+45	2.8927	2.89	Q				
10+50	2.9190	2.92	Q				
10+55	2.9440	2.94	Q				
11+ 0	2.9716	2.97	Q				
11+ 5	2.9980	3.00	Q				
11+10	3.0270	3.03	Q				
11+15	3.0547	3.05	Q				
11+20	3.0853	3.09	Q				
11+25	3.1146	3.11	Q				
11+30	3.1468	3.15	Q				
11+35	3.1778	3.18	Q				
11+40	3.2119	3.21	Q				
11+45	3.2447	3.24	Q				
11+50	3.2809	3.28	Q				
11+55	3.3156	3.32	Q				
12+ 0	3.3541	3.35	Q				
12+ 5	3.4482	3.45	Q				
12+10	3.7693	3.77	Q				
12+15	4.0035	4.00	Q				
12+20	4.0867	4.09	Q				
12+25	4.1386	4.14	Q				
12+30	4.1860	4.19	Q				
12+35	4.2316	4.23	Q				
12+40	4.2823	4.28	Q				
12+45	4.3313	4.33	Q				
12+50	4.3858	4.39	Q				
12+55	4.4385	4.44	Q				
13+ 0	4.4972	4.50	Q				

13+ 5	4.5541	4.55	Q				
13+10	4.6177	4.62	Q				
13+15	4.6794	4.68	Q				
13+20	4.7486	4.75	Q				
13+25	4.8158	4.82	Q				
13+30	4.8914	4.89	Q				
13+35	4.9651	4.97	Q				
13+40	5.0481	5.05	Q				
13+45	5.1293	5.13	Q				
13+50	5.2211	5.22	Q				
13+55	5.3112	5.31	Q				
14+ 0	5.4135	5.41	Q				
14+ 5	5.5148	5.51	Q				
14+10	5.6328	5.63	Q				
14+15	5.7484	5.75	Q				
14+20	5.8793	5.88	Q				
14+25	6.0089	6.01	Q				
14+30	6.1588	6.16	Q				
14+35	6.3083	6.31	Q				
14+40	6.4828	6.48	Q				
14+45	6.6583	6.66	Q				
14+50	6.8650	6.87	Q				
14+55	7.0749	7.07	Q				
15+ 0	7.3253	7.33	Q				
15+ 5	7.5826	7.58	Q				
15+10	7.8947	7.89	Q				
15+15	8.2206	8.22	Q				
15+20	8.6250	8.63	Q				
15+25	8.8516	8.85	Q				
15+30	8.3977	8.40	Q				
15+35	8.3034	8.30	Q				
15+40	8.9802	8.98	Q				
15+45	9.9237	9.92	Q				
15+50	11.4399	11.44	Q				
15+55	13.8263	13.83	Q				
16+ 0	19.0371	19.04		Q			
16+ 5	33.0937	33.09			Q		
16+10	62.7580	62.76					Q
16+15	45.7913	45.79				Q	
16+20	19.1617	19.16		Q			
16+25	11.6314	11.63	Q				
16+30	9.3958	9.40	Q				
16+35	8.8668	8.87	Q				
16+40	8.1602	8.16	Q				
16+45	7.5541	7.55	Q				
16+50	7.0477	7.05	Q				
16+55	6.6331	6.63	Q				
17+ 0	6.2853	6.29	Q				
17+ 5	5.9873	5.99	Q				
17+10	5.7261	5.73	Q				
17+15	5.4971	5.50	Q				
17+20	5.2951	5.30	Q				
17+25	5.1143	5.11	Q				
17+30	4.9513	4.95	Q				
17+35	4.8030	4.80	Q				
17+40	4.6675	4.67	Q				
17+45	4.5430	4.54	Q				
17+50	4.4281	4.43	Q				
17+55	4.3215	4.32	Q				

18+ 0	4.2224	4.22	Q				
18+ 5	4.0728	4.07	Q				
18+10	3.7065	3.71	Q				
18+15	3.4316	3.43	Q				
18+20	3.3177	3.32	Q				
18+25	3.2379	3.24	Q				
18+30	3.1714	3.17	Q				
18+35	3.1085	3.11	Q				
18+40	3.0489	3.05	Q				
18+45	2.9924	2.99	Q				
18+50	2.9387	2.94	Q				
18+55	2.8876	2.89	Q				
19+ 0	2.8389	2.84	Q				
19+ 5	2.7924	2.79	Q				
19+10	2.7480	2.75	Q				
19+15	2.7054	2.71	Q				
19+20	2.6647	2.66	Q				
19+25	2.6256	2.63	Q				
19+30	2.5880	2.59	Q				
19+35	2.5519	2.55	Q				
19+40	2.5172	2.52	Q				
19+45	2.4837	2.48	Q				
19+50	2.4515	2.45	Q				
19+55	2.4203	2.42	Q				
20+ 0	2.3903	2.39	Q				
20+ 5	2.3612	2.36	Q				
20+10	2.3332	2.33	Q				
20+15	2.3060	2.31	Q				
20+20	2.2797	2.28	Q				
20+25	2.2542	2.25	Q				
20+30	2.2294	2.23	Q				
20+35	2.2055	2.21	Q				
20+40	2.1822	2.18	Q				
20+45	2.1595	2.16	Q				
20+50	2.1376	2.14	Q				
20+55	2.1162	2.12	Q				
21+ 0	2.0954	2.10	Q				
21+ 5	2.0752	2.08	Q				
21+10	2.0555	2.06	Q				
21+15	2.0363	2.04	Q				
21+20	2.0176	2.02	Q				
21+25	1.9993	2.00	Q				
21+30	1.9816	1.98	Q				
21+35	1.9642	1.96	Q				
21+40	1.9473	1.95	Q				
21+45	1.9307	1.93	Q				
21+50	1.9146	1.91	Q				
21+55	1.8988	1.90	Q				
22+ 0	1.8833	1.88	Q				
22+ 5	1.8682	1.87	Q				
22+10	1.8535	1.85	Q				
22+15	1.8390	1.84	Q				
22+20	1.8249	1.82	Q				
22+25	1.8111	1.81	Q				
22+30	1.7975	1.80	Q				
22+35	1.7843	1.78	Q				
22+40	1.7712	1.77	Q				
22+45	1.7585	1.76	Q				
22+50	1.7460	1.75	Q				

22+55	1.7338	1.73	IQ				
23+ 0	1.7217	1.72	IQ				
23+ 5	1.7099	1.71	IQ				
23+10	1.6984	1.70	IQ				
23+15	1.6870	1.69	IQ				
23+20	1.6759	1.68	IQ				
23+25	1.6649	1.66	IQ				
23+30	1.6542	1.65	IQ				
23+35	1.6436	1.64	IQ				
23+40	1.6333	1.63	IQ				
23+45	1.6231	1.62	IQ				
23+50	1.6130	1.61	IQ				
23+55	1.6032	1.60	IQ				
24+ 0	1.5935	1.59	IQ				
24+ 5	1.4292	1.43	Q				
24+10	0.6619	0.66	Q				
24+15	0.1310	0.13	Q				
24+20	0.0251	0.03	Q				

*****HYDROGRAPH DATA*****

Number of intervals = 292

Time interval = 5.0 (Min.)

Maximum/Peak flow rate = 62.758 (CFS)

Total volume = 7.330 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	75.423	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	37.604	0.000	0.000	0.000	0.000

+++++

Process from Point/Station 7.000 to Point/Station 6.000

**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 292

Hydrograph time unit = 5.000 (Min.)

Initial depth in storage basin = 0.00 (Ft.)

Initial basin depth = 0.00 (Ft.)

Initial basin storage = 0.00 (Ac.Ft)

Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
----------------------	--------------------	------------------	-----------------------	-----------------------

0.000	0.000	0.000	0.000	0.000
1.000	0.560	2.000	0.553	0.567
2.000	1.710	5.170	1.692	1.728
3.000	2.900	11.170	2.862	2.938
4.000	4.140	19.020	4.075	4.205

5.000	5.420	24.300	5.336	5.504
6.000	6.750	56.750	6.555	6.945

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	15.7	31.38	47.07	62.76	Depth (Ft.)
0.083	0.16	0.00	0.001	O					0.00
0.167	0.92	0.01	0.004	O					0.01
0.250	1.45	0.04	0.012	O					0.02
0.333	1.56	0.08	0.022	O					0.04
0.417	1.59	0.11	0.032	O					0.06
0.500	1.59	0.15	0.042	O					0.08
0.583	1.59	0.19	0.052	O					0.09
0.667	1.60	0.22	0.062	O					0.11
0.750	1.60	0.25	0.071	O					0.13
0.833	1.61	0.29	0.080	O					0.14
0.917	1.61	0.32	0.089	O					0.16
1.000	1.62	0.35	0.098	O					0.18
1.083	1.62	0.38	0.107	O					0.19
1.167	1.63	0.41	0.115	O					0.21
1.250	1.63	0.44	0.123	O					0.22
1.333	1.64	0.47	0.132	O					0.24
1.417	1.64	0.50	0.140	O					0.25
1.500	1.65	0.53	0.147	O					0.26
1.583	1.66	0.55	0.155	O					0.28
1.667	1.66	0.58	0.163	O					0.29
1.750	1.67	0.61	0.170	O					0.30
1.833	1.67	0.63	0.177	O					0.32
1.917	1.68	0.66	0.184	O					0.33
2.000	1.68	0.68	0.191	O					0.34
2.083	1.69	0.71	0.198	O					0.35
2.167	1.69	0.73	0.205	O					0.37
2.250	1.70	0.75	0.211	O					0.38
2.333	1.71	0.78	0.218	O					0.39
2.417	1.71	0.80	0.224	O					0.40
2.500	1.72	0.82	0.230	O					0.41
2.583	1.72	0.84	0.236	O					0.42
2.667	1.73	0.87	0.242	O					0.43
2.750	1.74	0.89	0.248	O					0.44
2.833	1.74	0.91	0.254	O					0.45
2.917	1.75	0.93	0.260	O					0.46
3.000	1.75	0.95	0.265	O					0.47
3.083	1.76	0.97	0.271	O					0.48
3.167	1.77	0.99	0.276	O					0.49
3.250	1.77	1.01	0.282	O					0.50
3.333	1.78	1.02	0.287	O					0.51
3.417	1.79	1.04	0.292	O					0.52
3.500	1.79	1.06	0.297	O					0.53
3.583	1.80	1.08	0.302	O					0.54
3.667	1.81	1.10	0.307	O					0.55
3.750	1.81	1.11	0.312	O					0.56
3.833	1.82	1.13	0.317	O					0.57
3.917	1.83	1.15	0.321	O					0.57
4.000	1.83	1.16	0.326	O					0.58
4.083	1.84	1.18	0.331	O					0.59

4.167	1.85	1.20	0.335	O					0.60
4.250	1.86	1.21	0.340	O					0.61
4.333	1.86	1.23	0.344	O					0.61
4.417	1.87	1.24	0.348	O					0.62
4.500	1.88	1.26	0.353	O					0.63
4.583	1.88	1.27	0.357	O					0.64
4.667	1.89	1.29	0.361	O					0.64
4.750	1.90	1.30	0.365	O					0.65
4.833	1.91	1.32	0.369	O					0.66
4.917	1.92	1.33	0.373	O					0.67
5.000	1.92	1.35	0.377	O					0.67
5.083	1.93	1.36	0.381	O					0.68
5.167	1.94	1.38	0.385	O					0.69
5.250	1.95	1.39	0.389	O					0.69
5.333	1.96	1.40	0.393	O					0.70
5.417	1.97	1.42	0.397	OI					0.71
5.500	1.97	1.43	0.400	OI					0.71
5.583	1.98	1.44	0.404	OI					0.72
5.667	1.99	1.46	0.408	OI					0.73
5.750	2.00	1.47	0.412	OI					0.73
5.833	2.01	1.48	0.415	OI					0.74
5.917	2.02	1.50	0.419	OI					0.75
6.000	2.03	1.51	0.422	OI					0.75
6.083	2.04	1.52	0.426	OI					0.76
6.167	2.05	1.53	0.430	OI					0.77
6.250	2.06	1.55	0.433	OI					0.77
6.333	2.07	1.56	0.437	OI					0.78
6.417	2.08	1.57	0.440	OI					0.79
6.500	2.09	1.58	0.444	OI					0.79
6.583	2.10	1.60	0.447	OI					0.80
6.667	2.11	1.61	0.450	OI					0.80
6.750	2.12	1.62	0.454	OI					0.81
6.833	2.13	1.63	0.457	OI					0.82
6.917	2.14	1.65	0.461	OI					0.82
7.000	2.15	1.66	0.464	OI					0.83
7.083	2.16	1.67	0.467	OI					0.83
7.167	2.17	1.68	0.471	OI					0.84
7.250	2.18	1.69	0.474	OI					0.85
7.333	2.20	1.71	0.478	OI					0.85
7.417	2.21	1.72	0.481	OI					0.86
7.500	2.22	1.73	0.484	OI					0.86
7.583	2.23	1.74	0.488	OI					0.87
7.667	2.24	1.75	0.491	OI					0.88
7.750	2.26	1.77	0.495	OI					0.88
7.833	2.27	1.78	0.498	OI					0.89
7.917	2.28	1.79	0.501	OI					0.90
8.000	2.30	1.80	0.505	OI					0.90
8.083	2.31	1.81	0.508	OI					0.91
8.167	2.32	1.83	0.512	OI					0.91
8.250	2.34	1.84	0.515	OI					0.92
8.333	2.35	1.85	0.518	OI					0.93
8.417	2.36	1.86	0.522	OI					0.93
8.500	2.38	1.88	0.525	OI					0.94
8.583	2.39	1.89	0.529	OI					0.94
8.667	2.41	1.90	0.532	OI					0.95
8.750	2.42	1.91	0.536	OI					0.96
8.833	2.44	1.93	0.539	OI					0.96
8.917	2.45	1.94	0.543	OI					0.97
9.000	2.47	1.95	0.546	OI					0.98

9.083	2.49	1.96	0.550	IO					0.98
9.167	2.50	1.98	0.554	IO					0.99
9.250	2.52	1.99	0.557	IO					1.00
9.333	2.54	2.00	0.561	IO					1.00
9.417	2.56	2.01	0.565	IO					1.00
9.500	2.57	2.02	0.568	IO					1.01
9.583	2.59	2.03	0.572	IO					1.01
9.667	2.61	2.04	0.576	IO					1.01
9.750	2.63	2.06	0.580	IO					1.02
9.833	2.65	2.07	0.584	IO					1.02
9.917	2.67	2.08	0.588	IO					1.02
10.000	2.69	2.09	0.592	IO					1.03
10.083	2.71	2.10	0.596	IO					1.03
10.167	2.73	2.11	0.601	IO					1.04
10.250	2.75	2.12	0.605	IO					1.04
10.333	2.78	2.14	0.609	IO					1.04
10.417	2.80	2.15	0.614	IO					1.05
10.500	2.82	2.16	0.618	IO					1.05
10.583	2.84	2.17	0.623	IO					1.05
10.667	2.87	2.19	0.627	IO					1.06
10.750	2.89	2.20	0.632	IO					1.06
10.833	2.92	2.21	0.637	IO					1.07
10.917	2.94	2.23	0.642	IO					1.07
11.000	2.97	2.24	0.647	IO					1.08
11.083	3.00	2.25	0.652	IO					1.08
11.167	3.03	2.27	0.657	IO					1.08
11.250	3.05	2.28	0.662	IO					1.09
11.333	3.09	2.30	0.668	IO					1.09
11.417	3.11	2.31	0.673	IO					1.10
11.500	3.15	2.33	0.679	IO					1.10
11.583	3.18	2.34	0.685	IO					1.11
11.667	3.21	2.36	0.690	IO					1.11
11.750	3.24	2.38	0.696	IO					1.12
11.833	3.28	2.39	0.702	IO					1.12
11.917	3.32	2.41	0.709	IO					1.13
12.000	3.35	2.43	0.715	IO					1.13
12.083	3.45	2.45	0.721	IO					1.14
12.167	3.77	2.47	0.729	IO					1.15
12.250	4.00	2.49	0.739	IOI					1.16
12.333	4.09	2.52	0.750	IOI					1.16
12.417	4.14	2.55	0.761	IOI					1.17
12.500	4.19	2.58	0.772	IOI					1.18
12.583	4.23	2.61	0.783	IOI					1.19
12.667	4.28	2.64	0.794	IOI					1.20
12.750	4.33	2.68	0.805	IOI					1.21
12.833	4.39	2.71	0.817	IOI					1.22
12.917	4.44	2.74	0.828	IOI					1.23
13.000	4.50	2.77	0.840	IOI					1.24
13.083	4.55	2.80	0.852	IOI					1.25
13.167	4.62	2.84	0.864	IOI					1.26
13.250	4.68	2.87	0.877	IOI					1.28
13.333	4.75	2.91	0.889	IOI					1.29
13.417	4.82	2.94	0.902	IOI					1.30
13.500	4.89	2.98	0.915	IOI					1.31
13.583	4.97	3.01	0.928	IOI					1.32
13.667	5.05	3.05	0.942	IOI					1.33
13.750	5.13	3.09	0.956	IOI					1.34
13.833	5.22	3.13	0.970	IOI					1.36
13.917	5.31	3.17	0.984	IOI					1.37

14.000	5.41	3.21	0.999	OI				1.38
14.083	5.51	3.25	1.015	OI				1.40
14.167	5.63	3.30	1.031	OI				1.41
14.250	5.75	3.34	1.047	OI				1.42
14.333	5.88	3.39	1.064	OI				1.44
14.417	6.01	3.44	1.081	O I				1.45
14.500	6.16	3.49	1.099	O I				1.47
14.583	6.31	3.54	1.118	O I				1.49
14.667	6.48	3.59	1.138	O I				1.50
14.750	6.66	3.65	1.158	O I				1.52
14.833	6.87	3.71	1.179	O I				1.54
14.917	7.07	3.77	1.201	O I				1.56
15.000	7.33	3.83	1.225	O I				1.58
15.083	7.58	3.90	1.250	O I				1.60
15.167	7.89	3.97	1.276	O I				1.62
15.250	8.22	4.05	1.304	O I				1.65
15.333	8.63	4.13	1.333	O I				1.67
15.417	8.85	4.22	1.365	O I				1.70
15.500	8.40	4.30	1.395	O I				1.73
15.583	8.30	4.38	1.423	O I				1.75
15.667	8.98	4.46	1.452	O I				1.78
15.750	9.92	4.55	1.486	O I				1.80
15.833	11.44	4.67	1.527	O I				1.84
15.917	13.83	4.82	1.582	O I				1.89
16.000	19.04	5.04	1.661	O I				1.96
16.083	33.09	5.64	1.804	O I		I		2.08
16.167	62.76	7.09	2.090	O I			I	2.32
16.250	45.79	8.70	2.409	O I		I		2.59
16.333	19.16	9.51	2.570	O I				2.72
16.417	11.63	9.71	2.610	OI				2.76
16.500	9.40	9.74	2.616	O				2.76
16.583	8.87	9.72	2.612	O				2.76
16.667	8.16	9.68	2.604	O				2.75
16.750	7.55	9.61	2.591	IO				2.74
16.833	7.05	9.53	2.576	IO				2.73
16.917	6.63	9.44	2.557	IO				2.71
17.000	6.29	9.34	2.537	IO				2.70
17.083	5.99	9.23	2.515	IO				2.68
17.167	5.73	9.12	2.493	I O				2.66
17.250	5.50	9.00	2.469	I O				2.64
17.333	5.30	8.87	2.445	I O				2.62
17.417	5.11	8.75	2.420	I O				2.60
17.500	4.95	8.62	2.395	I O				2.58
17.583	4.80	8.49	2.369	I O				2.55
17.667	4.67	8.37	2.344	I O				2.53
17.750	4.54	8.24	2.318	I O				2.51
17.833	4.43	8.11	2.293	I O				2.49
17.917	4.32	7.98	2.268	I O				2.47
18.000	4.22	7.85	2.242	I O				2.45
18.083	4.07	7.73	2.217	IO				2.43
18.167	3.71	7.60	2.191	I O				2.40
18.250	3.43	7.46	2.164	I O				2.38
18.333	3.32	7.32	2.136	I O				2.36
18.417	3.24	7.18	2.109	I O				2.34
18.500	3.17	7.05	2.082	I O				2.31
18.583	3.11	6.91	2.056	I O				2.29
18.667	3.05	6.78	2.030	I O				2.27
18.750	2.99	6.65	2.004	I O				2.25
18.833	2.94	6.53	1.979	I O				2.23

18.917	2.89	6.40	1.955	I O				2.21
19.000	2.84	6.28	1.931	I O				2.19
19.083	2.79	6.17	1.907	I O				2.17
19.167	2.75	6.05	1.884	I O				2.15
19.250	2.71	5.94	1.862	I O				2.13
19.333	2.66	5.83	1.840	IO				2.11
19.417	2.63	5.72	1.818	IO				2.09
19.500	2.59	5.61	1.797	IO				2.07
19.583	2.55	5.51	1.777	IO				2.06
19.667	2.52	5.41	1.757	IO				2.04
19.750	2.48	5.31	1.737	IO				2.02
19.833	2.45	5.21	1.718	IO				2.01
19.917	2.42	5.14	1.699	IO				1.99
20.000	2.39	5.09	1.680	IO				1.97
20.083	2.36	5.04	1.662	IO				1.96
20.167	2.33	4.99	1.643	IO				1.94
20.250	2.31	4.94	1.625	IO				1.93
20.333	2.28	4.89	1.607	IO				1.91
20.417	2.25	4.84	1.589	IO				1.90
20.500	2.23	4.79	1.572	IO				1.88
20.583	2.21	4.74	1.554	IO				1.86
20.667	2.18	4.69	1.537	IO				1.85
20.750	2.16	4.64	1.519	IO				1.83
20.833	2.14	4.60	1.502	IO				1.82
20.917	2.12	4.55	1.486	IO				1.80
21.000	2.10	4.51	1.469	IO				1.79
21.083	2.08	4.46	1.452	IO				1.78
21.167	2.06	4.41	1.436	IO				1.76
21.250	2.04	4.37	1.420	IO				1.75
21.333	2.02	4.33	1.404	IO				1.73
21.417	2.00	4.28	1.388	IO				1.72
21.500	1.98	4.24	1.372	IO				1.71
21.583	1.96	4.20	1.357	IO				1.69
21.667	1.95	4.15	1.342	I O				1.68
21.750	1.93	4.11	1.327	I O				1.67
21.833	1.91	4.07	1.312	I O				1.65
21.917	1.90	4.03	1.297	I O				1.64
22.000	1.88	3.99	1.282	I O				1.63
22.083	1.87	3.95	1.268	I O				1.62
22.167	1.85	3.91	1.254	IO				1.60
22.250	1.84	3.87	1.239	IO				1.59
22.333	1.82	3.83	1.226	IO				1.58
22.417	1.81	3.80	1.212	IO				1.57
22.500	1.80	3.76	1.198	IO				1.55
22.583	1.78	3.72	1.185	IO				1.54
22.667	1.77	3.69	1.172	IO				1.53
22.750	1.76	3.65	1.158	IO				1.52
22.833	1.75	3.61	1.145	IO				1.51
22.917	1.73	3.58	1.133	IO				1.50
23.000	1.72	3.54	1.120	IO				1.49
23.083	1.71	3.51	1.108	IO				1.48
23.167	1.70	3.48	1.095	IO				1.47
23.250	1.69	3.44	1.083	IO				1.45
23.333	1.68	3.41	1.071	IO				1.44
23.417	1.66	3.38	1.059	IO				1.43
23.500	1.65	3.34	1.048	IO				1.42
23.583	1.64	3.31	1.036	IO				1.41
23.667	1.63	3.28	1.025	IO				1.40
23.750	1.62	3.25	1.013	IO				1.39

23.833	1.61	3.22	1.002	IO					1.38
23.917	1.60	3.19	0.991	IO					1.37
24.000	1.59	3.16	0.980	IO					1.37
24.083	1.43	3.13	0.969	IO					1.36
24.167	0.66	3.09	0.955	IO					1.34
24.250	0.13	3.04	0.937	IO					1.33
24.333	0.03	2.98	0.916	IO					1.31
24.417	0.00	2.93	0.896	IO					1.29
24.500	0.00	2.87	0.876	IO					1.27
24.583	0.00	2.82	0.856	IO					1.26
24.667	0.00	2.76	0.837	IO					1.24
24.750	0.00	2.71	0.818	IO					1.22
24.833	0.00	2.66	0.800	IO					1.21
24.917	0.00	2.61	0.782	IO					1.19
25.000	0.00	2.56	0.764	IO					1.18
25.083	0.00	2.51	0.746	IO					1.16
25.167	0.00	2.47	0.729	IO					1.15
25.250	0.00	2.42	0.712	IO					1.13
25.333	0.00	2.37	0.696	IO					1.12
25.417	0.00	2.33	0.680	IO					1.10
25.500	0.00	2.29	0.664	IO					1.09
25.583	0.00	2.24	0.648	IO					1.08
25.667	0.00	2.20	0.633	IO					1.06
25.750	0.00	2.16	0.618	IO					1.05
25.833	0.00	2.12	0.603	IO					1.04
25.917	0.00	2.08	0.589	IO					1.03
26.000	0.00	2.04	0.575	IO					1.01
26.083	0.00	2.00	0.561	IO					1.00
26.167	0.00	1.95	0.547	O					0.98
26.250	0.00	1.91	0.534	O					0.95
26.333	0.00	1.86	0.521	O					0.93
26.417	0.00	1.81	0.508	O					0.91
26.500	0.00	1.77	0.496	O					0.89
26.583	0.00	1.73	0.484	O					0.86
26.667	0.00	1.69	0.472	O					0.84
26.750	0.00	1.64	0.461	O					0.82
26.833	0.00	1.60	0.449	O					0.80
26.917	0.00	1.57	0.438	O					0.78
27.000	0.00	1.53	0.428	O					0.76
27.083	0.00	1.49	0.417	O					0.75
27.167	0.00	1.45	0.407	O					0.73
27.250	0.00	1.42	0.397	O					0.71
27.333	0.00	1.38	0.388	O					0.69
27.417	0.00	1.35	0.378	O					0.68
27.500	0.00	1.32	0.369	O					0.66
27.583	0.00	1.29	0.360	O					0.64
27.667	0.00	1.25	0.351	O					0.63
27.750	0.00	1.22	0.343	O					0.61
27.833	0.00	1.19	0.334	O					0.60
27.917	0.00	1.17	0.326	O					0.58
28.000	0.00	1.14	0.318	O					0.57
28.083	0.00	1.11	0.311	O					0.55
28.167	0.00	1.08	0.303	O					0.54
28.250	0.00	1.06	0.296	O					0.53
28.333	0.00	1.03	0.289	O					0.52
28.417	0.00	1.01	0.282	O					0.50
28.500	0.00	0.98	0.275	O					0.49
28.583	0.00	0.96	0.268	O					0.48
28.667	0.00	0.93	0.262	O					0.47

28.750	0.00	0.91	0.255	O					0.46
28.833	0.00	0.89	0.249	O					0.44
28.917	0.00	0.87	0.243	O					0.43
29.000	0.00	0.85	0.237	O					0.42
29.083	0.00	0.83	0.231	O					0.41
29.167	0.00	0.81	0.226	O					0.40
29.250	0.00	0.79	0.220	O					0.39
29.333	0.00	0.77	0.215	O					0.38
29.417	0.00	0.75	0.210	O					0.37
29.500	0.00	0.73	0.205	O					0.37
29.583	0.00	0.71	0.200	O					0.36
29.667	0.00	0.70	0.195	O					0.35
29.750	0.00	0.68	0.190	O					0.34
29.833	0.00	0.66	0.185	O					0.33
29.917	0.00	0.65	0.181	O					0.32
30.000	0.00	0.63	0.176	O					0.32
30.083	0.00	0.61	0.172	O					0.31
30.167	0.00	0.60	0.168	O					0.30
30.250	0.00	0.59	0.164	O					0.29
30.333	0.00	0.57	0.160	O					0.29
30.417	0.00	0.56	0.156	O					0.28
30.500	0.00	0.54	0.152	O					0.27
30.583	0.00	0.53	0.149	O					0.27
30.667	0.00	0.52	0.145	O					0.26
30.750	0.00	0.51	0.141	O					0.25
30.833	0.00	0.49	0.138	O					0.25
30.917	0.00	0.48	0.135	O					0.24
31.000	0.00	0.47	0.131	O					0.23
31.083	0.00	0.46	0.128	O					0.23
31.167	0.00	0.45	0.125	O					0.22
31.250	0.00	0.44	0.122	O					0.22
31.333	0.00	0.43	0.119	O					0.21
31.417	0.00	0.41	0.116	O					0.21
31.500	0.00	0.40	0.113	O					0.20
31.583	0.00	0.39	0.111	O					0.20
31.667	0.00	0.39	0.108	O					0.19
31.750	0.00	0.38	0.105	O					0.19
31.833	0.00	0.37	0.103	O					0.18
31.917	0.00	0.36	0.100	O					0.18
32.000	0.00	0.35	0.098	O					0.17
32.083	0.00	0.34	0.095	O					0.17
32.167	0.00	0.33	0.093	O					0.17
32.250	0.00	0.32	0.091	O					0.16
32.333	0.00	0.32	0.089	O					0.16
32.417	0.00	0.31	0.086	O					0.15
32.500	0.00	0.30	0.084	O					0.15
32.583	0.00	0.29	0.082	O					0.15
32.667	0.00	0.29	0.080	O					0.14
32.750	0.00	0.28	0.078	O					0.14
32.833	0.00	0.27	0.076	O					0.14
32.917	0.00	0.27	0.075	O					0.13
33.000	0.00	0.26	0.073	O					0.13
33.083	0.00	0.25	0.071	O					0.13
33.167	0.00	0.25	0.069	O					0.12
33.250	0.00	0.24	0.068	O					0.12
33.333	0.00	0.24	0.066	O					0.12
33.417	0.00	0.23	0.064	O					0.11
33.500	0.00	0.22	0.063	O					0.11
33.583	0.00	0.22	0.061	O					0.11

33.667	0.00	0.21	0.060	O					0.11
33.750	0.00	0.21	0.058	O					0.10
33.833	0.00	0.20	0.057	O					0.10
33.917	0.00	0.20	0.056	O					0.10
34.000	0.00	0.19	0.054	O					0.10
34.083	0.00	0.19	0.053	O					0.09
34.167	0.00	0.18	0.052	O					0.09
34.250	0.00	0.18	0.050	O					0.09
34.333	0.00	0.18	0.049	O					0.09
34.417	0.00	0.17	0.048	O					0.09
34.500	0.00	0.17	0.047	O					0.08
34.583	0.00	0.16	0.046	O					0.08
34.667	0.00	0.16	0.045	O					0.08
34.750	0.00	0.16	0.043	O					0.08
34.833	0.00	0.15	0.042	O					0.08
34.917	0.00	0.15	0.041	O					0.07
35.000	0.00	0.14	0.040	O					0.07
35.083	0.00	0.14	0.039	O					0.07
35.167	0.00	0.14	0.038	O					0.07
35.250	0.00	0.13	0.037	O					0.07
35.333	0.00	0.13	0.037	O					0.07
35.417	0.00	0.13	0.036	O					0.06
35.500	0.00	0.12	0.035	O					0.06
35.583	0.00	0.12	0.034	O					0.06
35.667	0.00	0.12	0.033	O					0.06
35.750	0.00	0.12	0.032	O					0.06
35.833	0.00	0.11	0.032	O					0.06
35.917	0.00	0.11	0.031	O					0.05
36.000	0.00	0.11	0.030	O					0.05
36.083	0.00	0.10	0.029	O					0.05
36.167	0.00	0.10	0.029	O					0.05
36.250	0.00	0.10	0.028	O					0.05
36.333	0.00	0.10	0.027	O					0.05
36.417	0.00	0.09	0.027	O					0.05
36.500	0.00	0.09	0.026	O					0.05
36.583	0.00	0.09	0.025	O					0.05
36.667	0.00	0.09	0.025	O					0.04
36.750	0.00	0.09	0.024	O					0.04
36.833	0.00	0.08	0.023	O					0.04
36.917	0.00	0.08	0.023	O					0.04
37.000	0.00	0.08	0.022	O					0.04
37.083	0.00	0.08	0.022	O					0.04
37.167	0.00	0.08	0.021	O					0.04
37.250	0.00	0.07	0.021	O					0.04
37.333	0.00	0.07	0.020	O					0.04
37.417	0.00	0.07	0.020	O					0.04
37.500	0.00	0.07	0.019	O					0.03
37.583	0.00	0.07	0.019	O					0.03
37.667	0.00	0.07	0.018	O					0.03
37.750	0.00	0.06	0.018	O					0.03
37.833	0.00	0.06	0.017	O					0.03
37.917	0.00	0.06	0.017	O					0.03
38.000	0.00	0.06	0.017	O					0.03
38.083	0.00	0.06	0.016	O					0.03
38.167	0.00	0.06	0.016	O					0.03
38.250	0.00	0.06	0.015	O					0.03
38.333	0.00	0.05	0.015	O					0.03
38.417	0.00	0.05	0.015	O					0.03
38.500	0.00	0.05	0.014	O					0.03

38.583	0.00	0.05	0.014	O					0.03
38.667	0.00	0.05	0.014	O					0.02
38.750	0.00	0.05	0.013	O					0.02
38.833	0.00	0.05	0.013	O					0.02
38.917	0.00	0.05	0.013	O					0.02
39.000	0.00	0.04	0.012	O					0.02
39.083	0.00	0.04	0.012	O					0.02
39.167	0.00	0.04	0.012	O					0.02
39.250	0.00	0.04	0.012	O					0.02
39.333	0.00	0.04	0.011	O					0.02
39.417	0.00	0.04	0.011	O					0.02
39.500	0.00	0.04	0.011	O					0.02
39.583	0.00	0.04	0.010	O					0.02
39.667	0.00	0.04	0.010	O					0.02
39.750	0.00	0.04	0.010	O					0.02
39.833	0.00	0.03	0.010	O					0.02
39.917	0.00	0.03	0.009	O					0.02
40.000	0.00	0.03	0.009	O					0.02
40.083	0.00	0.03	0.009	O					0.02
40.167	0.00	0.03	0.009	O					0.02
40.250	0.00	0.03	0.009	O					0.02
40.333	0.00	0.03	0.008	O					0.01
40.417	0.00	0.03	0.008	O					0.01
40.500	0.00	0.03	0.008	O					0.01
40.583	0.00	0.03	0.008	O					0.01
40.667	0.00	0.03	0.008	O					0.01
40.750	0.00	0.03	0.007	O					0.01
40.833	0.00	0.03	0.007	O					0.01
40.917	0.00	0.03	0.007	O					0.01
41.000	0.00	0.02	0.007	O					0.01
41.083	0.00	0.02	0.007	O					0.01
41.167	0.00	0.02	0.007	O					0.01
41.250	0.00	0.02	0.006	O					0.01
41.333	0.00	0.02	0.006	O					0.01
41.417	0.00	0.02	0.006	O					0.01
41.500	0.00	0.02	0.006	O					0.01
41.583	0.00	0.02	0.006	O					0.01
41.667	0.00	0.02	0.006	O					0.01
41.750	0.00	0.02	0.005	O					0.01
41.833	0.00	0.02	0.005	O					0.01
41.917	0.00	0.02	0.005	O					0.01
42.000	0.00	0.02	0.005	O					0.01
42.083	0.00	0.02	0.005	O					0.01
42.167	0.00	0.02	0.005	O					0.01
42.250	0.00	0.02	0.005	O					0.01
42.333	0.00	0.02	0.005	O					0.01
42.417	0.00	0.02	0.005	O					0.01
42.500	0.00	0.02	0.004	O					0.01
42.583	0.00	0.02	0.004	O					0.01
42.667	0.00	0.01	0.004	O					0.01
42.750	0.00	0.01	0.004	O					0.01
42.833	0.00	0.01	0.004	O					0.01
42.917	0.00	0.01	0.004	O					0.01
43.000	0.00	0.01	0.004	O					0.01
43.083	0.00	0.01	0.004	O					0.01
43.167	0.00	0.01	0.004	O					0.01
43.250	0.00	0.01	0.004	O					0.01
43.333	0.00	0.01	0.003	O					0.01
43.417	0.00	0.01	0.003	O					0.01

43.500	0.00	0.01	0.003	O					0.01
43.583	0.00	0.01	0.003	O					0.01
43.667	0.00	0.01	0.003	O					0.01
43.750	0.00	0.01	0.003	O					0.01
43.833	0.00	0.01	0.003	O					0.01
43.917	0.00	0.01	0.003	O					0.01
44.000	0.00	0.01	0.003	O					0.01
44.083	0.00	0.01	0.003	O					0.00
44.167	0.00	0.01	0.003	O					0.00
44.250	0.00	0.01	0.003	O					0.00
44.333	0.00	0.01	0.003	O					0.00
44.417	0.00	0.01	0.003	O					0.00
44.500	0.00	0.01	0.002	O					0.00
44.583	0.00	0.01	0.002	O					0.00
44.667	0.00	0.01	0.002	O					0.00
44.750	0.00	0.01	0.002	O					0.00
44.833	0.00	0.01	0.002	O					0.00
44.917	0.00	0.01	0.002	O					0.00
45.000	0.00	0.01	0.002	O					0.00
45.083	0.00	0.01	0.002	O					0.00
45.167	0.00	0.01	0.002	O					0.00
45.250	0.00	0.01	0.002	O					0.00
45.333	0.00	0.01	0.002	O					0.00
45.417	0.00	0.01	0.002	O					0.00
45.500	0.00	0.01	0.002	O					0.00
45.583	0.00	0.01	0.002	O					0.00
45.667	0.00	0.01	0.002	O					0.00
45.750	0.00	0.01	0.002	O					0.00
45.833	0.00	0.01	0.002	O					0.00
45.917	0.00	0.01	0.002	O					0.00
46.000	0.00	0.01	0.002	O					0.00
46.083	0.00	0.01	0.002	O					0.00
46.167	0.00	0.01	0.001	O					0.00
46.250	0.00	0.01	0.001	O					0.00
46.333	0.00	0.01	0.001	O					0.00
46.417	0.00	0.00	0.001	O					0.00
46.500	0.00	0.00	0.001	O					0.00
46.583	0.00	0.00	0.001	O					0.00
46.667	0.00	0.00	0.001	O					0.00
46.750	0.00	0.00	0.001	O					0.00
46.833	0.00	0.00	0.001	O					0.00
46.917	0.00	0.00	0.001	O					0.00
47.000	0.00	0.00	0.001	O					0.00
47.083	0.00	0.00	0.001	O					0.00
47.167	0.00	0.00	0.001	O					0.00
47.250	0.00	0.00	0.001	O					0.00
47.333	0.00	0.00	0.001	O					0.00
47.417	0.00	0.00	0.001	O					0.00
47.500	0.00	0.00	0.001	O					0.00
47.583	0.00	0.00	0.001	O					0.00
47.667	0.00	0.00	0.001	O					0.00
47.750	0.00	0.00	0.001	O					0.00
47.833	0.00	0.00	0.001	O					0.00
47.917	0.00	0.00	0.001	O					0.00
48.000	0.00	0.00	0.001	O					0.00
48.083	0.00	0.00	0.001	O					0.00
48.167	0.00	0.00	0.001	O					0.00
48.250	0.00	0.00	0.001	O					0.00
48.333	0.00	0.00	0.001	O					0.00

48.417	0.00	0.00	0.001	O					0.00
48.500	0.00	0.00	0.001	O					0.00
48.583	0.00	0.00	0.001	O					0.00
48.667	0.00	0.00	0.001	O					0.00
48.750	0.00	0.00	0.001	O					0.00
48.833	0.00	0.00	0.001	O					0.00
48.917	0.00	0.00	0.001	O					0.00
49.000	0.00	0.00	0.001	O					0.00
49.083	0.00	0.00	0.001	O					0.00
49.167	0.00	0.00	0.001	O					0.00
49.250	0.00	0.00	0.001	O					0.00
49.333	0.00	0.00	0.001	O					0.00
49.417	0.00	0.00	0.001	O					0.00
49.500	0.00	0.00	0.001	O					0.00

*****HYDROGRAPH DATA*****

Number of intervals = 594
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 9.737 (CFS)
Total volume = 7.329 (Ac.Ft)
Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	75.423	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	37.604	0.000	0.000	0.000	0.000

++++++
Process from Point/Station 7.000 to Point/Station 6.000
**** ADD/COMBINE/RECOVER HYDROGRAPHS ****

From stored stream number 1 the total
volume of 37.60 (Ac.Ft) is being added to the
current hydrograph at its original rate from user
with a delay time to start of addition of 0.00 hours.

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PRINT OF STORM
Runoff Hydrograph

Hydrograph in 5 Minute intervals (CFS)

Time(h+m)	Add q(CFS)	Tot. Q	0	21.0	42.1	63.1	84.1
0+ 5	0.0712	0.07	Q				
0+10	0.4853	0.50	Q				
0+15	1.1966	1.24	Q				
0+20	1.8182	1.90	Q				
0+25	2.3643	2.48	Q				
0+30	2.8556	3.01	Q				
0+35	3.3000	3.49	Q				
0+40	3.6835	3.90	Q				
0+45	4.0192	4.27	Q				
0+50	4.3126	4.60	Q				
0+55	4.5695	4.89	Q				
1+ 0	4.7953	5.15	Q				
1+ 5	4.9949	5.38	Q				

1+10	5.1722	5.58	Q				
1+15	5.3306	5.77	Q				
1+20	5.4729	5.94	Q				
1+25	5.6017	6.10	Q				
1+30	5.7189	6.25	Q				
1+35	5.8264	6.38	qQ				
1+40	5.9255	6.51	qQ				
1+45	6.0176	6.62	qQ				
1+50	6.1037	6.74	qQ				
1+55	6.1847	6.84	qQ				
2+ 0	6.2613	6.94	qQ				
2+ 5	6.3343	7.04	Q				
2+10	6.3992	7.13	Q				
2+15	6.4570	7.21	Q				
2+20	6.5112	7.29	Q				
2+25	6.5636	7.36	Q				
2+30	6.6145	7.44	Q				
2+35	6.6643	7.51	Q				
2+40	6.7129	7.58	Q				
2+45	6.7608	7.65	Q				
2+50	6.8078	7.72	Q				
2+55	6.8544	7.78	Q				
3+ 0	6.9004	7.85	Q				
3+ 5	6.9461	7.91	Q				
3+10	6.9914	7.98	Q				
3+15	7.0365	8.04	Q				
3+20	7.0814	8.11	Q				
3+25	7.1262	8.17	Q				
3+30	7.1708	8.23	Q				
3+35	7.2154	8.29	Q				
3+40	7.2599	8.36	Q				
3+45	7.3046	8.42	qQ				
3+50	7.3491	8.48	qQ				
3+55	7.3938	8.54	qQ				
4+ 0	7.4384	8.60	qQ				
4+ 5	7.4833	8.66	qQ				
4+10	7.5281	8.72	qQ				
4+15	7.5732	8.79	qQ				
4+20	7.6182	8.85	qQ				
4+25	7.6635	8.91	qQ				
4+30	7.7089	8.97	qQ				
4+35	7.7545	9.03	qQ				
4+40	7.8002	9.09	qQ				
4+45	7.8462	9.15	qQ				
4+50	7.8923	9.21	qQ				
4+55	7.9387	9.27	qQ				
5+ 0	7.9851	9.33	qQ				
5+ 5	8.0320	9.39	qQ				
5+10	8.0789	9.45	qQ				
5+15	8.1262	9.52	qQ				
5+20	8.1736	9.58	qQ				
5+25	8.2214	9.64	qQ				
5+30	8.2693	9.70	qQ				
5+35	8.3177	9.76	qQ				
5+40	8.3661	9.82	qQ				
5+45	8.4151	9.88	Q				
5+50	8.4642	9.95	Q				
5+55	8.5137	10.01	Q				
6+ 0	8.5634	10.07	Q				

6+ 5	8.6136	10.13	Q				
6+10	8.6640	10.20	Q				
6+15	8.7149	10.26	Q				
6+20	8.7660	10.33	Q				
6+25	8.8176	10.39	Q				
6+30	8.8695	10.45	Q				
6+35	8.9219	10.52	qQ				
6+40	8.9746	10.58	qQ				
6+45	9.0279	10.65	qQ				
6+50	9.0814	10.71	qQ				
6+55	9.1355	10.78	qQ				
7+ 0	9.1900	10.85	qQ				
7+ 5	9.2450	10.91	qQ				
7+10	9.3004	10.98	qQ				
7+15	9.3565	11.05	qQ				
7+20	9.4130	11.12	qQ				
7+25	9.4721	11.19	qQ				
7+30	9.5325	11.26	qQ				
7+35	9.5938	11.34	qQ				
7+40	9.6554	11.41	qQ				
7+45	9.7178	11.48	qQ				
7+50	9.7806	11.56	qQ				
7+55	9.8441	11.63	qQ				
8+ 0	9.9081	11.71	qQ				
8+ 5	9.9729	11.79	qQ				
8+10	10.0382	11.87	qQ				
8+15	10.1044	11.94	qQ				
8+20	10.1710	12.02	qQ				
8+25	10.2386	12.10	qQ				
8+30	10.3067	12.18	qQ				
8+35	10.3758	12.26	qQ				
8+40	10.4455	12.35	qQ				
8+45	10.5162	12.43	Q				
8+50	10.5875	12.51	Q				
8+55	10.6600	12.60	Q				
9+ 0	10.7331	12.68	qQ				
9+ 5	10.8073	12.77	qQ				
9+10	10.8823	12.86	qQ				
9+15	10.9585	12.95	qQ				
9+20	11.0355	13.04	qQ				
9+25	11.1139	13.13	qQ				
9+30	11.1930	13.22	qQ				
9+35	11.2735	13.31	qQ				
9+40	11.3550	13.40	qQ				
9+45	11.4379	13.49	qQ				
9+50	11.5218	13.59	qQ				
9+55	11.6072	13.68	qQ				
10+ 0	11.6937	13.78	qQ				
10+ 5	11.7819	13.88	qQ				
10+10	11.8712	13.98	qQ				
10+15	11.9623	14.09	qQ				
10+20	12.0546	14.19	qQ				
10+25	12.1489	14.30	qQ				
10+30	12.2444	14.40	qQ				
10+35	12.3421	14.52	qQ				
10+40	12.4411	14.63	qQ				
10+45	12.5423	14.74	q Q				
10+50	12.6451	14.86	qQ				
10+55	12.7502	14.98	qQ				

11+ 0	12.8570	15.10		qQ				
11+ 5	12.9664	15.22		qQ				
11+10	13.0776	15.35		qQ				
11+15	13.1915	15.47		qQ				
11+20	13.3074	15.60		qQ				
11+25	13.4263	15.74		qQ				
11+30	13.5473	15.87		qQ				
11+35	13.6716	16.01		qQ				
11+40	13.7982	16.16		qQ				
11+45	13.9283	16.30		qQ				
11+50	14.0611	16.45		qQ				
11+55	14.1976	16.61		qQ				
12+ 0	14.3370	16.76		qQ				
12+ 5	14.5062	16.95		q Q				
12+10	14.7804	17.25		qQ				
12+15	15.1347	17.63		qQ				
12+20	15.4301	17.95		qQ				
12+25	15.6928	18.25		qQ				
12+30	15.9466	18.53		qQ				
12+35	16.2018	18.82		qQ				
12+40	16.4520	19.10		q Q				
12+45	16.7021	19.38		q Q				
12+50	16.9512	19.66		qQ				
12+55	17.2013	19.94		qQ				
13+ 0	17.4515	20.22		qQ				
13+ 5	17.7042	20.51		qQ				
13+10	17.9583	20.80		qQ				
13+15	18.2164	21.09		q Q				
13+20	18.4771	21.38		q Q				
13+25	18.7434	21.69		q Q				
13+30	19.0137	21.99		qQ				
13+35	19.2910	22.31		qQ				
13+40	19.5739	22.63		qQ				
13+45	19.8656	22.96		qQ				
13+50	20.1645	23.29		q Q				
13+55	20.4741	23.64		q Q				
14+ 0	20.7928	24.00		q Q				
14+ 5	21.1247	24.38		qQ				
14+10	21.4686	24.77		qQ				
14+15	21.8293	25.17		qQ				
14+20	22.2046	25.59		q Q				
14+25	22.5994	26.04		q Q				
14+30	23.0120	26.50		q Q				
14+35	23.4481	26.99		qQ				
14+40	23.9064	27.50		q Q				
14+45	24.3941	28.04		q Q				
14+50	24.8951	28.60		q Q				
14+55	25.4145	29.18		qQ				
15+ 0	25.9634	29.80		q Q				
15+ 5	26.5600	30.46		q Q				
15+10	27.2091	31.18		q Q				
15+15	27.9299	31.98		q Q				
15+20	28.7291	32.86		q Q				
15+25	29.5327	33.75		q Q				
15+30	29.9841	34.29		q Q				
15+35	30.2256	34.60		q Q				
15+40	30.8765	35.33		q Q				
15+45	31.9586	36.51		q Q				
15+50	33.5052	38.17		q Q				

15+55	35.7667	40.58			q Q		
16+ 0	39.5188	44.55			q Q		
16+ 5	47.9728	53.62			q Q		
16+10	65.7052	72.79				q Q	
16+15	75.4228	84.12					q Q
16+20	65.1179	74.63				q Q	
16+25	57.1913	66.90				q Q	
16+30	53.8094	63.55				q Q	
16+35	52.7665	62.48				q Q	
16+40	51.3096	60.98				q Q	
16+45	50.2037	59.82				q Q	
16+50	49.1383	58.67				q Q	
16+55	48.1197	57.56				q Q	
17+ 0	47.1254	56.47				q Q	
17+ 5	46.1179	55.35				q Q	
17+10	45.0028	54.12				q Q	
17+15	43.8366	52.83				q Q	
17+20	42.6941	51.57				q Q	
17+25	41.5928	50.34				q Q	
17+30	40.5331	49.15				q Q	
17+35	39.5144	48.01				q Q	
17+40	38.5357	46.90				q Q	
17+45	37.5936	45.83				q Q	
17+50	36.6494	44.76				q Q	
17+55	35.7164	43.70				q Q	
18+ 0	34.8199	42.67				q Q	
18+ 5	33.9398	41.67				q Q	
18+10	32.9827	40.58				q Q	
18+15	31.9831	39.44				q Q	
18+20	31.0897	38.41				q Q	
18+25	30.2752	37.46				q Q	
18+30	29.5098	36.56				q Q	
18+35	28.7804	35.69				q Q	
18+40	28.0376	34.82				q Q	
18+45	27.2754	33.93				q Q	
18+50	26.5359	33.06				q Q	
18+55	25.8392	32.24				q Q	
19+ 0	25.1861	31.47				q Q	
19+ 5	24.5739	30.74				q Q	
19+10	23.9995	30.05				q Q	
19+15	23.4603	29.40				q Q	
19+20	22.9537	28.78				q Q	
19+25	22.4775	28.19				q Q	
19+30	22.0295	27.64				q Q	
19+35	21.6077	27.11				q Q	
19+40	21.2101	26.62				q Q	
19+45	20.8352	26.14				q Q	
19+50	20.4813	25.69				q Q	
19+55	20.1470	25.29				q Q	
20+ 0	19.8308	24.92				q Q	
20+ 5	19.5315	24.57				q Q	
20+10	19.2479	24.23				q Q	
20+15	18.9790	23.92				q Q	
20+20	18.7238	23.61				q Q	
20+25	18.4324	23.27				q Q	
20+30	18.0927	22.88				q Q	
20+35	17.7537	22.49				q Q	
20+40	17.4454	22.14				q Q	
20+45	17.1691	21.81				q Q	

20+50	16.9208	21.52		q Q			
20+55	16.6964	21.25		q Q			
21+ 0	16.4925	21.00		q Q			
21+ 5	16.3061	20.77		q Q			
21+10	16.1350	20.55		q Q			
21+15	15.9769	20.35		q Q			
21+20	15.8302	20.16		q Q			
21+25	15.6932	19.98		q Q			
21+30	15.5647	19.80		q Q			
21+35	15.4437	19.64		q Q			
21+40	15.3292	19.48		q Q			
21+45	15.2203	19.33		q Q			
21+50	15.1164	19.19		q Q			
21+55	15.0170	19.05		q Q			
22+ 0	14.9215	18.91		qQ			
22+ 5	14.8294	18.78		qQ			
22+10	14.7405	18.65		qQ			
22+15	14.6519	18.52		q Q			
22+20	14.5642	18.40		q Q			
22+25	14.4784	18.28		q Q			
22+30	14.3948	18.15		q Q			
22+35	14.3130	18.04		q Q			
22+40	14.2331	17.92		q Q			
22+45	14.1547	17.80		q Q			
22+50	14.0779	17.69		q Q			
22+55	14.0025	17.58		q Q			
23+ 0	13.9285	17.47		q Q			
23+ 5	13.8556	17.37		q Q			
23+10	13.7839	17.26		q Q			
23+15	13.7134	17.16		q Q			
23+20	13.6438	17.05		q Q			
23+25	13.5753	16.95		q Q			
23+30	13.5077	16.85		q Q			
23+35	13.4411	16.75		qQ			
23+40	13.3753	16.66		qQ			
23+45	13.3103	16.56		qQ			
23+50	13.2462	16.46		qQ			
23+55	13.1828	16.37		qQ			
24+ 0	13.1201	16.28		qQ			
24+ 5	12.9883	16.12		qQ			
24+10	12.5222	15.61		q Q			
24+15	11.7738	14.81		q Q			
24+20	11.1283	14.11		qQ			
24+25	10.5658	13.49		qQ			
24+30	10.0628	12.93		q Q			
24+35	9.6109	12.43		qQ			
24+40	9.2232	11.99		qQ			
24+45	8.8862	11.60		qQ			
24+50	8.5940	11.26		qQ			
24+55	8.3380	10.95		q Q			
25+ 0	8.1088	10.67		q Q			
25+ 5	7.9048	10.42		qQ			
25+10	7.7242	10.19		qQ			
25+15	7.5637	9.98		qQ			
25+20	7.4203	9.80		qQ			
25+25	7.2913	9.62		qQ			
25+30	7.1747	9.46		qQ			
25+35	7.0685	9.31		qQ			
25+40	6.9712	9.17		qQ			

25+45	6.8815	9.04	qQ				
25+50	6.7983	8.92	qQ				
25+55	6.7206	8.80	qQ				
26+ 0	6.6476	8.69	qQ				
26+ 5	6.5787	8.58	qQ				
26+10	6.5132	8.47	qQ				
26+15	6.4508	8.36	Q				
26+20	6.3909	8.25	Q				
26+25	6.3333	8.15	Q				
26+30	6.2777	8.05	qQ				
26+35	6.2237	7.95	qQ				
26+40	6.1713	7.86	qQ				
26+45	6.1201	7.76	qQ				
26+50	6.0701	7.67	qQ				
26+55	6.0211	7.59	qQ				
27+ 0	5.9629	7.49	qQ				
27+ 5	5.8904	7.38	qQ				
27+10	5.8132	7.27	qQ				
27+15	5.7369	7.16	qQ				
27+20	5.6618	7.05	qQ				
27+25	5.5878	6.94	qQ				
27+30	5.5121	6.83	qQ				
27+35	5.4386	6.72	qQ				
27+40	5.3682	6.62	qQ				
27+45	5.2993	6.52	qQ				
27+50	5.2313	6.43	qQ				
27+55	5.1642	6.33	qQ				
28+ 0	5.0980	6.24	Q				
28+ 5	5.0325	6.14	Q				
28+10	4.9680	6.05	Q				
28+15	4.9042	5.96	Q				
28+20	4.8413	5.87	Q				
28+25	4.7792	5.78	Q				
28+30	4.7179	5.70	Q				
28+35	4.6573	5.61	Q				
28+40	4.5976	5.53	Q				
28+45	4.5386	5.45	Q				
28+50	4.4804	5.37	Q				
28+55	4.4229	5.29	Q				
29+ 0	4.3661	5.21	Q				
29+ 5	4.3101	5.14	Q				
29+10	4.2548	5.06	Q				
29+15	4.2002	4.99	qQ				
29+20	4.1463	4.91	qQ				
29+25	4.0931	4.84	qQ				
29+30	4.0406	4.77	qQ				
29+35	3.9908	4.70	qQ				
29+40	3.9431	4.64	qQ				
29+45	3.8963	4.57	qQ				
29+50	3.8501	4.51	qQ				
29+55	3.8045	4.45	qQ				
30+ 0	3.7593	4.39	qQ				
30+ 5	3.7148	4.33	qQ				
30+10	3.6707	4.27	qQ				
30+15	3.6272	4.21	qQ				
30+20	3.5842	4.16	Q				
30+25	3.5417	4.10	Q				
30+30	3.4997	4.04	Q				
30+35	3.4582	3.99	Q				

30+40	3.4172	3.93	IQ				
30+45	3.3767	3.88	IQ				
30+50	3.3366	3.83	IQ				
30+55	3.2971	3.78	IQ				
31+ 0	3.2580	3.73	IQ				
31+ 5	3.2193	3.68	IQ				
31+10	3.1812	3.63	IQ				
31+15	3.1435	3.58	IQ				
31+20	3.1062	3.53	IQ				
31+25	3.0693	3.48	IQ				
31+30	3.0330	3.44	IQ				
31+35	2.9970	3.39	IQ				
31+40	2.9615	3.35	IQ				
31+45	2.9263	3.30	IQ				
31+50	2.8916	3.26	IQ				
31+55	2.8574	3.22	IQ				
32+ 0	2.8235	3.17	IQ				
32+ 5	2.7900	3.13	IQ				
32+10	2.7569	3.09	IQ				
32+15	2.7242	3.05	IQ				
32+20	2.6919	3.01	IQ				
32+25	2.6600	2.97	IQ				
32+30	2.6285	2.93	IQ				
32+35	2.5973	2.89	IQ				
32+40	2.5665	2.85	IQ				
32+45	2.5361	2.82	IQ				
32+50	2.5060	2.78	IQ				
32+55	2.4763	2.74	IQ				
33+ 0	2.4469	2.71	IQ				
33+ 5	2.4179	2.67	IQ				
33+10	2.3892	2.64	IQ				
33+15	2.3609	2.60	IQ				
33+20	2.3336	2.57	IQ				
33+25	2.3085	2.54	IQ				
33+30	2.2846	2.51	IQ				
33+35	2.2611	2.48	IQ				
33+40	2.2378	2.45	IQ				
33+45	2.2147	2.42	IQ				
33+50	2.1918	2.40	IQ				
33+55	2.1692	2.37	IQ				
34+ 0	2.1468	2.34	IQ				
34+ 5	2.1247	2.31	IQ				
34+10	2.1028	2.29	qQ				
34+15	2.0811	2.26	qQ				
34+20	2.0596	2.23	qQ				
34+25	2.0384	2.21	qQ				
34+30	2.0174	2.18	qQ				
34+35	1.9966	2.16	qQ				
34+40	1.9760	2.13	qQ				
34+45	1.9556	2.11	qQ				
34+50	1.9354	2.09	Q				
34+55	1.9154	2.06	Q				
35+ 0	1.8957	2.04	Q				
35+ 5	1.8761	2.02	Q				
35+10	1.8568	1.99	Q				
35+15	1.8376	1.97	Q				
35+20	1.8187	1.95	Q				
35+25	1.7999	1.93	Q				
35+30	1.7813	1.91	Q				

35+35	1.7630	1.88	Q				
35+40	1.7448	1.86	Q				
35+45	1.7268	1.84	Q				
35+50	1.7090	1.82	Q				
35+55	1.6913	1.80	Q				
36+ 0	1.6739	1.78	Q				
36+ 5	0.0000	0.10	Q				
36+10	0.0000	0.10	Q				
36+15	0.0000	0.10	Q				
36+20	0.0000	0.10	Q				
36+25	0.0000	0.09	Q				
36+30	0.0000	0.09	Q				
36+35	0.0000	0.09	Q				
36+40	0.0000	0.09	Q				
36+45	0.0000	0.09	Q				
36+50	0.0000	0.08	Q				
36+55	0.0000	0.08	Q				
37+ 0	0.0000	0.08	Q				
37+ 5	0.0000	0.08	Q				
37+10	0.0000	0.08	Q				
37+15	0.0000	0.07	Q				
37+20	0.0000	0.07	Q				
37+25	0.0000	0.07	Q				
37+30	0.0000	0.07	Q				
37+35	0.0000	0.07	Q				
37+40	0.0000	0.07	Q				
37+45	0.0000	0.06	Q				
37+50	0.0000	0.06	Q				
37+55	0.0000	0.06	Q				
38+ 0	0.0000	0.06	Q				
38+ 5	0.0000	0.06	Q				
38+10	0.0000	0.06	Q				
38+15	0.0000	0.06	Q				
38+20	0.0000	0.05	Q				
38+25	0.0000	0.05	Q				
38+30	0.0000	0.05	Q				
38+35	0.0000	0.05	Q				
38+40	0.0000	0.05	Q				
38+45	0.0000	0.05	Q				
38+50	0.0000	0.05	Q				
38+55	0.0000	0.05	Q				
39+ 0	0.0000	0.04	Q				
39+ 5	0.0000	0.04	Q				
39+10	0.0000	0.04	Q				
39+15	0.0000	0.04	Q				
39+20	0.0000	0.04	Q				
39+25	0.0000	0.04	Q				
39+30	0.0000	0.04	Q				
39+35	0.0000	0.04	Q				
39+40	0.0000	0.04	Q				
39+45	0.0000	0.04	Q				
39+50	0.0000	0.03	Q				
39+55	0.0000	0.03	Q				
40+ 0	0.0000	0.03	Q				
40+ 5	0.0000	0.03	Q				
40+10	0.0000	0.03	Q				
40+15	0.0000	0.03	Q				
40+20	0.0000	0.03	Q				
40+25	0.0000	0.03	Q				

40+30	0.0000	0.03	Q				
40+35	0.0000	0.03	Q				
40+40	0.0000	0.03	Q				
40+45	0.0000	0.03	Q				
40+50	0.0000	0.03	Q				
40+55	0.0000	0.03	Q				
41+ 0	0.0000	0.02	Q				
41+ 5	0.0000	0.02	Q				
41+10	0.0000	0.02	Q				
41+15	0.0000	0.02	Q				
41+20	0.0000	0.02	Q				
41+25	0.0000	0.02	Q				
41+30	0.0000	0.02	Q				
41+35	0.0000	0.02	Q				
41+40	0.0000	0.02	Q				
41+45	0.0000	0.02	Q				
41+50	0.0000	0.02	Q				
41+55	0.0000	0.02	Q				
42+ 0	0.0000	0.02	Q				
42+ 5	0.0000	0.02	Q				
42+10	0.0000	0.02	Q				
42+15	0.0000	0.02	Q				
42+20	0.0000	0.02	Q				
42+25	0.0000	0.02	Q				
42+30	0.0000	0.02	Q				
42+35	0.0000	0.02	Q				
42+40	0.0000	0.01	Q				
42+45	0.0000	0.01	Q				
42+50	0.0000	0.01	Q				
42+55	0.0000	0.01	Q				
43+ 0	0.0000	0.01	Q				
43+ 5	0.0000	0.01	Q				
43+10	0.0000	0.01	Q				
43+15	0.0000	0.01	Q				
43+20	0.0000	0.01	Q				
43+25	0.0000	0.01	Q				
43+30	0.0000	0.01	Q				
43+35	0.0000	0.01	Q				
43+40	0.0000	0.01	Q				
43+45	0.0000	0.01	Q				
43+50	0.0000	0.01	Q				
43+55	0.0000	0.01	Q				
44+ 0	0.0000	0.01	Q				
44+ 5	0.0000	0.01	Q				
44+10	0.0000	0.01	Q				
44+15	0.0000	0.01	Q				
44+20	0.0000	0.01	Q				
44+25	0.0000	0.01	Q				
44+30	0.0000	0.01	Q				
44+35	0.0000	0.01	Q				
44+40	0.0000	0.01	Q				
44+45	0.0000	0.01	Q				
44+50	0.0000	0.01	Q				
44+55	0.0000	0.01	Q				
45+ 0	0.0000	0.01	Q				
45+ 5	0.0000	0.01	Q				
45+10	0.0000	0.01	Q				
45+15	0.0000	0.01	Q				
45+20	0.0000	0.01	Q				

45+25	0.0000	0.01	Q				
45+30	0.0000	0.01	Q				
45+35	0.0000	0.01	Q				
45+40	0.0000	0.01	Q				
45+45	0.0000	0.01	Q				
45+50	0.0000	0.01	Q				
45+55	0.0000	0.01	Q				
46+ 0	0.0000	0.01	Q				
46+ 5	0.0000	0.01	Q				
46+10	0.0000	0.01	Q				
46+15	0.0000	0.01	Q				
46+20	0.0000	0.01	Q				
46+25	0.0000	0.00	Q				
46+30	0.0000	0.00	Q				
46+35	0.0000	0.00	Q				
46+40	0.0000	0.00	Q				
46+45	0.0000	0.00	Q				
46+50	0.0000	0.00	Q				
46+55	0.0000	0.00	Q				
47+ 0	0.0000	0.00	Q				
47+ 5	0.0000	0.00	Q				
47+10	0.0000	0.00	Q				
47+15	0.0000	0.00	Q				
47+20	0.0000	0.00	Q				
47+25	0.0000	0.00	Q				
47+30	0.0000	0.00	Q				
47+35	0.0000	0.00	Q				
47+40	0.0000	0.00	Q				
47+45	0.0000	0.00	Q				
47+50	0.0000	0.00	Q				
47+55	0.0000	0.00	Q				
48+ 0	0.0000	0.00	Q				
48+ 5	0.0000	0.00	Q				
48+10	0.0000	0.00	Q				
48+15	0.0000	0.00	Q				
48+20	0.0000	0.00	Q				
48+25	0.0000	0.00	Q				
48+30	0.0000	0.00	Q				
48+35	0.0000	0.00	Q				
48+40	0.0000	0.00	Q				
48+45	0.0000	0.00	Q				
48+50	0.0000	0.00	Q				
48+55	0.0000	0.00	Q				
49+ 0	0.0000	0.00	Q				
49+ 5	0.0000	0.00	Q				
49+10	0.0000	0.00	Q				
49+15	0.0000	0.00	Q				
49+20	0.0000	0.00	Q				
49+25	0.0000	0.00	Q				
49+30	0.0000	0.00	Q				
49+35	0.0000	0.00	Q				
49+40	0.0000	0.00	Q				
49+45	0.0000	0.00	Q				
49+50	0.0000	0.00	Q				
49+55	0.0000	0.00	Q				
50+ 0	0.0000	0.00	Q				
50+ 5	0.0000	0.00	Q				
50+10	0.0000	0.00	Q				
50+15	0.0000	0.00	Q				

50+20	0.0000	0.00	Q				
50+25	0.0000	0.00	Q				
50+30	0.0000	0.00	Q				
50+35	0.0000	0.00	Q				
50+40	0.0000	0.00	Q				
50+45	0.0000	0.00	Q				
50+50	0.0000	0.00	Q				
50+55	0.0000	0.00	Q				
51+ 0	0.0000	0.00	Q				
51+ 5	0.0000	0.00	Q				
51+10	0.0000	0.00	Q				
51+15	0.0000	0.00	Q				
51+20	0.0000	0.00	Q				
51+25	0.0000	0.00	Q				
51+30	0.0000	0.00	Q				
51+35	0.0000	0.00	Q				
51+40	0.0000	0.00	Q				
51+45	0.0000	0.00	Q				
51+50	0.0000	0.00	Q				
51+55	0.0000	0.00	Q				
52+ 0	0.0000	0.00	Q				
52+ 5	0.0000	0.00	Q				
52+10	0.0000	0.00	Q				
52+15	0.0000	0.00	Q				
52+20	0.0000	0.00	Q				
52+25	0.0000	0.00	Q				
52+30	0.0000	0.00	Q				
52+35	0.0000	0.00	Q				
52+40	0.0000	0.00	Q				
52+45	0.0000	0.00	Q				
52+50	0.0000	0.00	Q				
52+55	0.0000	0.00	Q				
53+ 0	0.0000	0.00	Q				
53+ 5	0.0000	0.00	Q				
53+10	0.0000	0.00	Q				
53+15	0.0000	0.00	Q				
53+20	0.0000	0.00	Q				
53+25	0.0000	0.00	Q				
53+30	0.0000	0.00	Q				
53+35	0.0000	0.00	Q				
53+40	0.0000	0.00	Q				
53+45	0.0000	0.00	Q				
53+50	0.0000	0.00	Q				
53+55	0.0000	0.00	Q				
54+ 0	0.0000	0.00	Q				
54+ 5	0.0000	0.00	Q				
54+10	0.0000	0.00	Q				
54+15	0.0000	0.00	Q				
54+20	0.0000	0.00	Q				
54+25	0.0000	0.00	Q				
54+30	0.0000	0.00	Q				
54+35	0.0000	0.00	Q				
54+40	0.0000	0.00	Q				
54+45	0.0000	0.00	Q				
54+50	0.0000	0.00	Q				
54+55	0.0000	0.00	Q				
55+ 0	0.0000	0.00	Q				
55+ 5	0.0000	0.00	Q				
55+10	0.0000	0.00	Q				

55+15	0.0000	0.00	Q				
55+20	0.0000	0.00	Q				
55+25	0.0000	0.00	Q				
55+30	0.0000	0.00	Q				
55+35	0.0000	0.00	Q				
55+40	0.0000	0.00	Q				
55+45	0.0000	0.00	Q				
55+50	0.0000	0.00	Q				
55+55	0.0000	0.00	Q				
56+ 0	0.0000	0.00	Q				
56+ 5	0.0000	0.00	Q				
56+10	0.0000	0.00	Q				
56+15	0.0000	0.00	Q				
56+20	0.0000	0.00	Q				
56+25	0.0000	0.00	Q				
56+30	0.0000	0.00	Q				
56+35	0.0000	0.00	Q				
56+40	0.0000	0.00	Q				
56+45	0.0000	0.00	Q				
56+50	0.0000	0.00	Q				
56+55	0.0000	0.00	Q				
57+ 0	0.0000	0.00	Q				
57+ 5	0.0000	0.00	Q				
57+10	0.0000	0.00	Q				
57+15	0.0000	0.00	Q				
57+20	0.0000	0.00	Q				
57+25	0.0000	0.00	Q				
57+30	0.0000	0.00	Q				
57+35	0.0000	0.00	Q				
57+40	0.0000	0.00	Q				
57+45	0.0000	0.00	Q				
57+50	0.0000	0.00	Q				
57+55	0.0000	0.00	Q				
58+ 0	0.0000	0.00	Q				
58+ 5	0.0000	0.00	Q				
58+10	0.0000	0.00	Q				
58+15	0.0000	0.00	Q				
58+20	0.0000	0.00	Q				
58+25	0.0000	0.00	Q				
58+30	0.0000	0.00	Q				
58+35	0.0000	0.00	Q				
58+40	0.0000	0.00	Q				
58+45	0.0000	0.00	Q				
58+50	0.0000	0.00	Q				
58+55	0.0000	0.00	Q				
59+ 0	0.0000	0.00	Q				
59+ 5	0.0000	0.00	Q				
59+10	0.0000	0.00	Q				
59+15	0.0000	0.00	Q				
59+20	0.0000	0.00	Q				
59+25	0.0000	0.00	Q				
59+30	0.0000	0.00	Q				
59+35	0.0000	0.00	Q				
59+40	0.0000	0.00	Q				
59+45	0.0000	0.00	Q				
59+50	0.0000	0.00	Q				
59+55	0.0000	0.00	Q				
60+ 0	0.0000	0.00	Q				
60+ 5	0.0000	0.00	Q				

60+10	0.0000	0.00	Q				
60+15	0.0000	0.00	Q				
60+20	0.0000	0.00	Q				
60+25	0.0000	0.00	Q				
60+30	0.0000	0.00	Q				
60+35	0.0000	0.00	Q				
60+40	0.0000	0.00	Q				
60+45	0.0000	0.00	Q				
60+50	0.0000	0.00	Q				
60+55	0.0000	0.00	Q				
61+ 0	0.0000	0.00	Q				
61+ 5	0.0000	0.00	Q				
61+10	0.0000	0.00	Q				
61+15	0.0000	0.00	Q				
61+20	0.0000	0.00	Q				
61+25	0.0000	0.00	Q				
61+30	0.0000	0.00	Q				
61+35	0.0000	0.00	Q				
61+40	0.0000	0.00	Q				
61+45	0.0000	0.00	Q				
61+50	0.0000	0.00	Q				
61+55	0.0000	0.00	Q				
62+ 0	0.0000	0.00	Q				
62+ 5	0.0000	0.00	Q				
62+10	0.0000	0.00	Q				
62+15	0.0000	0.00	Q				
62+20	0.0000	0.00	Q				
62+25	0.0000	0.00	Q				
62+30	0.0000	0.00	Q				
62+35	0.0000	0.00	Q				
62+40	0.0000	0.00	Q				
62+45	0.0000	0.00	Q				
62+50	0.0000	0.00	Q				
62+55	0.0000	0.00	Q				
63+ 0	0.0000	0.00	Q				
63+ 5	0.0000	0.00	Q				
63+10	0.0000	0.00	Q				
63+15	0.0000	0.00	Q				
63+20	0.0000	0.00	Q				
63+25	0.0000	0.00	Q				
63+30	0.0000	0.00	Q				
63+35	0.0000	0.00	Q				
63+40	0.0000	0.00	Q				
63+45	0.0000	0.00	Q				
63+50	0.0000	0.00	Q				
63+55	0.0000	0.00	Q				
64+ 0	0.0000	0.00	Q				
64+ 5	0.0000	0.00	Q				
64+10	0.0000	0.00	Q				
64+15	0.0000	0.00	Q				
64+20	0.0000	0.00	Q				
64+25	0.0000	0.00	Q				
64+30	0.0000	0.00	Q				
64+35	0.0000	0.00	Q				
64+40	0.0000	0.00	Q				
64+45	0.0000	0.00	Q				
64+50	0.0000	0.00	Q				
64+55	0.0000	0.00	Q				
65+ 0	0.0000	0.00	Q				

65+ 5	0.0000	0.00	Q				
65+10	0.0000	0.00	Q				
65+15	0.0000	0.00	Q				
65+20	0.0000	0.00	Q				
65+25	0.0000	0.00	Q				
65+30	0.0000	0.00	Q				
65+35	0.0000	0.00	Q				
65+40	0.0000	0.00	Q				
65+45	0.0000	0.00	Q				
65+50	0.0000	0.00	Q				
65+55	0.0000	0.00	Q				
66+ 0	0.0000	0.00	Q				
66+ 5	0.0000	0.00	Q				
66+10	0.0000	0.00	Q				
66+15	0.0000	0.00	Q				
66+20	0.0000	0.00	Q				
66+25	0.0000	0.00	Q				
66+30	0.0000	0.00	Q				
66+35	0.0000	0.00	Q				
66+40	0.0000	0.00	Q				
66+45	0.0000	0.00	Q				
66+50	0.0000	0.00	Q				
66+55	0.0000	0.00	Q				
67+ 0	0.0000	0.00	Q				
67+ 5	0.0000	0.00	Q				
67+10	0.0000	0.00	Q				
67+15	0.0000	0.00	Q				
67+20	0.0000	0.00	Q				
67+25	0.0000	0.00	Q				
67+30	0.0000	0.00	Q				
67+35	0.0000	0.00	Q				
67+40	0.0000	0.00	Q				
67+45	0.0000	0.00	Q				
67+50	0.0000	0.00	Q				
67+55	0.0000	0.00	Q				
68+ 0	0.0000	0.00	Q				
68+ 5	0.0000	0.00	Q				
68+10	0.0000	0.00	Q				
68+15	0.0000	0.00	Q				
68+20	0.0000	0.00	Q				
68+25	0.0000	0.00	Q				
68+30	0.0000	0.00	Q				
68+35	0.0000	0.00	Q				
68+40	0.0000	0.00	Q				
68+45	0.0000	0.00	Q				
68+50	0.0000	0.00	Q				
68+55	0.0000	0.00	Q				
69+ 0	0.0000	0.00	Q				
69+ 5	0.0000	0.00	Q				
69+10	0.0000	0.00	Q				
69+15	0.0000	0.00	Q				
69+20	0.0000	0.00	Q				
69+25	0.0000	0.00	Q				
69+30	0.0000	0.00	Q				
69+35	0.0000	0.00	Q				
69+40	0.0000	0.00	Q				
69+45	0.0000	0.00	Q				
69+50	0.0000	0.00	Q				
69+55	0.0000	0.00	Q				

70+ 0	0.0000	0.00	Q				
70+ 5	0.0000	0.00	Q				
70+10	0.0000	0.00	Q				
70+15	0.0000	0.00	Q				
70+20	0.0000	0.00	Q				
70+25	0.0000	0.00	Q				
70+30	0.0000	0.00	Q				
70+35	0.0000	0.00	Q				
70+40	0.0000	0.00	Q				
70+45	0.0000	0.00	Q				
70+50	0.0000	0.00	Q				
70+55	0.0000	0.00	Q				
71+ 0	0.0000	0.00	Q				
71+ 5	0.0000	0.00	Q				
71+10	0.0000	0.00	Q				
71+15	0.0000	0.00	Q				
71+20	0.0000	0.00	Q				
71+25	0.0000	0.00	Q				
71+30	0.0000	0.00	Q				
71+35	0.0000	0.00	Q				
71+40	0.0000	0.00	Q				
71+45	0.0000	0.00	Q				
71+50	0.0000	0.00	Q				
71+55	0.0000	0.00	Q				
72+ 0	0.0000	0.00	Q				
72+ 5	0.0000	0.00	Q				
72+10	0.0000	0.00	Q				
72+15	0.0000	0.00	Q				
72+20	0.0000	0.00	Q				
72+25	0.0000	0.00	Q				
72+30	0.0000	0.00	Q				
72+35	0.0000	0.00	Q				
72+40	0.0000	0.00	Q				
72+45	0.0000	0.00	Q				
72+50	0.0000	0.00	Q				
72+55	0.0000	0.00	Q				
73+ 0	0.0000	0.00	Q				
73+ 5	0.0000	0.00	Q				
73+10	0.0000	0.00	Q				
73+15	0.0000	0.00	Q				
73+20	0.0000	0.00	Q				
73+25	0.0000	0.00	Q				
73+30	0.0000	0.00	Q				
73+35	0.0000	0.00	Q				
73+40	0.0000	0.00	Q				
73+45	0.0000	0.00	Q				
73+50	0.0000	0.00	Q				
73+55	0.0000	0.00	Q				
74+ 0	0.0000	0.00	Q				
74+ 5	0.0000	0.00	Q				
74+10	0.0000	0.00	Q				
74+15	0.0000	0.00	Q				
74+20	0.0000	0.00	Q				
74+25	0.0000	0.00	Q				
74+30	0.0000	0.00	Q				
74+35	0.0000	0.00	Q				
74+40	0.0000	0.00	Q				
74+45	0.0000	0.00	Q				
74+50	0.0000	0.00	Q				

74+55	0.0000	0.00	Q				
75+ 0	0.0000	0.00	Q				
75+ 5	0.0000	0.00	Q				
75+10	0.0000	0.00	Q				
75+15	0.0000	0.00	Q				
75+20	0.0000	0.00	Q				
75+25	0.0000	0.00	Q				
75+30	0.0000	0.00	Q				
75+35	0.0000	0.00	Q				
75+40	0.0000	0.00	Q				
75+45	0.0000	0.00	Q				
75+50	0.0000	0.00	Q				
75+55	0.0000	0.00	Q				
76+ 0	0.0000	0.00	Q				
76+ 5	0.0000	0.00	Q				
76+10	0.0000	0.00	Q				
76+15	0.0000	0.00	Q				
76+20	0.0000	0.00	Q				
76+25	0.0000	0.00	Q				
76+30	0.0000	0.00	Q				
76+35	0.0000	0.00	Q				
76+40	0.0000	0.00	Q				
76+45	0.0000	0.00	Q				
76+50	0.0000	0.00	Q				
76+55	0.0000	0.00	Q				
77+ 0	0.0000	0.00	Q				
77+ 5	0.0000	0.00	Q				
77+10	0.0000	0.00	Q				
77+15	0.0000	0.00	Q				
77+20	0.0000	0.00	Q				
77+25	0.0000	0.00	Q				
77+30	0.0000	0.00	Q				
77+35	0.0000	0.00	Q				
77+40	0.0000	0.00	Q				
77+45	0.0000	0.00	Q				
77+50	0.0000	0.00	Q				
77+55	0.0000	0.00	Q				
78+ 0	0.0000	0.00	Q				
78+ 5	0.0000	0.00	Q				
78+10	0.0000	0.00	Q				
78+15	0.0000	0.00	Q				
78+20	0.0000	0.00	Q				
78+25	0.0000	0.00	Q				
78+30	0.0000	0.00	Q				
78+35	0.0000	0.00	Q				
78+40	0.0000	0.00	Q				
78+45	0.0000	0.00	Q				
78+50	0.0000	0.00	Q				

*****HYDROGRAPH DATA*****

Number of intervals = 946

Time interval = 5.0 (Min.)

Maximum/Peak flow rate = 84.120 (CFS)

Total volume = 44.933 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

```

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+++++++
Process from Point/Station      6.000 to Point/Station      20.000
**** STORE OR DELETE CURRENT HYDROGRAPH ****

```

```

-----
Current stream hydrograph of 5.0 minute
intervals has been stored as stream number 2 with
a starting time of 0.00 hours and ending time of 36.00 hours
With a total volume of 44.90 (Ac.Ft)
*****HYDROGRAPH DATA*****
      Number of intervals = 0
      Time interval = 0.0 (Min.)
      Maximum/Peak flow rate = 0.000 (CFS)
      Total volume = 0.000 (Ac.Ft)
      Status of hydrographs being held in storage
            Stream 1 Stream 2 Stream 3 Stream 4 Stream 5
      Peak (CFS)      0.000 84.120 0.000 0.000 0.000
      Vol (Ac.Ft)      0.000 44.904 0.000 0.000 0.000
*****

```

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+++++++
Process from Point/Station      8.000 to Point/Station      9.000
**** ADD/COMBINE/RECOVER HYDROGRAPHS ****

```

***** HYDROGRAPH INFORMATION *****

```

      From study/file name: p2bouma100.rte
+++++++
      P R I N T   O F   S T O R M
      R u n o f f       H y d r o g r a p h

```

Hydrograph in 5 Minute intervals (CFS)

```

-----
Time(h+m) Add q(CFS) Tot. Q 0 14.6 29.1 43.7 58.3
-----
0+ 5      0.0628      0.06 Q | | | |
0+10      0.4074      0.41 Q | | | |
0+15      1.0277      1.03 Q | | | |
0+20      1.5694      1.57 |Q | | | |
0+25      1.8119      1.81 |Q | | | |
0+30      1.9142      1.91 |Q | | | |
0+35      1.9471      1.95 |Q | | | |
0+40      1.9675      1.97 |Q | | | |
0+45      1.9855      1.99 |Q | | | |
0+50      1.9915      1.99 |Q | | | |
0+55      1.9976      2.00 |Q | | | |
1+ 0      2.0037      2.00 |Q | | | |
1+ 5      2.0099      2.01 |Q | | | |
1+10      2.0162      2.02 |Q | | | |
1+15      2.0224      2.02 |Q | | | |
1+20      2.0288      2.03 |Q | | | |
1+25      2.0351      2.04 |Q | | | |

```

1+30	2.0416	2.04	IQ				
1+35	2.0481	2.05	IQ				
1+40	2.0547	2.05	IQ				
1+45	2.0613	2.06	IQ				
1+50	2.0680	2.07	IQ				
1+55	2.0747	2.07	IQ				
2+ 0	2.0816	2.08	IQ				
2+ 5	2.0884	2.09	IQ				
2+10	2.0954	2.10	IQ				
2+15	2.1023	2.10	IQ				
2+20	2.1095	2.11	IQ				
2+25	2.1165	2.12	IQ				
2+30	2.1238	2.12	IQ				
2+35	2.1310	2.13	IQ				
2+40	2.1384	2.14	IQ				
2+45	2.1457	2.15	IQ				
2+50	2.1533	2.15	IQ				
2+55	2.1608	2.16	IQ				
3+ 0	2.1684	2.17	IQ				
3+ 5	2.1761	2.18	IQ				
3+10	2.1839	2.18	IQ				
3+15	2.1917	2.19	IQ				
3+20	2.1997	2.20	IQ				
3+25	2.2077	2.21	IQ				
3+30	2.2158	2.22	IQ				
3+35	2.2239	2.22	IQ				
3+40	2.2323	2.23	IQ				
3+45	2.2406	2.24	IQ				
3+50	2.2490	2.25	IQ				
3+55	2.2575	2.26	IQ				
4+ 0	2.2662	2.27	IQ				
4+ 5	2.2748	2.27	IQ				
4+10	2.2837	2.28	IQ				
4+15	2.2925	2.29	IQ				
4+20	2.3016	2.30	IQ				
4+25	2.3106	2.31	IQ				
4+30	2.3198	2.32	IQ				
4+35	2.3291	2.33	IQ				
4+40	2.3385	2.34	IQ				
4+45	2.3480	2.35	IQ				
4+50	2.3576	2.36	IQ				
4+55	2.3673	2.37	IQ				
5+ 0	2.3772	2.38	IQ				
5+ 5	2.3871	2.39	IQ				
5+10	2.3972	2.40	IQ				
5+15	2.4073	2.41	IQ				
5+20	2.4177	2.42	IQ				
5+25	2.4281	2.43	IQ				
5+30	2.4387	2.44	IQ				
5+35	2.4493	2.45	IQ				
5+40	2.4602	2.46	IQ				
5+45	2.4710	2.47	IQ				
5+50	2.4822	2.48	IQ				
5+55	2.4933	2.49	IQ				
6+ 0	2.5048	2.50	IQ				
6+ 5	2.5162	2.52	IQ				
6+10	2.5279	2.53	IQ				
6+15	2.5397	2.54	IQ				
6+20	2.5517	2.55	IQ				

6+25	2.5637	2.56	Q				
6+30	2.5761	2.58	Q				
6+35	2.5885	2.59	Q				
6+40	2.6011	2.60	Q				
6+45	2.6138	2.61	Q				
6+50	2.6269	2.63	Q				
6+55	2.6399	2.64	Q				
7+ 0	2.6533	2.65	Q				
7+ 5	2.6668	2.67	Q				
7+10	2.6806	2.68	Q				
7+15	2.6944	2.69	Q				
7+20	2.7086	2.71	Q				
7+25	2.7228	2.72	Q				
7+30	2.7374	2.74	Q				
7+35	2.7521	2.75	Q				
7+40	2.7671	2.77	Q				
7+45	2.7822	2.78	Q				
7+50	2.7977	2.80	Q				
7+55	2.8133	2.81	Q				
8+ 0	2.8293	2.83	Q				
8+ 5	2.8454	2.85	Q				
8+10	2.8619	2.86	Q				
8+15	2.8785	2.88	Q				
8+20	2.8955	2.90	Q				
8+25	2.9127	2.91	Q				
8+30	2.9303	2.93	Q				
8+35	2.9480	2.95	Q				
8+40	2.9662	2.97	Q				
8+45	2.9846	2.98	Q				
8+50	3.0035	3.00	Q				
8+55	3.0224	3.02	Q				
9+ 0	3.0420	3.04	Q				
9+ 5	3.0617	3.06	Q				
9+10	3.0819	3.08	Q				
9+15	3.1023	3.10	Q				
9+20	3.1233	3.12	Q				
9+25	3.1445	3.14	Q				
9+30	3.1664	3.17	Q				
9+35	3.1884	3.19	Q				
9+40	3.2111	3.21	Q				
9+45	3.2339	3.23	Q				
9+50	3.2575	3.26	Q				
9+55	3.2814	3.28	Q				
10+ 0	3.3060	3.31	Q				
10+ 5	3.3308	3.33	Q				
10+10	3.3564	3.36	Q				
10+15	3.3823	3.38	Q				
10+20	3.4091	3.41	Q				
10+25	3.4361	3.44	Q				
10+30	3.4641	3.46	Q				
10+35	3.4924	3.49	Q				
10+40	3.5217	3.52	Q				
10+45	3.5513	3.55	Q				
10+50	3.5820	3.58	Q				
10+55	3.6130	3.61	Q				
11+ 0	3.6452	3.65	Q				
11+ 5	3.6778	3.68	Q				
11+10	3.7117	3.71	Q				
11+15	3.7460	3.75	Q				

11+20	3.7816	3.78	Q				
11+25	3.8177	3.82	Q				
11+30	3.8553	3.86	Q				
11+35	3.8935	3.89	Q				
11+40	3.9332	3.93	Q				
11+45	3.9735	3.97	Q				
11+50	4.0156	4.02	Q				
11+55	4.0583	4.06	Q				
12+ 0	4.1029	4.10	Q				
12+ 5	4.1710	4.17	Q				
12+10	4.3426	4.34	Q				
12+15	4.6143	4.61	Q				
12+20	4.8595	4.86	Q				
12+25	4.9975	5.00	Q				
12+30	5.0871	5.09	Q				
12+35	5.1527	5.15	Q				
12+40	5.2165	5.22	Q				
12+45	5.2807	5.28	Q				
12+50	5.3434	5.34	Q				
12+55	5.4076	5.41	Q				
13+ 0	5.4751	5.48	Q				
13+ 5	5.5444	5.54	Q				
13+10	5.6173	5.62	Q				
13+15	5.6922	5.69	Q				
13+20	5.7713	5.77	Q				
13+25	5.8528	5.85	Q				
13+30	5.9389	5.94	Q				
13+35	6.0279	6.03	Q				
13+40	6.1222	6.12	Q				
13+45	6.2200	6.22	Q				
13+50	6.3240	6.32	Q				
13+55	6.4321	6.43	Q				
14+ 0	6.5474	6.55	Q				
14+ 5	6.6681	6.67	Q				
14+10	6.7987	6.80	Q				
14+15	6.9368	6.94	Q				
14+20	7.0849	7.08	Q				
14+25	7.2393	7.24	Q				
14+30	7.4058	7.41	Q				
14+35	7.5818	7.58	Q				
14+40	7.7736	7.77	Q				
14+45	7.9784	7.98	Q				
14+50	8.2033	8.20	Q				
14+55	8.4459	8.45	Q				
15+ 0	8.7151	8.72	Q				
15+ 5	9.0087	9.01	Q				
15+10	9.3391	9.34	Q				
15+15	9.7050	9.71	Q				
15+20	10.1242	10.12	Q				
15+25	10.5155	10.52	Q				
15+30	10.6167	10.62	Q				
15+35	10.4446	10.44	Q				
15+40	10.5199	10.52	Q				
15+45	11.1794	11.18	Q				
15+50	12.3667	12.37	Q				
15+55	14.2978	14.30	Q				
16+ 0	17.8396	17.84	Q				
16+ 5	26.4352	26.44		Q			
16+10	44.8695	44.87			Q		

16+15	58.2741	58.27							
16+20	49.9239	49.92							Q
16+25	29.9130	29.91							
16+30	19.1075	19.11					Q		
16+35	13.7323	13.73				Q			
16+40	12.0203	12.02				Q			
16+45	10.9220	10.92				Q			
16+50	9.5166	9.52				Q			
16+55	8.8378	8.84				Q			
17+ 0	8.3019	8.30				Q			
17+ 5	7.8613	7.86				Q			
17+10	7.4740	7.47				Q			
17+15	7.1391	7.14				Q			
17+20	6.8464	6.85				Q			
17+25	6.5888	6.59				Q			
17+30	6.3593	6.36				Q			
17+35	6.1530	6.15				Q			
17+40	5.9660	5.97				Q			
17+45	5.7954	5.80				Q			
17+50	5.6389	5.64				Q			
17+55	5.4946	5.49				Q			
18+ 0	5.3611	5.36				Q			
18+ 5	5.2144	5.21				Q			
18+10	4.9746	4.97				Q			
18+15	4.6437	4.64				Q			
18+20	4.3489	4.35				Q			
18+25	4.1691	4.17				Q			
18+30	4.0459	4.05				Q			
18+35	3.9529	3.95				Q			
18+40	3.8692	3.87				Q			
18+45	3.7905	3.79				Q			
18+50	3.7200	3.72				Q			
18+55	3.6531	3.65				Q			
19+ 0	3.5894	3.59				Q			
19+ 5	3.5287	3.53				Q			
19+10	3.4707	3.47				Q			
19+15	3.4154	3.42				Q			
19+20	3.3624	3.36				Q			
19+25	3.3116	3.31				Q			
19+30	3.2630	3.26				Q			
19+35	3.2162	3.22				Q			
19+40	3.1713	3.17				Q			
19+45	3.1281	3.13				Q			
19+50	3.0864	3.09				Q			
19+55	3.0463	3.05				Q			
20+ 0	3.0076	3.01				Q			
20+ 5	2.9703	2.97				Q			
20+10	2.9341	2.93				Q			
20+15	2.8992	2.90				IQ			
20+20	2.8655	2.87				IQ			
20+25	2.8327	2.83				IQ			
20+30	2.8010	2.80				IQ			
20+35	2.7703	2.77				IQ			
20+40	2.7405	2.74				IQ			
20+45	2.7116	2.71				IQ			
20+50	2.6835	2.68				IQ			
20+55	2.6562	2.66				IQ			
21+ 0	2.6296	2.63				IQ			
21+ 5	2.6038	2.60				IQ			

21+10	2.5787	2.58	IQ				
21+15	2.5542	2.55	IQ				
21+20	2.5303	2.53	IQ				
21+25	2.5071	2.51	IQ				
21+30	2.4845	2.48	IQ				
21+35	2.4624	2.46	IQ				
21+40	2.4408	2.44	IQ				
21+45	2.4198	2.42	IQ				
21+50	2.3993	2.40	IQ				
21+55	2.3792	2.38	IQ				
22+ 0	2.3596	2.36	IQ				
22+ 5	2.3404	2.34	IQ				
22+10	2.3217	2.32	IQ				
22+15	2.3034	2.30	IQ				
22+20	2.2855	2.29	IQ				
22+25	2.2679	2.27	IQ				
22+30	2.2507	2.25	IQ				
22+35	2.2339	2.23	IQ				
22+40	2.2174	2.22	IQ				
22+45	2.2013	2.20	IQ				
22+50	2.1855	2.19	IQ				
22+55	2.1700	2.17	IQ				
23+ 0	2.1548	2.15	IQ				
23+ 5	2.1398	2.14	IQ				
23+10	2.1252	2.13	IQ				
23+15	2.1108	2.11	IQ				
23+20	2.0968	2.10	IQ				
23+25	2.0829	2.08	IQ				
23+30	2.0693	2.07	IQ				
23+35	2.0560	2.06	IQ				
23+40	2.0429	2.04	IQ				
23+45	2.0300	2.03	IQ				
23+50	2.0174	2.02	IQ				
23+55	2.0049	2.00	IQ				
24+ 0	1.9927	1.99	IQ				
24+ 5	1.9180	1.92	IQ				
24+10	1.5628	1.56	IQ				
24+15	0.9354	0.94	Q				
24+20	0.3919	0.39	Q				
24+25	0.1519	0.15	Q				
24+30	0.0543	0.05	Q				
24+35	0.0268	0.03	Q				
24+40	0.0122	0.01	Q				

*****HYDROGRAPH DATA*****

Number of intervals = 296
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 58.274 (CFS)
Total volume = 9.054 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	84.120	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	44.904	0.000	0.000	0.000

+++++

Process from Point/Station 8.000 to Point/Station 9.000
 **** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

 Total number of inflow hydrograph intervals = 296
 Hydrograph time unit = 5.000 (Min.)
 Initial depth in storage basin = 0.00 (Ft.)

 Initial basin depth = 0.00 (Ft.)
 Initial basin storage = 0.00 (Ac.Ft)
 Initial basin outflow = 0.00 (CFS)

 Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
1.000	0.037	6.100	0.016	0.058
2.000	0.094	11.850	0.053	0.135
3.000	0.171	18.580	0.107	0.235
4.000	0.273	23.160	0.193	0.353
5.000	0.398	26.870	0.305	0.491
6.000	0.550	30.100	0.446	0.654
7.000	0.730	33.010	0.616	0.844
8.000	0.939	35.670	0.816	1.062
9.000	1.178	76.920	0.913	1.443

 Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)						Depth (Ft.)
				.0	14.6	29.14	43.71	58.27	
0.083	0.06	0.02	0.000	O					0.00
0.167	0.41	0.18	0.001	O					0.03
0.250	1.03	0.57	0.003	O					0.09
0.333	1.57	1.10	0.007	O					0.18
0.417	1.81	1.53	0.009	O					0.25
0.500	1.91	1.77	0.011	OI					0.29
0.583	1.95	1.89	0.011	IO					0.31
0.667	1.97	1.94	0.012	IO					0.32
0.750	1.99	1.97	0.012	IO					0.32
0.833	1.99	1.98	0.012	IO					0.32
0.917	2.00	1.99	0.012	IO					0.33
1.000	2.00	2.00	0.012	IO					0.33
1.083	2.01	2.00	0.012	IO					0.33
1.167	2.02	2.01	0.012	IO					0.33
1.250	2.02	2.02	0.012	IO					0.33
1.333	2.03	2.02	0.012	IO					0.33
1.417	2.04	2.03	0.012	IO					0.33
1.500	2.04	2.04	0.012	IO					0.33
1.583	2.05	2.04	0.012	IO					0.33
1.667	2.05	2.05	0.012	IO					0.34
1.750	2.06	2.06	0.012	IO					0.34

1.833	2.07	2.06	0.013	IO					0.34
1.917	2.07	2.07	0.013	IO					0.34
2.000	2.08	2.08	0.013	IO					0.34
2.083	2.09	2.08	0.013	IO					0.34
2.167	2.10	2.09	0.013	IO					0.34
2.250	2.10	2.10	0.013	IO					0.34
2.333	2.11	2.10	0.013	IO					0.34
2.417	2.12	2.11	0.013	IO					0.35
2.500	2.12	2.12	0.013	IO					0.35
2.583	2.13	2.12	0.013	IO					0.35
2.667	2.14	2.13	0.013	IO					0.35
2.750	2.15	2.14	0.013	IO					0.35
2.833	2.15	2.15	0.013	IO					0.35
2.917	2.16	2.15	0.013	IO					0.35
3.000	2.17	2.16	0.013	IO					0.35
3.083	2.18	2.17	0.013	IO					0.36
3.167	2.18	2.18	0.013	IO					0.36
3.250	2.19	2.18	0.013	IO					0.36
3.333	2.20	2.19	0.013	IO					0.36
3.417	2.21	2.20	0.013	IO					0.36
3.500	2.22	2.21	0.013	IO					0.36
3.583	2.22	2.22	0.013	IO					0.36
3.667	2.23	2.22	0.013	IO					0.36
3.750	2.24	2.23	0.014	IO					0.37
3.833	2.25	2.24	0.014	IO					0.37
3.917	2.26	2.25	0.014	IO					0.37
4.000	2.27	2.26	0.014	IO					0.37
4.083	2.27	2.27	0.014	IO					0.37
4.167	2.28	2.28	0.014	IO					0.37
4.250	2.29	2.28	0.014	IO					0.37
4.333	2.30	2.29	0.014	IO					0.38
4.417	2.31	2.30	0.014	IO					0.38
4.500	2.32	2.31	0.014	IO					0.38
4.583	2.33	2.32	0.014	IO					0.38
4.667	2.34	2.33	0.014	IO					0.38
4.750	2.35	2.34	0.014	IO					0.38
4.833	2.36	2.35	0.014	IO					0.39
4.917	2.37	2.36	0.014	IO					0.39
5.000	2.38	2.37	0.014	IO					0.39
5.083	2.39	2.38	0.014	IO					0.39
5.167	2.40	2.39	0.014	IO					0.39
5.250	2.41	2.40	0.015	IO					0.39
5.333	2.42	2.41	0.015	IO					0.39
5.417	2.43	2.42	0.015	IO					0.40
5.500	2.44	2.43	0.015	IO					0.40
5.583	2.45	2.44	0.015	IO					0.40
5.667	2.46	2.45	0.015	IO					0.40
5.750	2.47	2.46	0.015	IO					0.40
5.833	2.48	2.47	0.015	IO					0.41
5.917	2.49	2.48	0.015	IO					0.41
6.000	2.50	2.49	0.015	IO					0.41
6.083	2.52	2.51	0.015	IO					0.41
6.167	2.53	2.52	0.015	IO					0.41
6.250	2.54	2.53	0.015	IO					0.41
6.333	2.55	2.54	0.015	IO					0.42
6.417	2.56	2.55	0.015	IO					0.42
6.500	2.58	2.57	0.016	IO					0.42
6.583	2.59	2.58	0.016	IO					0.42
6.667	2.60	2.59	0.016	IO					0.42

6.750	2.61	2.60	0.016	O				0.43
6.833	2.63	2.62	0.016	O				0.43
6.917	2.64	2.63	0.016	O				0.43
7.000	2.65	2.64	0.016	O				0.43
7.083	2.67	2.65	0.016	O				0.44
7.167	2.68	2.67	0.016	O				0.44
7.250	2.69	2.68	0.016	O				0.44
7.333	2.71	2.70	0.016	O				0.44
7.417	2.72	2.71	0.016	O				0.44
7.500	2.74	2.72	0.017	O				0.45
7.583	2.75	2.74	0.017	O				0.45
7.667	2.77	2.75	0.017	O				0.45
7.750	2.78	2.77	0.017	O				0.45
7.833	2.80	2.78	0.017	O				0.46
7.917	2.81	2.80	0.017	O				0.46
8.000	2.83	2.82	0.017	O				0.46
8.083	2.85	2.83	0.017	O				0.46
8.167	2.86	2.85	0.017	O				0.47
8.250	2.88	2.86	0.017	O				0.47
8.333	2.90	2.88	0.017	O				0.47
8.417	2.91	2.90	0.018	O				0.48
8.500	2.93	2.91	0.018	O				0.48
8.583	2.95	2.93	0.018	O				0.48
8.667	2.97	2.95	0.018	O				0.48
8.750	2.98	2.97	0.018	O				0.49
8.833	3.00	2.99	0.018	O				0.49
8.917	3.02	3.01	0.018	O				0.49
9.000	3.04	3.02	0.018	O				0.50
9.083	3.06	3.04	0.018	O				0.50
9.167	3.08	3.06	0.019	O				0.50
9.250	3.10	3.08	0.019	O				0.51
9.333	3.12	3.10	0.019	O				0.51
9.417	3.14	3.13	0.019	O				0.51
9.500	3.17	3.15	0.019	O				0.52
9.583	3.19	3.17	0.019	O				0.52
9.667	3.21	3.19	0.019	O				0.52
9.750	3.23	3.21	0.019	O				0.53
9.833	3.26	3.24	0.020	O				0.53
9.917	3.28	3.26	0.020	O				0.53
10.000	3.31	3.28	0.020	O				0.54
10.083	3.33	3.31	0.020	O				0.54
10.167	3.36	3.33	0.020	O				0.55
10.250	3.38	3.36	0.020	O				0.55
10.333	3.41	3.39	0.021	O				0.56
10.417	3.44	3.41	0.021	O				0.56
10.500	3.46	3.44	0.021	O				0.56
10.583	3.49	3.47	0.021	O				0.57
10.667	3.52	3.50	0.021	O				0.57
10.750	3.55	3.53	0.021	O				0.58
10.833	3.58	3.56	0.022	O				0.58
10.917	3.61	3.59	0.022	O				0.59
11.000	3.65	3.62	0.022	OI				0.59
11.083	3.68	3.65	0.022	O				0.60
11.167	3.71	3.68	0.022	O				0.60
11.250	3.75	3.72	0.023	O				0.61
11.333	3.78	3.75	0.023	O				0.61
11.417	3.82	3.79	0.023	O				0.62
11.500	3.86	3.82	0.023	O				0.63
11.583	3.89	3.86	0.023	O				0.63

11.667	3.93	3.90	0.024		O					0.64
11.750	3.97	3.94	0.024		O					0.65
11.833	4.02	3.98	0.024		O					0.65
11.917	4.06	4.02	0.024		O					0.66
12.000	4.10	4.06	0.025		O					0.67
12.083	4.17	4.12	0.025		O					0.67
12.167	4.34	4.22	0.026		O					0.69
12.250	4.61	4.41	0.027		O					0.72
12.333	4.86	4.65	0.028		O					0.76
12.417	5.00	4.85	0.029		O					0.80
12.500	5.09	4.99	0.030		O					0.82
12.583	5.15	5.08	0.031		O					0.83
12.667	5.22	5.16	0.031		O					0.85
12.750	5.28	5.22	0.032		O					0.86
12.833	5.34	5.29	0.032		O					0.87
12.917	5.41	5.35	0.032		O					0.88
13.000	5.48	5.42	0.033		OI					0.89
13.083	5.54	5.48	0.033		O					0.90
13.167	5.62	5.55	0.034		O					0.91
13.250	5.69	5.63	0.034		O					0.92
13.333	5.77	5.70	0.035		O					0.93
13.417	5.85	5.78	0.035		O					0.95
13.500	5.94	5.86	0.036		O					0.96
13.583	6.03	5.95	0.036		O					0.98
13.667	6.12	6.04	0.037		O					0.99
13.750	6.22	6.13	0.037		O					1.00
13.833	6.32	6.20	0.038		O					1.02
13.917	6.43	6.29	0.039		O					1.03
14.000	6.55	6.39	0.040		O					1.05
14.083	6.67	6.50	0.041		O					1.07
14.167	6.80	6.62	0.042		O					1.09
14.250	6.94	6.75	0.043		O					1.11
14.333	7.08	6.88	0.045		O					1.14
14.417	7.24	7.03	0.046		O					1.16
14.500	7.41	7.18	0.048		OI					1.19
14.583	7.58	7.34	0.049		O					1.22
14.667	7.77	7.51	0.051		O					1.25
14.750	7.98	7.70	0.053		O					1.28
14.833	8.20	7.90	0.055		O					1.31
14.917	8.45	8.12	0.057		O					1.35
15.000	8.72	8.36	0.059		O					1.39
15.083	9.01	8.62	0.062		O					1.44
15.167	9.34	8.90	0.065		OI					1.49
15.250	9.71	9.22	0.068		O					1.54
15.333	10.12	9.58	0.071		O					1.61
15.417	10.52	9.96	0.075		O					1.67
15.500	10.62	10.27	0.078		O					1.73
15.583	10.44	10.41	0.080		O					1.75
15.667	10.52	10.45	0.080		O					1.76
15.750	11.18	10.65	0.082		OI					1.79
15.833	12.37	11.23	0.088		O					1.89
15.917	14.30	12.27	0.099		OI					2.06
16.000	17.84	14.03	0.119		O	I				2.32
16.083	26.44	17.78	0.162			O	I			2.88
16.167	44.87	22.90	0.267				O	I		3.94
16.250	58.27	27.92	0.447				O	I	I	5.33
16.333	49.92	31.18	0.617				O	I		6.37
16.417	29.91	32.10	0.674				O	I		6.69
16.500	19.11	31.30	0.624			I	O			6.41

16.583	13.73	29.62	0.527		I		O			5.85
16.667	12.02	27.34	0.420		I		O			5.14
16.750	10.92	24.56	0.320		I		O			4.38
16.833	9.52	21.34	0.233		I		O			3.60
16.917	8.84	17.72	0.161		I		O			2.87
17.000	8.30	13.49	0.113		I		O			2.24
17.083	7.86	10.89	0.084		IO					1.83
17.167	7.47	9.23	0.068		IO					1.54
17.250	7.14	8.24	0.058		IO					1.37
17.333	6.85	7.60	0.052		IO					1.26
17.417	6.59	7.14	0.047		O					1.18
17.500	6.36	6.80	0.044		O					1.12
17.583	6.15	6.52	0.041		O					1.07
17.667	5.97	6.28	0.039		O					1.03
17.750	5.80	6.06	0.037		O					0.99
17.833	5.64	5.81	0.035		O					0.95
17.917	5.49	5.63	0.034		O					0.92
18.000	5.36	5.48	0.033		IO					0.90
18.083	5.21	5.34	0.032		O					0.88
18.167	4.97	5.16	0.031		O					0.85
18.250	4.64	4.91	0.030		O					0.80
18.333	4.35	4.61	0.028		O					0.76
18.417	4.17	4.36	0.026		O					0.71
18.500	4.05	4.18	0.025		O					0.68
18.583	3.95	4.05	0.025		O					0.66
18.667	3.87	3.95	0.024		O					0.65
18.750	3.79	3.86	0.023		O					0.63
18.833	3.72	3.78	0.023		O					0.62
18.917	3.65	3.71	0.023		O					0.61
19.000	3.59	3.65	0.022		IO					0.60
19.083	3.53	3.58	0.022		O					0.59
19.167	3.47	3.52	0.021		O					0.58
19.250	3.42	3.47	0.021		O					0.57
19.333	3.36	3.41	0.021		O					0.56
19.417	3.31	3.36	0.020		O					0.55
19.500	3.26	3.31	0.020		O					0.54
19.583	3.22	3.26	0.020		O					0.53
19.667	3.17	3.21	0.019		O					0.53
19.750	3.13	3.17	0.019		O					0.52
19.833	3.09	3.12	0.019		O					0.51
19.917	3.05	3.08	0.019		O					0.51
20.000	3.01	3.04	0.018		O					0.50
20.083	2.97	3.00	0.018		O					0.49
20.167	2.93	2.97	0.018		O					0.49
20.250	2.90	2.93	0.018		O					0.48
20.333	2.87	2.90	0.018		O					0.47
20.417	2.83	2.86	0.017		O					0.47
20.500	2.80	2.83	0.017		O					0.46
20.583	2.77	2.80	0.017		O					0.46
20.667	2.74	2.77	0.017		O					0.45
20.750	2.71	2.74	0.017		O					0.45
20.833	2.68	2.71	0.016		O					0.44
20.917	2.66	2.68	0.016		O					0.44
21.000	2.63	2.65	0.016		O					0.43
21.083	2.60	2.63	0.016		O					0.43
21.167	2.58	2.60	0.016		O					0.43
21.250	2.55	2.58	0.016		O					0.42
21.333	2.53	2.55	0.015		O					0.42
21.417	2.51	2.53	0.015		O					0.41

21.500	2.48	2.50	0.015	IO					0.41
21.583	2.46	2.48	0.015	IO					0.41
21.667	2.44	2.46	0.015	IO					0.40
21.750	2.42	2.44	0.015	IO					0.40
21.833	2.40	2.42	0.015	IO					0.40
21.917	2.38	2.40	0.015	IO					0.39
22.000	2.36	2.38	0.014	IO					0.39
22.083	2.34	2.36	0.014	IO					0.39
22.167	2.32	2.34	0.014	IO					0.38
22.250	2.30	2.32	0.014	IO					0.38
22.333	2.29	2.30	0.014	IO					0.38
22.417	2.27	2.28	0.014	IO					0.37
22.500	2.25	2.27	0.014	IO					0.37
22.583	2.23	2.25	0.014	IO					0.37
22.667	2.22	2.23	0.014	IO					0.37
22.750	2.20	2.22	0.013	IO					0.36
22.833	2.19	2.20	0.013	IO					0.36
22.917	2.17	2.18	0.013	IO					0.36
23.000	2.15	2.17	0.013	IO					0.36
23.083	2.14	2.15	0.013	IO					0.35
23.167	2.13	2.14	0.013	IO					0.35
23.250	2.11	2.12	0.013	IO					0.35
23.333	2.10	2.11	0.013	IO					0.35
23.417	2.08	2.10	0.013	IO					0.34
23.500	2.07	2.08	0.013	IO					0.34
23.583	2.06	2.07	0.013	IO					0.34
23.667	2.04	2.05	0.012	IO					0.34
23.750	2.03	2.04	0.012	IO					0.33
23.833	2.02	2.03	0.012	IO					0.33
23.917	2.00	2.02	0.012	IO					0.33
24.000	1.99	2.00	0.012	IO					0.33
24.083	1.92	1.97	0.012	IO					0.32
24.167	1.56	1.80	0.011	O					0.30
24.250	0.94	1.40	0.009	O					0.23
24.333	0.39	0.87	0.005	O					0.14
24.417	0.15	0.44	0.003	O					0.07
24.500	0.05	0.19	0.001	O					0.03
24.583	0.03	0.08	0.001	O					0.01
24.667	0.01	0.04	0.000	O					0.01
24.750	0.00	0.01	0.000	O					0.00
24.833	0.00	0.00	0.000	O					0.00

*****HYDROGRAPH DATA*****

Number of intervals = 298
 Time interval = 5.0 (Min.)
 Maximum/Peak flow rate = 32.098 (CFS)
 Total volume = 9.054 (Ac.Ft)
 Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	84.120	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	44.904	0.000	0.000	0.000

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 Process from Point/Station 9.000 to Point/Station 10.000
 **** STREAM ROUTING SCS CONVEX METHOD ****

HYDROGRAPH STREAM ROUTING DATA:

Length of stream = 110.00 (Ft.)
Elevation difference = 0.80 (Ft.)
Slope of channel = 0.007273 (Vert/Horiz)
Channel type - Pipe

Pipe length = 110.00(Ft.) Elevation difference = 0.80(Ft.)
Manning's N = 0.013 No. of pipes = 1
Pipe evaluation using mean flow rate of hydrograph
Required pipe flow = 4.935(CFS)
Nearest computed pipe diameter = 15.00(In.)
Calculated individual pipe flow = 4.935(CFS)
Normal flow depth in pipe = 11.09(In.)
Flow top width inside pipe = 13.17(In.)
Critical Depth = 0.90(Ft.)
Pipe flow velocity = 5.08(Ft/s)
Travel time through pipe = 0.36 min.

Pipe length = 110.00(Ft.) Elevation difference = 0.80(Ft.)
Manning's N = 0.013 No. of pipes = 1
Pipe evaluation using maximum flow rate of hydrograph
Required pipe flow = 32.098(CFS)
Nearest computed pipe diameter = 30.00(In.)
Calculated individual pipe flow = 32.098(CFS)
Normal flow depth in pipe = 22.64(In.)
Flow top width inside pipe = 25.82(In.)
Critical Depth = 1.93(Ft.)
Pipe flow velocity = 8.08(Ft/s)
Travel time through pipe = 0.23 min.

***** SCS CONVEX CHANNEL ROUTING *****

Convex method of stream routing data items:

Using equation: Outflow =

$O(t+dt) = (1-c^*)O(t+dt-dt^*) + \text{Input}(c^*)$

where $c^* = 1 - (1-c)^e$ and $dt = c(\text{length})/\text{velocity}$

$c(v/v+1.7) = 0.8262$ Travel time = 0.23 (min.)

$dt^*(\text{unit time interval}) = 5.00(\text{min.}), e = 18.1217$

$dt(\text{routing time-step}) = 0.19 (\text{min.}), c^* = 1.0000$

Output hydrograph delayed by 0 unit time increments

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P R I N T O F S T O R M

R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals (CFS)

Time(h+m)	Out = O(CFS)	In = I	0	8.0	16.0	24.1	32.1
-----------	--------------	--------	---	-----	------	------	------

0+ 5	0.0219	0.02	O				
0+10	0.1708	0.18	O				
0+15	0.5537	0.57	O				
0+20	1.0774	1.10	O				

0+25	1.5109	1.53	O				
0+30	1.7613	1.77	O				
0+35	1.8821	1.89	O				
0+40	1.9358	1.94	O				
0+45	1.9647	1.97	O				
0+50	1.9816	1.98	O				
0+55	1.9908	1.99	O				
1+ 0	1.9978	2.00	O				
1+ 5	2.0042	2.00	O				
1+10	2.0104	2.01	O				
1+15	2.0167	2.02	O				
1+20	2.0230	2.02	O				
1+25	2.0293	2.03	O				
1+30	2.0357	2.04	O				
1+35	2.0422	2.04	O				
1+40	2.0487	2.05	O				
1+45	2.0553	2.06	O				
1+50	2.0619	2.06	O				
1+55	2.0686	2.07	O				
2+ 0	2.0753	2.08	O				
2+ 5	2.0822	2.08	O				
2+10	2.0890	2.09	O				
2+15	2.0960	2.10	O				
2+20	2.1030	2.10	O				
2+25	2.1100	2.11	O				
2+30	2.1172	2.12	O				
2+35	2.1244	2.12	O				
2+40	2.1317	2.13	O				
2+45	2.1390	2.14	O				
2+50	2.1464	2.15	O				
2+55	2.1539	2.15	O				
3+ 0	2.1614	2.16	O				
3+ 5	2.1691	2.17	O				
3+10	2.1768	2.18	O				
3+15	2.1846	2.18	O				
3+20	2.1924	2.19	O				
3+25	2.2004	2.20	O				
3+30	2.2084	2.21	O				
3+35	2.2165	2.22	O				
3+40	2.2247	2.22	O				
3+45	2.2329	2.23	O				
3+50	2.2413	2.24	O				
3+55	2.2497	2.25	O				
4+ 0	2.2583	2.26	O				
4+ 5	2.2669	2.27	O				
4+10	2.2756	2.28	O				
4+15	2.2844	2.28	O				
4+20	2.2933	2.29	O				
4+25	2.3023	2.30	O				
4+30	2.3114	2.31	O				
4+35	2.3206	2.32	O				
4+40	2.3299	2.33	O				
4+45	2.3393	2.34	O				
4+50	2.3488	2.35	O				
4+55	2.3585	2.36	O				
5+ 0	2.3682	2.37	O				
5+ 5	2.3780	2.38	O				
5+10	2.3880	2.39	O				
5+15	2.3981	2.40	O				

5+20	2.4082	2.41		O					
5+25	2.4186	2.42		O					
5+30	2.4290	2.43		O					
5+35	2.4396	2.44		O					
5+40	2.4502	2.45		O					
5+45	2.4611	2.46		O					
5+50	2.4720	2.47		O					
5+55	2.4831	2.48		O					
6+ 0	2.4944	2.49		O					
6+ 5	2.5057	2.51		O					
6+10	2.5172	2.52		O					
6+15	2.5289	2.53		O					
6+20	2.5407	2.54		O					
6+25	2.5527	2.55		O					
6+30	2.5648	2.57		O					
6+35	2.5771	2.58		O					
6+40	2.5896	2.59		O					
6+45	2.6022	2.60		O					
6+50	2.6150	2.62		O					
6+55	2.6280	2.63		O					
7+ 0	2.6411	2.64		O					
7+ 5	2.6545	2.65		O					
7+10	2.6680	2.67		O					
7+15	2.6817	2.68		O					
7+20	2.6957	2.70		O					
7+25	2.7098	2.71		O					
7+30	2.7241	2.72		O					
7+35	2.7386	2.74		O					
7+40	2.7534	2.75		O					
7+45	2.7684	2.77		O					
7+50	2.7836	2.78		O					
7+55	2.7990	2.80		O					
8+ 0	2.8147	2.82		O					
8+ 5	2.8307	2.83		O					
8+10	2.8468	2.85		O					
8+15	2.8633	2.86		O					
8+20	2.8800	2.88		O					
8+25	2.8970	2.90		O					
8+30	2.9143	2.91		O					
8+35	2.9318	2.93		O					
8+40	2.9497	2.95		O					
8+45	2.9678	2.97		O					
8+50	2.9863	2.99		O					
8+55	3.0051	3.01		O					
9+ 0	3.0242	3.02		O					
9+ 5	3.0437	3.04		O					
9+10	3.0635	3.06		O					
9+15	3.0837	3.08		O					
9+20	3.1042	3.10		O					
9+25	3.1252	3.13		O					
9+30	3.1465	3.15		O					
9+35	3.1683	3.17		O					
9+40	3.1904	3.19		O					
9+45	3.2130	3.21		O					
9+50	3.2361	3.24		O					
9+55	3.2596	3.26		O					
10+ 0	3.2836	3.28		O					
10+ 5	3.3081	3.31		O					
10+10	3.3331	3.33		O					

10+15	3.3587	3.36		O					
10+20	3.3848	3.39		O					
10+25	3.4114	3.41		O					
10+30	3.4387	3.44		O					
10+35	3.4666	3.47		O					
10+40	3.4951	3.50		O					
10+45	3.5243	3.53		O					
10+50	3.5541	3.56		O					
10+55	3.5847	3.59		O					
11+ 0	3.6160	3.62		O					
11+ 5	3.6481	3.65		O					
11+10	3.6810	3.68		O					
11+15	3.7147	3.72		O					
11+20	3.7493	3.75		O					
11+25	3.7848	3.79		O					
11+30	3.8213	3.82		O					
11+35	3.8587	3.86		O					
11+40	3.8972	3.90		O					
11+45	3.9368	3.94		O					
11+50	3.9775	3.98		O					
11+55	4.0194	4.02		O					
12+ 0	4.0626	4.06		O					
12+ 5	4.1149	4.12		O					
12+10	4.2144	4.22		O					
12+15	4.3996	4.41		O					
12+20	4.6369	4.65		O					
12+25	4.8429	4.85		O					
12+30	4.9842	4.99		O					
12+35	5.0804	5.08		O					
12+40	5.1541	5.16		O					
12+45	5.2208	5.22		O					
12+50	5.2851	5.29		O					
12+55	5.3489	5.35		O					
13+ 0	5.4141	5.42		O					
13+ 5	5.4815	5.48		O					
13+10	5.5515	5.55		O					
13+15	5.6243	5.63		O					
13+20	5.7000	5.70		O					
13+25	5.7790	5.78		O					
13+30	5.8613	5.86		O					
13+35	5.9474	5.95		O					
13+40	6.0374	6.04		O					
13+45	6.1219	6.13		O					
13+50	6.1980	6.20		O					
13+55	6.2887	6.29		O					
14+ 0	6.3902	6.39		O					
14+ 5	6.5001	6.50		O					
14+10	6.6179	6.62		O					
14+15	6.7441	6.75		O					
14+20	6.8789	6.88		O					
14+25	7.0220	7.03		O					
14+30	7.1739	7.18		O					
14+35	7.3355	7.34		O					
14+40	7.5084	7.51		O					
14+45	7.6941	7.70		O					
14+50	7.8945	7.90		O					
14+55	8.1118	8.12		O					
15+ 0	8.3485	8.36		O					
15+ 5	8.6078	8.62		O					

15+10	8.8936	8.90				O					
15+15	9.2109	9.22				O					
15+20	9.5662	9.58				O					
15+25	9.9470	9.96				O					
15+30	10.2614	10.27				O					
15+35	10.4009	10.41				O					
15+40	10.4438	10.45				O					
15+45	10.6460	10.65				O					
15+50	11.2093	11.23				O					
15+55	12.2279	12.27				O					
16+ 0	13.9600	14.03				O					
16+ 5	17.6383	17.78				O		O			
16+10	22.7113	22.90				O		O			
16+15	27.7327	27.92				O		O			
16+20	31.0536	31.18				O		O			
16+25	32.0631	32.10				O		O			
16+30	31.3274	31.30				O		O			
16+35	29.6823	29.62				O		O			
16+40	27.4217	27.34				O		O			
16+45	24.6657	24.56				O		O			
16+50	21.4636	21.34				O		O			
16+55	17.8598	17.72				O		O			
17+ 0	13.6473	13.49				O		O			
17+ 5	10.9855	10.89				O		O			
17+10	9.2898	9.23				O		O			
17+15	8.2741	8.24				O		O			
17+20	7.6195	7.60				O		O			
17+25	7.1598	7.14				O		O			
17+30	6.8109	6.80				O		O			
17+35	6.5291	6.52				O		O			
17+40	6.2907	6.28				O		O			
17+45	6.0730	6.06				O		O			
17+50	5.8224	5.81				O		O			
17+55	5.6413	5.63				O		O			
18+ 0	5.4905	5.48				O		O			
18+ 5	5.3474	5.34				O		O			
18+10	5.1695	5.16				O		O			
18+15	4.9163	4.91				O		O			
18+20	4.6206	4.61				O		O			
18+25	4.3652	4.36				O		O			
18+30	4.1827	4.18				O		O			
18+35	4.0529	4.05				O		O			
18+40	3.9526	3.95				O		O			
18+45	3.8659	3.86				O		O			
18+50	3.7878	3.78				O		O			
18+55	3.7163	3.71				O		O			
19+ 0	3.6492	3.65				O		O			
19+ 5	3.5856	3.58				O		O			
19+10	3.5250	3.52				O		O			
19+15	3.4672	3.47				O		O			
19+20	3.4119	3.41				O		O			
19+25	3.3591	3.36				O		O			
19+30	3.3084	3.31				O		O			
19+35	3.2599	3.26				O		O			
19+40	3.2132	3.21				O		O			
19+45	3.1684	3.17				O		O			
19+50	3.1253	3.12				O		O			
19+55	3.0837	3.08				O		O			
20+ 0	3.0437	3.04				O		O			

20+ 5	3.0051	3.00	O				
20+10	2.9678	2.97	O				
20+15	2.9317	2.93	O				
20+20	2.8969	2.90	O				
20+25	2.8632	2.86	O				
20+30	2.8305	2.83	O				
20+35	2.7989	2.80	O				
20+40	2.7682	2.77	O				
20+45	2.7385	2.74	O				
20+50	2.7096	2.71	O				
20+55	2.6815	2.68	O				
21+ 0	2.6543	2.65	O				
21+ 5	2.6278	2.63	O				
21+10	2.6020	2.60	O				
21+15	2.5769	2.58	O				
21+20	2.5525	2.55	O				
21+25	2.5287	2.53	O				
21+30	2.5055	2.50	O				
21+35	2.4829	2.48	O				
21+40	2.4608	2.46	O				
21+45	2.4393	2.44	O				
21+50	2.4183	2.42	O				
21+55	2.3978	2.40	O				
22+ 0	2.3778	2.38	O				
22+ 5	2.3582	2.36	O				
22+10	2.3391	2.34	O				
22+15	2.3204	2.32	O				
22+20	2.3021	2.30	O				
22+25	2.2842	2.28	O				
22+30	2.2666	2.27	O				
22+35	2.2495	2.25	O				
22+40	2.2327	2.23	O				
22+45	2.2162	2.22	O				
22+50	2.2001	2.20	O				
22+55	2.1843	2.18	O				
23+ 0	2.1688	2.17	O				
23+ 5	2.1536	2.15	O				
23+10	2.1387	2.14	O				
23+15	2.1241	2.12	O				
23+20	2.1098	2.11	O				
23+25	2.0957	2.10	O				
23+30	2.0819	2.08	O				
23+35	2.0683	2.07	O				
23+40	2.0550	2.05	O				
23+45	2.0419	2.04	O				
23+50	2.0291	2.03	O				
23+55	2.0164	2.02	O				
24+ 0	2.0040	2.00	O				
24+ 5	1.9699	1.97	O				
24+10	1.8095	1.80	O				
24+15	1.4169	1.40	O				
24+20	0.8872	0.87	O				
24+25	0.4522	0.44	O				
24+30	0.2039	0.19	O				
24+35	0.0873	0.08	O				
24+40	0.0388	0.04	O				
24+45	0.0155	0.01	O				
24+50	0.0044	0.00	O				
24+55	0.0000	0.00	O				

```

*****HYDROGRAPH DATA*****
      Number of intervals =    299
      Time interval =      5.0 (Min.)
      Maximum/Peak flow rate =      32.063 (CFS)
      Total volume =      9.054 (Ac.Ft)
      Status of hydrographs being held in storage
            Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
      Peak (CFS)      0.000   84.120    0.000    0.000    0.000
      Vol (Ac.Ft)      0.000   44.904    0.000    0.000    0.000
*****

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+++++
Process from Point/Station      9.000 to Point/Station      10.000
**** STORE OR DELETE CURRENT HYDROGRAPH ****

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Current stream hydrograph of    5.0 minute
intervals has been stored as stream number 3 with
a starting time of    0.00 hours and ending time of    36.00 hours
With a total volume of      9.05(Ac.Ft)
*****HYDROGRAPH DATA*****
      Number of intervals =      0
      Time interval =      0.0 (Min.)
      Maximum/Peak flow rate =      0.000 (CFS)
      Total volume =      0.000 (Ac.Ft)
      Status of hydrographs being held in storage
            Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
      Peak (CFS)      0.000   84.120   32.063    0.000    0.000
      Vol (Ac.Ft)      0.000   44.904    9.054    0.000    0.000
*****

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+++++
Process from Point/Station      11.000 to Point/Station      10.000
**** ADD/COMBINE/RECOVER HYDROGRAPHS ****

```

***** HYDROGRAPH INFORMATION *****

```

      From study/file name: b2bruel100.rte
+++++
      P R I N T   O F   S T O R M
      R u n o f f       H y d r o g r a p h

```

Hydrograph in 5 Minute intervals (CFS)

Time(h+m)	Add q(CFS)	Tot. Q	0	8.2	16.4	24.5	32.7
0+ 5	0.0815	0.08	Q				
0+10	0.4905	0.49	Q				
0+15	0.8003	0.80	Q				
0+20	0.8713	0.87	IQ				
0+25	0.8902	0.89	IQ				
0+30	0.8929	0.89	IQ				

0+35	0.8956	0.90	IQ				
0+40	0.8983	0.90	IQ				
0+45	0.9010	0.90	IQ				
0+50	0.9038	0.90	IQ				
0+55	0.9065	0.91	IQ				
1+ 0	0.9094	0.91	IQ				
1+ 5	0.9122	0.91	IQ				
1+10	0.9151	0.92	IQ				
1+15	0.9179	0.92	IQ				
1+20	0.9209	0.92	IQ				
1+25	0.9237	0.92	IQ				
1+30	0.9268	0.93	IQ				
1+35	0.9297	0.93	IQ				
1+40	0.9328	0.93	IQ				
1+45	0.9357	0.94	IQ				
1+50	0.9389	0.94	IQ				
1+55	0.9419	0.94	IQ				
2+ 0	0.9451	0.95	IQ				
2+ 5	0.9482	0.95	IQ				
2+10	0.9514	0.95	IQ				
2+15	0.9545	0.95	IQ				
2+20	0.9579	0.96	IQ				
2+25	0.9611	0.96	IQ				
2+30	0.9644	0.96	IQ				
2+35	0.9677	0.97	IQ				
2+40	0.9711	0.97	IQ				
2+45	0.9745	0.97	IQ				
2+50	0.9780	0.98	IQ				
2+55	0.9813	0.98	IQ				
3+ 0	0.9849	0.98	IQ				
3+ 5	0.9884	0.99	IQ				
3+10	0.9920	0.99	IQ				
3+15	0.9955	1.00	IQ				
3+20	0.9993	1.00	IQ				
3+25	1.0029	1.00	IQ				
3+30	1.0067	1.01	IQ				
3+35	1.0103	1.01	IQ				
3+40	1.0142	1.01	IQ				
3+45	1.0180	1.02	IQ				
3+50	1.0219	1.02	IQ				
3+55	1.0257	1.03	IQ				
4+ 0	1.0298	1.03	IQ				
4+ 5	1.0337	1.03	IQ				
4+10	1.0378	1.04	IQ				
4+15	1.0418	1.04	IQ				
4+20	1.0461	1.05	IQ				
4+25	1.0501	1.05	IQ				
4+30	1.0545	1.05	IQ				
4+35	1.0586	1.06	IQ				
4+40	1.0631	1.06	IQ				
4+45	1.0673	1.07	IQ				
4+50	1.0718	1.07	IQ				
4+55	1.0762	1.08	IQ				
5+ 0	1.0808	1.08	IQ				
5+ 5	1.0853	1.09	IQ				
5+10	1.0900	1.09	IQ				
5+15	1.0946	1.09	IQ				
5+20	1.0995	1.10	IQ				
5+25	1.1041	1.10	IQ				

5+30	1.1091	1.11	IQ				
5+35	1.1139	1.11	IQ				
5+40	1.1190	1.12	IQ				
5+45	1.1239	1.12	IQ				
5+50	1.1291	1.13	IQ				
5+55	1.1342	1.13	IQ				
6+ 0	1.1395	1.14	IQ				
6+ 5	1.1447	1.14	IQ				
6+10	1.1502	1.15	IQ				
6+15	1.1555	1.16	IQ				
6+20	1.1612	1.16	IQ				
6+25	1.1666	1.17	IQ				
6+30	1.1724	1.17	IQ				
6+35	1.1780	1.18	IQ				
6+40	1.1840	1.18	IQ				
6+45	1.1897	1.19	IQ				
6+50	1.1958	1.20	IQ				
6+55	1.2017	1.20	IQ				
7+ 0	1.2080	1.21	IQ				
7+ 5	1.2141	1.21	IQ				
7+10	1.2206	1.22	IQ				
7+15	1.2268	1.23	IQ				
7+20	1.2335	1.23	IQ				
7+25	1.2399	1.24	IQ				
7+30	1.2468	1.25	IQ				
7+35	1.2534	1.25	IQ				
7+40	1.2605	1.26	IQ				
7+45	1.2674	1.27	IQ				
7+50	1.2747	1.27	IQ				
7+55	1.2817	1.28	IQ				
8+ 0	1.2893	1.29	IQ				
8+ 5	1.2965	1.30	IQ				
8+10	1.3043	1.30	IQ				
8+15	1.3119	1.31	IQ				
8+20	1.3199	1.32	IQ				
8+25	1.3277	1.33	IQ				
8+30	1.3360	1.34	IQ				
8+35	1.3440	1.34	IQ				
8+40	1.3526	1.35	IQ				
8+45	1.3609	1.36	IQ				
8+50	1.3699	1.37	IQ				
8+55	1.3785	1.38	IQ				
9+ 0	1.3877	1.39	IQ				
9+ 5	1.3966	1.40	IQ				
9+10	1.4062	1.41	IQ				
9+15	1.4155	1.42	IQ				
9+20	1.4255	1.43	IQ				
9+25	1.4351	1.44	IQ				
9+30	1.4454	1.45	IQ				
9+35	1.4554	1.46	IQ				
9+40	1.4662	1.47	IQ				
9+45	1.4766	1.48	IQ				
9+50	1.4878	1.49	IQ				
9+55	1.4986	1.50	IQ				
10+ 0	1.5103	1.51	IQ				
10+ 5	1.5216	1.52	IQ				
10+10	1.5338	1.53	IQ				
10+15	1.5455	1.55	IQ				
10+20	1.5583	1.56	IQ				

10+25	1.5706	1.57	Q				
10+30	1.5839	1.58	Q				
10+35	1.5968	1.60	Q				
10+40	1.6107	1.61	Q				
10+45	1.6242	1.62	Q				
10+50	1.6389	1.64	Q				
10+55	1.6530	1.65	Q				
11+ 0	1.6684	1.67	Q				
11+ 5	1.6833	1.68	Q				
11+10	1.6995	1.70	Q				
11+15	1.7151	1.72	Q				
11+20	1.7322	1.73	Q				
11+25	1.7487	1.75	Q				
11+30	1.7667	1.77	Q				
11+35	1.7842	1.78	Q				
11+40	1.8032	1.80	Q				
11+45	1.8217	1.82	Q				
11+50	1.8419	1.84	Q				
11+55	1.8615	1.86	Q				
12+ 0	1.8829	1.88	Q				
12+ 5	1.9338	1.93	Q				
12+10	2.1073	2.11	Q				
12+15	2.2434	2.24	Q				
12+20	2.2933	2.29	Q				
12+25	2.3235	2.32	Q				
12+30	2.3499	2.35	Q				
12+35	2.3757	2.38	Q				
12+40	2.4039	2.40	Q				
12+45	2.4316	2.43	Q				
12+50	2.4619	2.46	Q				
12+55	2.4917	2.49	Q				
13+ 0	2.5244	2.52	Q				
13+ 5	2.5565	2.56	Q				
13+10	2.5920	2.59	Q				
13+15	2.6268	2.63	Q				
13+20	2.6653	2.67	Q				
13+25	2.7032	2.70	Q				
13+30	2.7453	2.75	Q				
13+35	2.7869	2.79	Q				
13+40	2.8332	2.83	Q				
13+45	2.8789	2.88	Q				
13+50	2.9301	2.93	Q				
13+55	2.9809	2.98	Q				
14+ 0	3.0379	3.04	Q				
14+ 5	3.0948	3.09	Q				
14+10	3.1596	3.16	Q				
14+15	3.2243	3.22	Q				
14+20	3.2971	3.30	Q				
14+25	3.3701	3.37	Q				
14+30	3.4535	3.45	Q				
14+35	3.5378	3.54	Q				
14+40	3.6348	3.63	Q				
14+45	3.7337	3.73	Q				
14+50	3.8486	3.85	Q				
14+55	3.9668	3.97	Q				
15+ 0	4.1059	4.11	Q				
15+ 5	4.2507	4.25	Q				
15+10	4.4240	4.42	Q				
15+15	4.6073	4.61	Q				

15+20	4.8317	4.83		Q				
15+25	4.9666	4.97		Q				
15+30	4.7329	4.73		Q				
15+35	4.6644	4.66		Q				
15+40	5.0252	5.03		Q				
15+45	5.5567	5.56		Q				
15+50	6.4278	6.43		Q				
15+55	7.7345	7.73			Q			
16+ 0	10.4122	10.41				Q		
16+ 5	17.5228	17.52					Q	
16+10	32.7078	32.71						Q
16+15	25.3039	25.30					Q	
16+20	11.1160	11.12				Q		
16+25	6.6750	6.67			Q			
16+30	5.2950	5.29			Q			
16+35	4.9945	4.99			Q			
16+40	4.6012	4.60			Q			
16+45	4.2586	4.26			Q			
16+50	3.9707	3.97		Q				
16+55	3.7354	3.74		Q				
17+ 0	3.5382	3.54		Q				
17+ 5	3.3696	3.37		Q				
17+10	3.2227	3.22		Q				
17+15	3.0938	3.09		Q				
17+20	2.9797	2.98		Q				
17+25	2.8777	2.88		Q				
17+30	2.7856	2.79		Q				
17+35	2.7019	2.70		Q				
17+40	2.6254	2.63		Q				
17+45	2.5552	2.56		Q				
17+50	2.4904	2.49		Q				
17+55	2.4303	2.43		Q				
18+ 0	2.3744	2.37		Q				
18+ 5	2.2923	2.29		Q				
18+10	2.0931	2.09		Q				
18+15	1.9341	1.93		Q				
18+20	1.8665	1.87		Q				
18+25	1.8207	1.82		Q				
18+30	1.7832	1.78		Q				
18+35	1.7478	1.75		Q				
18+40	1.7143	1.71		Q				
18+45	1.6824	1.68		Q				
18+50	1.6522	1.65		Q				
18+55	1.6234	1.62		Q				
19+ 0	1.5960	1.60		Q				
19+ 5	1.5698	1.57		Q				
19+10	1.5448	1.54		Q				
19+15	1.5209	1.52		Q				
19+20	1.4979	1.50		Q				
19+25	1.4759	1.48		Q				
19+30	1.4548	1.45		Q				
19+35	1.4344	1.43		Q				
19+40	1.4149	1.41		Q				
19+45	1.3961	1.40		Q				
19+50	1.3779	1.38		Q				
19+55	1.3604	1.36		Q				
20+ 0	1.3435	1.34		Q				
20+ 5	1.3271	1.33		Q				
20+10	1.3113	1.31		Q				

20+15	1.2961	1.30	IQ				
20+20	1.2812	1.28	IQ				
20+25	1.2669	1.27	IQ				
20+30	1.2530	1.25	IQ				
20+35	1.2395	1.24	IQ				
20+40	1.2264	1.23	IQ				
20+45	1.2137	1.21	IQ				
20+50	1.2013	1.20	IQ				
20+55	1.1893	1.19	IQ				
21+ 0	1.1776	1.18	IQ				
21+ 5	1.1662	1.17	IQ				
21+10	1.1551	1.16	IQ				
21+15	1.1443	1.14	IQ				
21+20	1.1338	1.13	IQ				
21+25	1.1236	1.12	IQ				
21+30	1.1136	1.11	IQ				
21+35	1.1038	1.10	IQ				
21+40	1.0943	1.09	IQ				
21+45	1.0850	1.08	IQ				
21+50	1.0759	1.08	IQ				
21+55	1.0670	1.07	IQ				
22+ 0	1.0583	1.06	IQ				
22+ 5	1.0498	1.05	IQ				
22+10	1.0415	1.04	IQ				
22+15	1.0334	1.03	IQ				
22+20	1.0255	1.03	IQ				
22+25	1.0177	1.02	IQ				
22+30	1.0101	1.01	IQ				
22+35	1.0026	1.00	IQ				
22+40	0.9953	1.00	IQ				
22+45	0.9881	0.99	IQ				
22+50	0.9811	0.98	IQ				
22+55	0.9742	0.97	IQ				
23+ 0	0.9674	0.97	IQ				
23+ 5	0.9608	0.96	IQ				
23+10	0.9543	0.95	IQ				
23+15	0.9479	0.95	IQ				
23+20	0.9417	0.94	IQ				
23+25	0.9355	0.94	IQ				
23+30	0.9295	0.93	IQ				
23+35	0.9235	0.92	IQ				
23+40	0.9177	0.92	IQ				
23+45	0.9120	0.91	IQ				
23+50	0.9063	0.91	IQ				
23+55	0.9008	0.90	IQ				
24+ 0	0.8954	0.90	IQ				
24+ 5	0.8086	0.81	Q				
24+10	0.3959	0.40	Q				
24+15	0.0854	0.09	Q				
24+20	0.0165	0.02	Q				

*****HYDROGRAPH DATA*****

Number of intervals = 292

Time interval = 5.0 (Min.)

Maximum/Peak flow rate = 32.708 (CFS)

Total volume = 4.091 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	84.120	32.063	0.000	0.000

Vol (Ac.Ft) 0.000 44.904 9.054 0.000 0.000

++++
 Process from Point/Station 11.000 to Point/Station 10.000
 **** RETARDING BASIN ROUTING ****

 User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 292
 Hydrograph time unit = 5.000 (Min.)
 Initial depth in storage basin = 0.00 (Ft.)

 Initial basin depth = 0.00 (Ft.)
 Initial basin storage = 0.00 (Ac.Ft)
 Initial basin outflow = 0.00 (CFS)

 Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
1.000	0.035	2.850	0.025	0.045
2.000	0.088	5.960	0.067	0.109
3.000	0.160	9.330	0.128	0.192
4.000	0.254	12.900	0.210	0.298
5.000	0.370	15.320	0.317	0.423
6.000	0.513	31.070	0.406	0.620

 Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	0	8.2	16.35	24.53	32.71	Depth (Ft.)
0.083	0.08	0.02	0.000	O					0.01
0.167	0.49	0.14	0.002	O					0.05
0.250	0.80	0.36	0.004	O					0.13
0.333	0.87	0.57	0.007	O					0.20
0.417	0.89	0.70	0.009	O					0.25
0.500	0.89	0.79	0.010	O					0.28
0.583	0.90	0.83	0.010	O					0.29
0.667	0.90	0.86	0.011	O					0.30
0.750	0.90	0.88	0.011	O					0.31
0.833	0.90	0.89	0.011	O					0.31
0.917	0.91	0.90	0.011	O					0.31
1.000	0.91	0.90	0.011	O					0.32
1.083	0.91	0.91	0.011	O					0.32
1.167	0.92	0.91	0.011	O					0.32
1.250	0.92	0.91	0.011	O					0.32
1.333	0.92	0.92	0.011	O					0.32
1.417	0.92	0.92	0.011	O					0.32

1.500	0.93	0.92	0.011	O					0.32
1.583	0.93	0.92	0.011	O					0.32
1.667	0.93	0.93	0.011	O					0.33
1.750	0.94	0.93	0.011	O					0.33
1.833	0.94	0.93	0.011	O					0.33
1.917	0.94	0.94	0.012	O					0.33
2.000	0.95	0.94	0.012	O					0.33
2.083	0.95	0.94	0.012	O					0.33
2.167	0.95	0.95	0.012	O					0.33
2.250	0.95	0.95	0.012	O					0.33
2.333	0.96	0.95	0.012	O					0.33
2.417	0.96	0.96	0.012	O					0.34
2.500	0.96	0.96	0.012	O					0.34
2.583	0.97	0.96	0.012	O					0.34
2.667	0.97	0.97	0.012	O					0.34
2.750	0.97	0.97	0.012	O					0.34
2.833	0.98	0.97	0.012	O					0.34
2.917	0.98	0.98	0.012	O					0.34
3.000	0.98	0.98	0.012	O					0.34
3.083	0.99	0.98	0.012	O					0.34
3.167	0.99	0.99	0.012	O					0.35
3.250	1.00	0.99	0.012	O					0.35
3.333	1.00	0.99	0.012	O					0.35
3.417	1.00	1.00	0.012	O					0.35
3.500	1.01	1.00	0.012	O					0.35
3.583	1.01	1.00	0.012	O					0.35
3.667	1.01	1.01	0.012	O					0.35
3.750	1.02	1.01	0.012	O					0.35
3.833	1.02	1.02	0.012	O					0.36
3.917	1.03	1.02	0.013	OI					0.36
4.000	1.03	1.02	0.013	IO					0.36
4.083	1.03	1.03	0.013	IO					0.36
4.167	1.04	1.03	0.013	IO					0.36
4.250	1.04	1.03	0.013	IO					0.36
4.333	1.05	1.04	0.013	IO					0.36
4.417	1.05	1.04	0.013	IO					0.37
4.500	1.05	1.05	0.013	IO					0.37
4.583	1.06	1.05	0.013	IO					0.37
4.667	1.06	1.06	0.013	IO					0.37
4.750	1.07	1.06	0.013	IO					0.37
4.833	1.07	1.06	0.013	IO					0.37
4.917	1.08	1.07	0.013	IO					0.37
5.000	1.08	1.07	0.013	IO					0.38
5.083	1.09	1.08	0.013	IO					0.38
5.167	1.09	1.08	0.013	IO					0.38
5.250	1.09	1.09	0.013	IO					0.38
5.333	1.10	1.09	0.013	IO					0.38
5.417	1.10	1.10	0.013	IO					0.38
5.500	1.11	1.10	0.014	IO					0.39
5.583	1.11	1.11	0.014	IO					0.39
5.667	1.12	1.11	0.014	IO					0.39
5.750	1.12	1.12	0.014	IO					0.39
5.833	1.13	1.12	0.014	IO					0.39
5.917	1.13	1.13	0.014	IO					0.39
6.000	1.14	1.13	0.014	IO					0.40
6.083	1.14	1.14	0.014	IO					0.40
6.167	1.15	1.14	0.014	IO					0.40
6.250	1.16	1.15	0.014	IO					0.40
6.333	1.16	1.15	0.014	IO					0.40

6.417	1.17	1.16	0.014	IO					0.41
6.500	1.17	1.16	0.014	IO					0.41
6.583	1.18	1.17	0.014	IO					0.41
6.667	1.18	1.17	0.014	IO					0.41
6.750	1.19	1.18	0.014	IO					0.41
6.833	1.20	1.19	0.015	IO					0.42
6.917	1.20	1.19	0.015	IO					0.42
7.000	1.21	1.20	0.015	IO					0.42
7.083	1.21	1.20	0.015	IO					0.42
7.167	1.22	1.21	0.015	IO					0.42
7.250	1.23	1.22	0.015	IO					0.43
7.333	1.23	1.22	0.015	IO					0.43
7.417	1.24	1.23	0.015	IO					0.43
7.500	1.25	1.24	0.015	IO					0.43
7.583	1.25	1.24	0.015	IO					0.44
7.667	1.26	1.25	0.015	IO					0.44
7.750	1.27	1.26	0.015	IO					0.44
7.833	1.27	1.26	0.015	IO					0.44
7.917	1.28	1.27	0.016	IO					0.45
8.000	1.29	1.28	0.016	IO					0.45
8.083	1.30	1.28	0.016	IO					0.45
8.167	1.30	1.29	0.016	IO					0.45
8.250	1.31	1.30	0.016	IO					0.46
8.333	1.32	1.31	0.016	IO					0.46
8.417	1.33	1.31	0.016	IO					0.46
8.500	1.34	1.32	0.016	IO					0.46
8.583	1.34	1.33	0.016	IO					0.47
8.667	1.35	1.34	0.016	IO					0.47
8.750	1.36	1.35	0.017	IO					0.47
8.833	1.37	1.35	0.017	IO					0.48
8.917	1.38	1.36	0.017	IO					0.48
9.000	1.39	1.37	0.017	IO					0.48
9.083	1.40	1.38	0.017	IO					0.48
9.167	1.41	1.39	0.017	IO					0.49
9.250	1.42	1.40	0.017	IO					0.49
9.333	1.43	1.41	0.017	IO					0.49
9.417	1.44	1.42	0.017	IO					0.50
9.500	1.45	1.43	0.018	IO					0.50
9.583	1.46	1.44	0.018	IO					0.50
9.667	1.47	1.45	0.018	IO					0.51
9.750	1.48	1.46	0.018	IO					0.51
9.833	1.49	1.47	0.018	IO					0.52
9.917	1.50	1.48	0.018	IO					0.52
10.000	1.51	1.49	0.018	IO					0.52
10.083	1.52	1.50	0.018	IO					0.53
10.167	1.53	1.51	0.019	IO					0.53
10.250	1.55	1.52	0.019	IO					0.53
10.333	1.56	1.54	0.019	IO					0.54
10.417	1.57	1.55	0.019	IO					0.54
10.500	1.58	1.56	0.019	IO					0.55
10.583	1.60	1.57	0.019	IO					0.55
10.667	1.61	1.59	0.019	IO					0.56
10.750	1.62	1.60	0.020	IO					0.56
10.833	1.64	1.61	0.020	IO					0.57
10.917	1.65	1.63	0.020	IO					0.57
11.000	1.67	1.64	0.020	IO					0.58
11.083	1.68	1.66	0.020	IO					0.58
11.167	1.70	1.67	0.021	IO					0.59
11.250	1.72	1.69	0.021	IO					0.59

11.333	1.73	1.70	0.021	O					0.60
11.417	1.75	1.72	0.021	O					0.60
11.500	1.77	1.74	0.021	O					0.61
11.583	1.78	1.75	0.022	O					0.62
11.667	1.80	1.77	0.022	O					0.62
11.750	1.82	1.79	0.022	O					0.63
11.833	1.84	1.81	0.022	O					0.63
11.917	1.86	1.83	0.022	O					0.64
12.000	1.88	1.85	0.023	O					0.65
12.083	1.93	1.87	0.023	O					0.66
12.167	2.11	1.94	0.024	OI					0.68
12.250	2.24	2.04	0.025	OI					0.72
12.333	2.29	2.14	0.026	O					0.75
12.417	2.32	2.21	0.027	O					0.78
12.500	2.35	2.27	0.028	O					0.80
12.583	2.38	2.31	0.028	O					0.81
12.667	2.40	2.34	0.029	O					0.82
12.750	2.43	2.38	0.029	O					0.83
12.833	2.46	2.41	0.030	O					0.84
12.917	2.49	2.44	0.030	O					0.86
13.000	2.52	2.47	0.030	O					0.87
13.083	2.56	2.50	0.031	O					0.88
13.167	2.59	2.53	0.031	O					0.89
13.250	2.63	2.57	0.032	O					0.90
13.333	2.67	2.60	0.032	O					0.91
13.417	2.70	2.64	0.032	O					0.93
13.500	2.75	2.68	0.033	O					0.94
13.583	2.79	2.72	0.033	O					0.95
13.667	2.83	2.76	0.034	O					0.97
13.750	2.88	2.80	0.034	O					0.98
13.833	2.93	2.85	0.035	O					1.00
13.917	2.98	2.88	0.036	O					1.01
14.000	3.04	2.93	0.036	O					1.02
14.083	3.09	2.97	0.037	OI					1.04
14.167	3.16	3.02	0.038	OI					1.06
14.250	3.22	3.08	0.039	O					1.07
14.333	3.30	3.14	0.040	O					1.09
14.417	3.37	3.21	0.041	O					1.11
14.500	3.45	3.28	0.042	O					1.14
14.583	3.54	3.35	0.044	O					1.16
14.667	3.63	3.43	0.045	O					1.19
14.750	3.73	3.51	0.046	O					1.21
14.833	3.85	3.61	0.048	O					1.24
14.917	3.97	3.71	0.050	O					1.28
15.000	4.11	3.82	0.052	OI					1.31
15.083	4.25	3.94	0.054	OI					1.35
15.167	4.42	4.07	0.056	OI					1.39
15.250	4.61	4.22	0.058	O					1.44
15.333	4.83	4.39	0.061	O					1.49
15.417	4.97	4.56	0.064	O					1.55
15.500	4.73	4.66	0.066	O					1.58
15.583	4.66	4.67	0.066	O					1.59
15.667	5.03	4.73	0.067	O					1.60
15.750	5.56	4.92	0.070	OI					1.67
15.833	6.43	5.28	0.076	OI					1.78
15.917	7.73	5.89	0.087	O I					1.98
16.000	10.41	6.78	0.106	O I					2.24
16.083	17.52	8.78	0.148	O	I				2.84
16.167	32.71	12.65	0.247	O	I			I	3.93

16.250	25.30	14.95	0.352				O		I		4.85
16.333	11.12	15.58	0.372				I	O			5.02
16.417	6.67	14.49	0.330			I		O			4.66
16.500	5.29	13.35	0.275			I		O			4.19
16.583	4.99	11.78	0.224			I		O			3.69
16.667	4.60	10.16	0.182			I		O			3.23
16.750	4.26	8.74	0.147			I		O			2.82
16.833	3.97	7.45	0.120			I		O			2.44
16.917	3.74	6.45	0.099			I		O			2.15
17.000	3.54	5.61	0.082			I		O			1.89
17.083	3.37	4.89	0.070			IO					1.65
17.167	3.22	4.35	0.061			IO					1.48
17.250	3.09	3.95	0.054			O					1.35
17.333	2.98	3.64	0.049			IO					1.26
17.417	2.88	3.40	0.044			IO					1.18
17.500	2.79	3.21	0.041			IO					1.12
17.583	2.70	3.05	0.038			O					1.07
17.667	2.63	2.92	0.036			O					1.02
17.750	2.56	2.80	0.034			O					0.98
17.833	2.49	2.68	0.033			O					0.94
17.917	2.43	2.58	0.032			O					0.91
18.000	2.37	2.50	0.031			O					0.88
18.083	2.29	2.43	0.030			O					0.85
18.167	2.09	2.33	0.029			O					0.82
18.250	1.93	2.19	0.027			IO					0.77
18.333	1.87	2.06	0.025			IO					0.72
18.417	1.82	1.97	0.024			O					0.69
18.500	1.78	1.89	0.023			O					0.66
18.583	1.75	1.84	0.023			O					0.64
18.667	1.71	1.79	0.022			O					0.63
18.750	1.68	1.75	0.021			O					0.61
18.833	1.65	1.71	0.021			O					0.60
18.917	1.62	1.68	0.021			O					0.59
19.000	1.60	1.65	0.020			O					0.58
19.083	1.57	1.62	0.020			O					0.57
19.167	1.54	1.59	0.020			O					0.56
19.250	1.52	1.57	0.019			O					0.55
19.333	1.50	1.54	0.019			O					0.54
19.417	1.48	1.52	0.019			O					0.53
19.500	1.45	1.49	0.018			O					0.52
19.583	1.43	1.47	0.018			O					0.52
19.667	1.41	1.45	0.018			O					0.51
19.750	1.40	1.43	0.018			O					0.50
19.833	1.38	1.41	0.017			O					0.50
19.917	1.36	1.39	0.017			O					0.49
20.000	1.34	1.38	0.017			O					0.48
20.083	1.33	1.36	0.017			O					0.48
20.167	1.31	1.34	0.016			O					0.47
20.250	1.30	1.32	0.016			O					0.46
20.333	1.28	1.31	0.016			O					0.46
20.417	1.27	1.29	0.016			O					0.45
20.500	1.25	1.28	0.016			O					0.45
20.583	1.24	1.26	0.016			O					0.44
20.667	1.23	1.25	0.015			O					0.44
20.750	1.21	1.24	0.015			O					0.43
20.833	1.20	1.22	0.015			O					0.43
20.917	1.19	1.21	0.015			O					0.43
21.000	1.18	1.20	0.015			O					0.42
21.083	1.17	1.19	0.015			O					0.42

21.167	1.16	1.18	0.014	IO					0.41
21.250	1.14	1.16	0.014	IO					0.41
21.333	1.13	1.15	0.014	IO					0.40
21.417	1.12	1.14	0.014	IO					0.40
21.500	1.11	1.13	0.014	IO					0.40
21.583	1.10	1.12	0.014	IO					0.39
21.667	1.09	1.11	0.014	IO					0.39
21.750	1.08	1.10	0.014	IO					0.39
21.833	1.08	1.09	0.013	IO					0.38
21.917	1.07	1.08	0.013	IO					0.38
22.000	1.06	1.07	0.013	IO					0.38
22.083	1.05	1.07	0.013	IO					0.37
22.167	1.04	1.06	0.013	IO					0.37
22.250	1.03	1.05	0.013	IO					0.37
22.333	1.03	1.04	0.013	IO					0.36
22.417	1.02	1.03	0.013	IO					0.36
22.500	1.01	1.02	0.013	IO					0.36
22.583	1.00	1.02	0.012	O					0.36
22.667	1.00	1.01	0.012	O					0.35
22.750	0.99	1.00	0.012	O					0.35
22.833	0.98	0.99	0.012	O					0.35
22.917	0.97	0.99	0.012	O					0.35
23.000	0.97	0.98	0.012	O					0.34
23.083	0.96	0.97	0.012	O					0.34
23.167	0.95	0.97	0.012	O					0.34
23.250	0.95	0.96	0.012	O					0.34
23.333	0.94	0.95	0.012	O					0.33
23.417	0.94	0.95	0.012	O					0.33
23.500	0.93	0.94	0.012	O					0.33
23.583	0.92	0.93	0.011	O					0.33
23.667	0.92	0.93	0.011	O					0.33
23.750	0.91	0.92	0.011	O					0.32
23.833	0.91	0.92	0.011	O					0.32
23.917	0.90	0.91	0.011	O					0.32
24.000	0.90	0.91	0.011	O					0.32
24.083	0.81	0.88	0.011	O					0.31
24.167	0.40	0.76	0.009	O					0.27
24.250	0.09	0.53	0.007	O					0.19
24.333	0.02	0.32	0.004	O					0.11
24.417	0.00	0.18	0.002	O					0.06
24.500	0.00	0.10	0.001	O					0.04
24.583	0.00	0.06	0.001	O					0.02
24.667	0.00	0.03	0.000	O					0.01
24.750	0.00	0.02	0.000	O					0.01
24.833	0.00	0.01	0.000	O					0.00
24.917	0.00	0.01	0.000	O					0.00
25.000	0.00	0.00	0.000	O					0.00
25.083	0.00	0.00	0.000	O					0.00

*****HYDROGRAPH DATA*****

Number of intervals = 301
 Time interval = 5.0 (Min.)
 Maximum/Peak flow rate = 15.584 (CFS)
 Total volume = 4.091 (Ac.Ft)
 Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	84.120	32.063	0.000	0.000
Vol (Ac.Ft)	0.000	44.904	9.054	0.000	0.000

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Process from Point/Station      11.000 to Point/Station      10.000
**** ADD/COMBINE/RECOVER HYDROGRAPHS ****

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From stored stream number 3 the total
volume of      9.05 (Ac.Ft) is being added to the
current hydrograph at its original rate from user
with a delay time to start of addition of      0.00 hours.
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          P R I N T   O F   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      5      Minute intervals (CFS)

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Time(h+m)	Add q(CFS)	Tot. Q	0	11.7	23.3	35.0	46.6
0+ 5	0.0219	0.04	Q				
0+10	0.1708	0.31	Q				
0+15	0.5537	0.91	Q				
0+20	1.0774	1.65	qQ				
0+25	1.5109	2.22	lQ				
0+30	1.7613	2.55	lqQ				
0+35	1.8821	2.72	lqQ				
0+40	1.9358	2.80	lqQ				
0+45	1.9647	2.84	lqQ				
0+50	1.9816	2.87	lqQ				
0+55	1.9908	2.89	lqQ				
1+ 0	1.9978	2.90	lqQ				
1+ 5	2.0042	2.91	lqQ				
1+10	2.0104	2.92	lqQ				
1+15	2.0167	2.93	lqQ				
1+20	2.0230	2.94	lqQ				
1+25	2.0293	2.95	lqQ				
1+30	2.0357	2.96	lqQ				
1+35	2.0422	2.97	lqQ				
1+40	2.0487	2.98	lqQ				
1+45	2.0553	2.99	lqQ				
1+50	2.0619	3.00	lqQ				
1+55	2.0686	3.01	lqQ				
2+ 0	2.0753	3.01	lqQ				
2+ 5	2.0822	3.02	lqQ				
2+10	2.0890	3.03	lqQ				
2+15	2.0960	3.04	lqQ				
2+20	2.1030	3.06	lqQ				
2+25	2.1100	3.07	lqQ				
2+30	2.1172	3.08	lqQ				
2+35	2.1244	3.09	lqQ				
2+40	2.1317	3.10	lqQ				
2+45	2.1390	3.11	lqQ				
2+50	2.1464	3.12	lqQ				
2+55	2.1539	3.13	lqQ				
3+ 0	2.1614	3.14	lqQ				
3+ 5	2.1691	3.15	lqQ				
3+10	2.1768	3.16	lqQ				

3+15	2.1846	3.17	qQ				
3+20	2.1924	3.19	qQ				
3+25	2.2004	3.20	qQ				
3+30	2.2084	3.21	qQ				
3+35	2.2165	3.22	qQ				
3+40	2.2247	3.23	qQ				
3+45	2.2329	3.24	qQ				
3+50	2.2413	3.26	qQ				
3+55	2.2497	3.27	qQ				
4+ 0	2.2583	3.28	qQ				
4+ 5	2.2669	3.29	qQ				
4+10	2.2756	3.31	qQ				
4+15	2.2844	3.32	qQ				
4+20	2.2933	3.33	qQ				
4+25	2.3023	3.35	qQ				
4+30	2.3114	3.36	qQ				
4+35	2.3206	3.37	qQ				
4+40	2.3299	3.39	qQ				
4+45	2.3393	3.40	Q				
4+50	2.3488	3.41	Q				
4+55	2.3585	3.43	Q				
5+ 0	2.3682	3.44	Q				
5+ 5	2.3780	3.46	Q				
5+10	2.3880	3.47	Q				
5+15	2.3981	3.48	Q				
5+20	2.4082	3.50	qQ				
5+25	2.4186	3.51	qQ				
5+30	2.4290	3.53	qQ				
5+35	2.4396	3.54	qQ				
5+40	2.4502	3.56	qQ				
5+45	2.4611	3.58	qQ				
5+50	2.4720	3.59	qQ				
5+55	2.4831	3.61	qQ				
6+ 0	2.4944	3.62	qQ				
6+ 5	2.5057	3.64	qQ				
6+10	2.5172	3.66	qQ				
6+15	2.5289	3.67	qQ				
6+20	2.5407	3.69	qQ				
6+25	2.5527	3.71	qQ				
6+30	2.5648	3.73	qQ				
6+35	2.5771	3.75	qQ				
6+40	2.5896	3.76	qQ				
6+45	2.6022	3.78	qQ				
6+50	2.6150	3.80	qQ				
6+55	2.6280	3.82	qQ				
7+ 0	2.6411	3.84	qQ				
7+ 5	2.6545	3.86	qQ				
7+10	2.6680	3.88	qQ				
7+15	2.6817	3.90	qQ				
7+20	2.6957	3.92	qQ				
7+25	2.7098	3.94	qQ				
7+30	2.7241	3.96	qQ				
7+35	2.7386	3.98	qQ				
7+40	2.7534	4.00	qQ				
7+45	2.7684	4.02	qQ				
7+50	2.7836	4.05	qQ				
7+55	2.7990	4.07	qQ				
8+ 0	2.8147	4.09	qQ				
8+ 5	2.8307	4.11	qQ				

8+10	2.8468	4.14		qQ					
8+15	2.8633	4.16		qQ					
8+20	2.8800	4.19		qQ					
8+25	2.8970	4.21		qQ					
8+30	2.9143	4.24		qQ					
8+35	2.9318	4.26		qQ					
8+40	2.9497	4.29		qQ					
8+45	2.9678	4.31		qQ					
8+50	2.9863	4.34		qQ					
8+55	3.0051	4.37		qQ					
9+ 0	3.0242	4.40		qQ					
9+ 5	3.0437	4.42		qQ					
9+10	3.0635	4.45		qQ					
9+15	3.0837	4.48		qQ					
9+20	3.1042	4.51		qQ					
9+25	3.1252	4.54		qQ					
9+30	3.1465	4.57		qQ					
9+35	3.1683	4.61		qQ					
9+40	3.1904	4.64		qQ					
9+45	3.2130	4.67		q Q					
9+50	3.2361	4.70		q Q					
9+55	3.2596	4.74		q Q					
10+ 0	3.2836	4.77		q Q					
10+ 5	3.3081	4.81		q Q					
10+10	3.3331	4.85		q Q					
10+15	3.3587	4.88		q Q					
10+20	3.3848	4.92		q Q					
10+25	3.4114	4.96		q Q					
10+30	3.4387	5.00		q Q					
10+35	3.4666	5.04		q Q					
10+40	3.4951	5.08		q Q					
10+45	3.5243	5.12		qQ					
10+50	3.5541	5.17		qQ					
10+55	3.5847	5.21		qQ					
11+ 0	3.6160	5.26		qQ					
11+ 5	3.6481	5.31		qQ					
11+10	3.6810	5.35		qQ					
11+15	3.7147	5.40		qQ					
11+20	3.7493	5.45		qQ					
11+25	3.7848	5.50		qQ					
11+30	3.8213	5.56		qQ					
11+35	3.8587	5.61		qQ					
11+40	3.8972	5.67		qQ					
11+45	3.9368	5.73		qQ					
11+50	3.9775	5.79		qQ					
11+55	4.0194	5.85		q Q					
12+ 0	4.0626	5.91		q Q					
12+ 5	4.1149	5.99		q Q					
12+10	4.2144	6.15		q Q					
12+15	4.3996	6.44		q Q					
12+20	4.6369	6.78		q Q					
12+25	4.8429	7.06		q Q					
12+30	4.9842	7.25		q Q					
12+35	5.0804	7.39		q Q					
12+40	5.1541	7.50		q Q					
12+45	5.2208	7.60		q Q					
12+50	5.2851	7.69		q Q					
12+55	5.3489	7.79		q Q					
13+ 0	5.4141	7.88		q Q					

13+ 5	5.4815	7.98		q Q					
13+10	5.5515	8.08		q Q					
13+15	5.6243	8.19		q Q					
13+20	5.7000	8.30		q Q					
13+25	5.7790	8.42		q Q					
13+30	5.8613	8.54		q Q					
13+35	5.9474	8.66		q Q					
13+40	6.0374	8.79		q Q					
13+45	6.1219	8.92		q Q					
13+50	6.1980	9.04		q Q					
13+55	6.2887	9.17		q Q					
14+ 0	6.3902	9.32		q Q					
14+ 5	6.5001	9.47		q Q					
14+10	6.6179	9.64		q Q					
14+15	6.7441	9.83		q Q					
14+20	6.8789	10.02		q Q					
14+25	7.0220	10.23		q Q					
14+30	7.1739	10.45		q Q					
14+35	7.3355	10.68		q Q					
14+40	7.5084	10.94		q Q					
14+45	7.6941	11.21		q Q					
14+50	7.8945	11.50		q Q					
14+55	8.1118	11.82		q Q					
15+ 0	8.3485	12.17		q Q					
15+ 5	8.6078	12.55		q Q					
15+10	8.8936	12.97		q Q					
15+15	9.2109	13.43		q Q					
15+20	9.5662	13.96		q Q					
15+25	9.9470	14.51		q Q					
15+30	10.2614	14.92		q Q					
15+35	10.4009	15.07		q Q					
15+40	10.4438	15.17		q Q					
15+45	10.6460	15.56		q Q					
15+50	11.2093	16.49		q Q					
15+55	12.2279	18.11		q Q					
16+ 0	13.9600	20.74		q Q					
16+ 5	17.6383	26.42		q Q					
16+10	22.7113	35.36		q Q					
16+15	27.7327	42.68		q Q					
16+20	31.0536	46.64		q Q					
16+25	32.0631	46.55		q Q					
16+30	31.3274	44.68		q Q					
16+35	29.6823	41.46		q Q					
16+40	27.4217	37.58		q Q					
16+45	24.6657	33.40		q Q					
16+50	21.4636	28.92		q Q					
16+55	17.8598	24.31		q Q					
17+ 0	13.6473	19.26		q Q					
17+ 5	10.9855	15.87		q Q					
17+10	9.2898	13.64		q Q					
17+15	8.2741	12.22		q Q					
17+20	7.6195	11.26		q Q					
17+25	7.1598	10.56		q Q					
17+30	6.8109	10.02		q Q					
17+35	6.5291	9.58		q Q					
17+40	6.2907	9.21		q Q					
17+45	6.0730	8.87		q Q					
17+50	5.8224	8.50		q Q					
17+55	5.6413	8.22		q Q					

18+ 0	5.4905	7.99	q Q				
18+ 5	5.3474	7.78	q Q				
18+10	5.1695	7.50	q Q				
18+15	4.9163	7.11	q Q				
18+20	4.6206	6.68	q Q				
18+25	4.3652	6.33	q Q				
18+30	4.1827	6.08	q Q				
18+35	4.0529	5.89	q Q				
18+40	3.9526	5.74	qQ				
18+45	3.8659	5.62	qQ				
18+50	3.7878	5.50	qQ				
18+55	3.7163	5.40	qQ				
19+ 0	3.6492	5.30	qQ				
19+ 5	3.5856	5.21	qQ				
19+10	3.5250	5.12	qQ				
19+15	3.4672	5.03	q Q				
19+20	3.4119	4.95	q Q				
19+25	3.3591	4.88	q Q				
19+30	3.3084	4.80	q Q				
19+35	3.2599	4.73	q Q				
19+40	3.2132	4.66	q Q				
19+45	3.1684	4.60	qQ				
19+50	3.1253	4.54	qQ				
19+55	3.0837	4.48	qQ				
20+ 0	3.0437	4.42	qQ				
20+ 5	3.0051	4.36	qQ				
20+10	2.9678	4.31	qQ				
20+15	2.9317	4.26	qQ				
20+20	2.8969	4.21	qQ				
20+25	2.8632	4.16	qQ				
20+30	2.8305	4.11	qQ				
20+35	2.7989	4.06	qQ				
20+40	2.7682	4.02	qQ				
20+45	2.7385	3.98	qQ				
20+50	2.7096	3.93	qQ				
20+55	2.6815	3.89	qQ				
21+ 0	2.6543	3.85	qQ				
21+ 5	2.6278	3.82	qQ				
21+10	2.6020	3.78	qQ				
21+15	2.5769	3.74	qQ				
21+20	2.5525	3.71	qQ				
21+25	2.5287	3.67	qQ				
21+30	2.5055	3.64	qQ				
21+35	2.4829	3.60	qQ				
21+40	2.4608	3.57	qQ				
21+45	2.4393	3.54	qQ				
21+50	2.4183	3.51	qQ				
21+55	2.3978	3.48	Q				
22+ 0	2.3778	3.45	Q				
22+ 5	2.3582	3.42	Q				
22+10	2.3391	3.40	Q				
22+15	2.3204	3.37	qQ				
22+20	2.3021	3.34	qQ				
22+25	2.2842	3.32	qQ				
22+30	2.2666	3.29	qQ				
22+35	2.2495	3.27	qQ				
22+40	2.2327	3.24	qQ				
22+45	2.2162	3.22	qQ				
22+50	2.2001	3.19	qQ				

22+55	2.1843	3.17	lqQ				
23+ 0	2.1688	3.15	lqQ				
23+ 5	2.1536	3.13	lqQ				
23+10	2.1387	3.10	lqQ				
23+15	2.1241	3.08	lqQ				
23+20	2.1098	3.06	lqQ				
23+25	2.0957	3.04	lqQ				
23+30	2.0819	3.02	lqQ				
23+35	2.0683	3.00	lqQ				
23+40	2.0550	2.98	lqQ				
23+45	2.0419	2.96	lqQ				
23+50	2.0291	2.95	lqQ				
23+55	2.0164	2.93	lqQ				
24+ 0	2.0040	2.91	lqQ				
24+ 5	1.9699	2.85	lqQ				
24+10	1.8095	2.57	lqQ				
24+15	1.4169	1.95	lQ				
24+20	0.8872	1.21	qQ				
24+25	0.4522	0.64	Q				
24+30	0.2039	0.31	Q				
24+35	0.0873	0.15	Q				
24+40	0.0388	0.07	Q				
24+45	0.0155	0.03	Q				
24+50	0.0044	0.01	Q				
24+55	0.0000	0.01	Q				
25+ 0	0.0000	0.00	Q				
25+ 5	0.0000	0.00	Q				

*****HYDROGRAPH DATA*****

Number of intervals = 301
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 46.638 (CFS)
Total volume = 13.145 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	84.120	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	44.904	0.000	0.000	0.000

+++++

Process from Point/Station 10.000 to Point/Station 12.000

**** STREAM ROUTING SCS CONVEX METHOD ****

HYDROGRAPH STREAM ROUTING DATA:

Length of stream = 478.00 (Ft.)
Elevation difference = 4.70 (Ft.)
Slope of channel = 0.009833 (Vert/Horiz)
Channel type - Pipe

Pipe length = 478.00 (Ft.) Elevation difference = 4.70 (Ft.)
Manning's N = 0.013 No. of pipes = 1
Pipe evaluation using mean flow rate of hydrograph
Required pipe flow = 7.158 (CFS)
Nearest computed pipe diameter = 18.00 (In.)
Calculated individual pipe flow = 7.158 (CFS)

Normal flow depth in pipe = 10.97(In.)
 Flow top width inside pipe = 17.56(In.)
 Critical Depth = 1.04(Ft.)
 Pipe flow velocity = 6.35(Ft/s)
 Travel time through pipe = 1.25 min.

Pipe length = 478.00(Ft.) Elevation difference = 4.70(Ft.)
 Manning's N = 0.013 No. of pipes = 1
 Pipe evaluation using maximum flow rate of hydrograph
 Required pipe flow = 46.638(CFS)
 Nearest computed pipe diameter = 33.00(In.)
 Calculated individual pipe flow = 46.638(CFS)
 Normal flow depth in pipe = 24.23(In.)
 Flow top width inside pipe = 29.15(In.)
 Critical Depth = 2.26(Ft.)
 Pipe flow velocity = 9.98(Ft/s)
 Travel time through pipe = 0.80 min.

***** SCS CONVEX CHANNEL ROUTING *****

Convex method of stream routing data items:

Using equation: Outflow =

$O(t+dt) = (1-c^*)O(t+dt-dt^*) + \text{Input}(c^*)$

where $c^* = 1 - (1-c)^e$ and $dt = c(\text{length})/\text{velocity}$

$c(v/v+1.7) = 0.8544$ Travel time = 0.80 (min.)

$dt^*(\text{unit time interval}) = 5.00(\text{min.}), e = 5.2190$

$dt(\text{routing time-step}) = 0.68 (\text{min.}), c^* = 1.0000$

Output hydrograph delayed by 0 unit time increments

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PRINT OF STORM
 Runoff Hydrograph

 Hydrograph in 5 Minute intervals (CFS)

Time(h+m)	Out = O(CFS)	In = I	0	11.7	23.3	35.0	46.6
0+ 5	0.0343	0.04	O				
0+10	0.2697	0.31	O				
0+15	0.8296	0.91	O				
0+20	1.5450	1.65	O				
0+25	2.1378	2.22	O				
0+30	2.5025	2.55	O				
0+35	2.6929	2.72	O				
0+40	2.7861	2.80	O				
0+45	2.8367	2.84	O				
0+50	2.8667	2.87	O				
0+55	2.8846	2.89	O				
1+ 0	2.8974	2.90	O				
1+ 5	2.9081	2.91	O				
1+10	2.9181	2.92	O				
1+15	2.9277	2.93	O				
1+20	2.9371	2.94	O				
1+25	2.9465	2.95	O				
1+30	2.9559	2.96	O				

1+35	2.9653	2.97	O				
1+40	2.9748	2.98	O				
1+45	2.9844	2.99	O				
1+50	2.9940	3.00	O				
1+55	3.0037	3.01	O				
2+ 0	3.0135	3.01	O				
2+ 5	3.0234	3.02	O				
2+10	3.0334	3.03	O				
2+15	3.0435	3.04	O				
2+20	3.0537	3.06	O				
2+25	3.0640	3.07	O				
2+30	3.0743	3.08	O				
2+35	3.0848	3.09	O				
2+40	3.0954	3.10	O				
2+45	3.1061	3.11	O				
2+50	3.1168	3.12	O				
2+55	3.1277	3.13	O				
3+ 0	3.1387	3.14	O				
3+ 5	3.1498	3.15	O				
3+10	3.1610	3.16	O				
3+15	3.1723	3.17	O				
3+20	3.1837	3.19	O				
3+25	3.1952	3.20	O				
3+30	3.2069	3.21	O				
3+35	3.2187	3.22	O				
3+40	3.2306	3.23	O				
3+45	3.2426	3.24	O				
3+50	3.2547	3.26	O				
3+55	3.2670	3.27	O				
4+ 0	3.2794	3.28	O				
4+ 5	3.2919	3.29	O				
4+10	3.3046	3.31	O				
4+15	3.3174	3.32	O				
4+20	3.3303	3.33	O				
4+25	3.3434	3.35	O				
4+30	3.3566	3.36	O				
4+35	3.3700	3.37	O				
4+40	3.3835	3.39	O				
4+45	3.3971	3.40	O				
4+50	3.4110	3.41	O				
4+55	3.4249	3.43	O				
5+ 0	3.4391	3.44	O				
5+ 5	3.4534	3.46	O				
5+10	3.4678	3.47	O				
5+15	3.4825	3.48	O				
5+20	3.4973	3.50	OI				
5+25	3.5123	3.51	O				
5+30	3.5274	3.53	O				
5+35	3.5428	3.54	O				
5+40	3.5583	3.56	O				
5+45	3.5741	3.58	O				
5+50	3.5900	3.59	O				
5+55	3.6061	3.61	O				
6+ 0	3.6224	3.62	O				
6+ 5	3.6389	3.64	O				
6+10	3.6557	3.66	O				
6+15	3.6726	3.67	O				
6+20	3.6898	3.69	O				
6+25	3.7072	3.71	O				

6+30	3.7248	3.73		O					
6+35	3.7427	3.75		O					
6+40	3.7608	3.76		O					
6+45	3.7791	3.78		O					
6+50	3.7977	3.80		O					
6+55	3.8166	3.82		O					
7+ 0	3.8357	3.84		O					
7+ 5	3.8551	3.86		O					
7+10	3.8747	3.88		O					
7+15	3.8947	3.90		O					
7+20	3.9149	3.92		O					
7+25	3.9354	3.94		O					
7+30	3.9563	3.96		O					
7+35	3.9774	3.98		O					
7+40	3.9988	4.00		O					
7+45	4.0206	4.02		O					
7+50	4.0427	4.05		O					
7+55	4.0651	4.07		O					
8+ 0	4.0879	4.09		O					
8+ 5	4.1111	4.11		O					
8+10	4.1346	4.14		O					
8+15	4.1585	4.16		O					
8+20	4.1828	4.19		O					
8+25	4.2075	4.21		O					
8+30	4.2325	4.24		O					
8+35	4.2581	4.26		O					
8+40	4.2840	4.29		O					
8+45	4.3104	4.31		O					
8+50	4.3372	4.34		O					
8+55	4.3645	4.37		O					
9+ 0	4.3923	4.40		O					
9+ 5	4.4206	4.42		O					
9+10	4.4494	4.45		O					
9+15	4.4787	4.48		O					
9+20	4.5086	4.51		O					
9+25	4.5390	4.54		O					
9+30	4.5700	4.57		O					
9+35	4.6016	4.61		O					
9+40	4.6338	4.64		O					
9+45	4.6667	4.67		O					
9+50	4.7002	4.70		O					
9+55	4.7343	4.74		O					
10+ 0	4.7692	4.77		O					
10+ 5	4.8048	4.81		O					
10+10	4.8411	4.85		O					
10+15	4.8783	4.88		O					
10+20	4.9162	4.92		O					
10+25	4.9549	4.96		O					
10+30	4.9945	5.00		O					
10+35	5.0350	5.04		O					
10+40	5.0764	5.08		O					
10+45	5.1188	5.12		O					
10+50	5.1622	5.17		O					
10+55	5.2066	5.21		O					
11+ 0	5.2521	5.26		O					
11+ 5	5.2987	5.31		O					
11+10	5.3465	5.35		O					
11+15	5.3955	5.40		O					
11+20	5.4458	5.45		O					

11+25	5.4973	5.50		O					
11+30	5.5503	5.56		O					
11+35	5.6047	5.61		O					
11+40	5.6606	5.67		O					
11+45	5.7181	5.73		O					
11+50	5.7773	5.79		O					
11+55	5.8381	5.85		O					
12+ 0	5.9008	5.91		O					
12+ 5	5.9779	5.99		O					
12+10	6.1301	6.15		O					
12+15	6.4021	6.44		O					
12+20	6.7321	6.78		O					
12+25	7.0191	7.06		O					
12+30	7.2255	7.25		O					
12+35	7.3711	7.39		O					
12+40	7.4839	7.50		O					
12+45	7.5840	7.60		O					
12+50	7.6795	7.69		O					
12+55	7.7738	7.79		O					
13+ 0	7.8695	7.88		O					
13+ 5	7.9681	7.98		O					
13+10	8.0701	8.08		O					
13+15	8.1759	8.19		O					
13+20	8.2861	8.30		O					
13+25	8.4008	8.42		O					
13+30	8.5204	8.54		O					
13+35	8.6454	8.66		O					
13+40	8.7761	8.79		O					
13+45	8.9046	8.92		O					
13+50	9.0273	9.04		O					
13+55	9.1549	9.17		O					
14+ 0	9.2965	9.32		O					
14+ 5	9.4518	9.47		O					
14+10	9.6197	9.64		O					
14+15	9.8004	9.83		O					
14+20	9.9938	10.02		O					
14+25	10.1997	10.23		O					
14+30	10.4189	10.45		O					
14+35	10.6527	10.68		O					
14+40	10.9029	10.94		O					
14+45	11.1719	11.21		O					
14+50	11.4622	11.50		O					
14+55	11.7769	11.82		O					
15+ 0	12.1199	12.17		O					
15+ 5	12.4955	12.55		O					
15+10	12.9097	12.97		O					
15+15	13.3694	13.43		O					
15+20	13.8842	13.96		O					
15+25	14.4323	14.51		O					
15+30	14.8631	14.92		O					
15+35	15.0516	15.07		O					
15+40	15.1599	15.17		O					
15+45	15.5111	15.56		O					
15+50	16.3626	16.49		O					
15+55	17.8914	18.11		O					
16+ 0	20.3842	20.74		O					
16+ 5	25.6417	26.42				OI			
16+10	34.1393	35.36					OI		
16+15	41.6807	42.68						OI	

[illegible]

21+15	3.7461	3.74		O				
21+20	3.7105	3.71		O				
21+25	3.6759	3.67		O				
21+30	3.6421	3.64		O				
21+35	3.6091	3.60		O				
21+40	3.5770	3.57		O				
21+45	3.5457	3.54		O				
21+50	3.5151	3.51		O				
21+55	3.4852	3.48		O				
22+ 0	3.4560	3.45		O				
22+ 5	3.4275	3.42		O				
22+10	3.3996	3.40		O				
22+15	3.3724	3.37		O				
22+20	3.3457	3.34		O				
22+25	3.3197	3.32		O				
22+30	3.2941	3.29		O				
22+35	3.2692	3.27		O				
22+40	3.2447	3.24		O				
22+45	3.2207	3.22		O				
22+50	3.1973	3.19		O				
22+55	3.1743	3.17		O				
23+ 0	3.1517	3.15		O				
23+ 5	3.1296	3.13		O				
23+10	3.1079	3.10		O				
23+15	3.0866	3.08		O				
23+20	3.0658	3.06		O				
23+25	3.0453	3.04		O				
23+30	3.0252	3.02		O				
23+35	3.0054	3.00		O				
23+40	2.9860	2.98		O				
23+45	2.9670	2.96		O				
23+50	2.9482	2.95		O				
23+55	2.9298	2.93		O				
24+ 0	2.9118	2.91		O				
24+ 5	2.8597	2.85		O				
24+10	2.6076	2.57		O				
24+15	2.0337	1.95		O				
24+20	1.3097	1.21		O				
24+25	0.7146	0.64		O				
24+30	0.3524	0.31		O				
24+35	0.1676	0.15		O				
24+40	0.0816	0.07		O				
24+45	0.0390	0.03		O				
24+50	0.0174	0.01		O				
24+55	0.0070	0.01		O				
25+ 0	0.0036	0.00		O				
25+ 5	0.0020	0.00		O				
25+10	0.0000	0.00		O				

*****HYDROGRAPH DATA*****

Number of intervals = 302

Time interval = 5.0 (Min.)

Maximum/Peak flow rate = 46.563 (CFS)

Total volume = 13.145 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	84.120	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	44.904	0.000	0.000	0.000

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Process from Point/Station      10.000 to Point/Station      12.000
**** STORE OR DELETE CURRENT HYDROGRAPH ****

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Current stream hydrograph of   5.0 minute
intervals has been stored as stream number 4 with
a starting time of   0.00 hours and ending time of  36.00 hours
With a total volume of      13.15 (Ac.Ft)
*****HYDROGRAPH DATA*****
      Number of intervals =      0
      Time interval =      0.0 (Min.)
      Maximum/Peak flow rate =      0.000 (CFS)
      Total volume =      0.000 (Ac.Ft)
      Status of hydrographs being held in storage
                Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
      Peak (CFS)      0.000      84.120      0.000      46.563      0.000
      Vol (Ac.Ft)      0.000      44.904      0.000      13.145      0.000
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Process from Point/Station      13.000 to Point/Station      12.000
**** ADD/COMBINE/RECOVER HYDROGRAPHS ****

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***** HYDROGRAPH INFORMATION *****

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      From study/file name: blbrue100.rte
+++++++
      P R I N T   O F   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 5 Minute intervals (CFS)

Time(h+m)	Add q(CFS)	Tot. Q	0	9.2	18.5	27.7	37.0
0+ 5	0.0954	0.10	Q				
0+10	0.5678	0.57	Q				
0+15	0.9085	0.91	Q				
0+20	0.9820	0.98	IQ				
0+25	1.0017	1.00	IQ				
0+30	1.0048	1.00	IQ				
0+35	1.0077	1.01	IQ				
0+40	1.0108	1.01	IQ				
0+45	1.0138	1.01	IQ				
0+50	1.0170	1.02	IQ				
0+55	1.0201	1.02	IQ				
1+ 0	1.0233	1.02	IQ				
1+ 5	1.0264	1.03	IQ				
1+10	1.0297	1.03	IQ				
1+15	1.0329	1.03	IQ				
1+20	1.0362	1.04	IQ				
1+25	1.0394	1.04	IQ				

1+30	1.0429	1.04	IQ				
1+35	1.0461	1.05	IQ				
1+40	1.0496	1.05	IQ				
1+45	1.0529	1.05	IQ				
1+50	1.0565	1.06	IQ				
1+55	1.0598	1.06	IQ				
2+ 0	1.0635	1.06	IQ				
2+ 5	1.0669	1.07	IQ				
2+10	1.0706	1.07	IQ				
2+15	1.0741	1.07	IQ				
2+20	1.0779	1.08	IQ				
2+25	1.0814	1.08	IQ				
2+30	1.0852	1.09	IQ				
2+35	1.0889	1.09	IQ				
2+40	1.0928	1.09	IQ				
2+45	1.0965	1.10	IQ				
2+50	1.1005	1.10	IQ				
2+55	1.1042	1.10	IQ				
3+ 0	1.1083	1.11	IQ				
3+ 5	1.1122	1.11	IQ				
3+10	1.1163	1.12	IQ				
3+15	1.1202	1.12	IQ				
3+20	1.1245	1.12	IQ				
3+25	1.1285	1.13	IQ				
3+30	1.1328	1.13	IQ				
3+35	1.1369	1.14	IQ				
3+40	1.1413	1.14	IQ				
3+45	1.1455	1.15	IQ				
3+50	1.1499	1.15	IQ				
3+55	1.1542	1.15	IQ				
4+ 0	1.1588	1.16	IQ				
4+ 5	1.1632	1.16	IQ				
4+10	1.1679	1.17	IQ				
4+15	1.1723	1.17	IQ				
4+20	1.1771	1.18	IQ				
4+25	1.1817	1.18	IQ				
4+30	1.1866	1.19	IQ				
4+35	1.1912	1.19	IQ				
4+40	1.1962	1.20	IQ				
4+45	1.2010	1.20	IQ				
4+50	1.2061	1.21	IQ				
4+55	1.2110	1.21	IQ				
5+ 0	1.2162	1.22	IQ				
5+ 5	1.2212	1.22	IQ				
5+10	1.2266	1.23	IQ				
5+15	1.2317	1.23	IQ				
5+20	1.2372	1.24	IQ				
5+25	1.2424	1.24	IQ				
5+30	1.2481	1.25	IQ				
5+35	1.2534	1.25	IQ				
5+40	1.2592	1.26	IQ				
5+45	1.2647	1.26	IQ				
5+50	1.2706	1.27	IQ				
5+55	1.2762	1.28	IQ				
6+ 0	1.2823	1.28	IQ				
6+ 5	1.2881	1.29	IQ				
6+10	1.2943	1.29	IQ				
6+15	1.3003	1.30	IQ				
6+20	1.3067	1.31	IQ				

6+25	1.3127	1.31	IQ				
6+30	1.3193	1.32	IQ				
6+35	1.3256	1.33	IQ				
6+40	1.3323	1.33	IQ				
6+45	1.3387	1.34	IQ				
6+50	1.3457	1.35	IQ				
6+55	1.3523	1.35	IQ				
7+ 0	1.3594	1.36	IQ				
7+ 5	1.3662	1.37	IQ				
7+10	1.3735	1.37	IQ				
7+15	1.3805	1.38	IQ				
7+20	1.3881	1.39	IQ				
7+25	1.3953	1.40	IQ				
7+30	1.4031	1.40	IQ				
7+35	1.4105	1.41	IQ				
7+40	1.4185	1.42	IQ				
7+45	1.4262	1.43	IQ				
7+50	1.4344	1.43	IQ				
7+55	1.4423	1.44	IQ				
8+ 0	1.4509	1.45	IQ				
8+ 5	1.4590	1.46	IQ				
8+10	1.4678	1.47	IQ				
8+15	1.4762	1.48	IQ				
8+20	1.4854	1.49	IQ				
8+25	1.4940	1.49	IQ				
8+30	1.5035	1.50	IQ				
8+35	1.5125	1.51	IQ				
8+40	1.5222	1.52	IQ				
8+45	1.5315	1.53	IQ				
8+50	1.5416	1.54	IQ				
8+55	1.5512	1.55	IQ				
9+ 0	1.5617	1.56	IQ				
9+ 5	1.5717	1.57	IQ				
9+10	1.5825	1.58	IQ				
9+15	1.5929	1.59	IQ				
9+20	1.6042	1.60	IQ				
9+25	1.6149	1.61	IQ				
9+30	1.6266	1.63	IQ				
9+35	1.6378	1.64	IQ				
9+40	1.6500	1.65	IQ				
9+45	1.6617	1.66	IQ				
9+50	1.6743	1.67	IQ				
9+55	1.6865	1.69	IQ				
10+ 0	1.6997	1.70	IQ				
10+ 5	1.7123	1.71	IQ				
10+10	1.7261	1.73	IQ				
10+15	1.7393	1.74	IQ				
10+20	1.7537	1.75	IQ				
10+25	1.7675	1.77	IQ				
10+30	1.7826	1.78	IQ				
10+35	1.7970	1.80	IQ				
10+40	1.8128	1.81	IQ				
10+45	1.8279	1.83	IQ				
10+50	1.8444	1.84	IQ				
10+55	1.8603	1.86	IQ				
11+ 0	1.8777	1.88	IQ				
11+ 5	1.8944	1.89	IQ				
11+10	1.9127	1.91	IQ				
11+15	1.9303	1.93	IQ				

11+20	1.9495	1.95	Q				
11+25	1.9681	1.97	Q				
11+30	1.9884	1.99	Q				
11+35	2.0080	2.01	Q				
11+40	2.0295	2.03	Q				
11+45	2.0502	2.05	Q				
11+50	2.0730	2.07	Q				
11+55	2.0951	2.10	Q				
12+ 0	2.1193	2.12	Q				
12+ 5	2.1779	2.18	Q				
12+10	2.3776	2.38	Q				
12+15	2.5278	2.53	Q				
12+20	2.5818	2.58	Q				
12+25	2.6150	2.61	Q				
12+30	2.6448	2.64	Q				
12+35	2.6738	2.67	Q				
12+40	2.7057	2.71	Q				
12+45	2.7367	2.74	Q				
12+50	2.7711	2.77	Q				
12+55	2.8044	2.80	Q				
13+ 0	2.8414	2.84	Q				
13+ 5	2.8775	2.88	Q				
13+10	2.9175	2.92	Q				
13+15	2.9566	2.96	Q				
13+20	3.0002	3.00	Q				
13+25	3.0427	3.04	Q				
13+30	3.0903	3.09	Q				
13+35	3.1370	3.14	Q				
13+40	3.1893	3.19	Q				
13+45	3.2407	3.24	Q				
13+50	3.2985	3.30	Q				
13+55	3.3555	3.36	Q				
14+ 0	3.4200	3.42	Q				
14+ 5	3.4839	3.48	Q				
14+10	3.5574	3.56	Q				
14+15	3.6301	3.63	Q				
14+20	3.7124	3.71	Q				
14+25	3.7944	3.79	Q				
14+30	3.8887	3.89	Q				
14+35	3.9834	3.98	Q				
14+40	4.0932	4.09	Q				
14+45	4.2043	4.20	Q				
14+50	4.3344	4.33	Q				
14+55	4.4672	4.47	Q				
15+ 0	4.6248	4.62	Q				
15+ 5	4.7875	4.79	Q				
15+10	4.9839	4.98	Q				
15+15	5.1900	5.19	Q				
15+20	5.4444	5.44	Q				
15+25	5.5913	5.59	Q				
15+30	5.3149	5.31	Q				
15+35	5.2485	5.25	Q				
15+40	5.6678	5.67	Q				
15+45	6.2733	6.27	Q				
15+50	7.2784	7.28	Q				
15+55	8.7597	8.76	Q				
16+ 0	11.7872	11.79	Q				
16+ 5	19.8529	19.85		Q			
16+10	36.9536	36.95			Q		

16+15	27.7421	27.74					Q	
16+20	12.0591	12.06				Q		
16+25	7.3717	7.37				Q		
16+30	5.9465	5.95				Q		
16+35	5.6100	5.61				Q		
16+40	5.1644	5.16				Q		
16+45	4.7803	4.78				Q		
16+50	4.4586	4.46				Q		
16+55	4.1955	4.20				Q		
17+ 0	3.9749	3.97				Q		
17+ 5	3.7861	3.79				Q		
17+10	3.6213	3.62				Q		
17+15	3.4767	3.48				Q		
17+20	3.3489	3.35				Q		
17+25	3.2344	3.23				Q		
17+30	3.1311	3.13				Q		
17+35	3.0373	3.04				Q		
17+40	2.9515	2.95				Q		
17+45	2.8726	2.87				Q		
17+50	2.7999	2.80				Q		
17+55	2.7324	2.73				Q		
18+ 0	2.6697	2.67				Q		
18+ 5	2.5760	2.58				Q		
18+10	2.3475	2.35				Q		
18+15	2.1717	2.17				Q		
18+20	2.0981	2.10				Q		
18+25	2.0472	2.05				Q		
18+30	2.0051	2.01				Q		
18+35	1.9653	1.97				Q		
18+40	1.9277	1.93				Q		
18+45	1.8919	1.89				Q		
18+50	1.8579	1.86				Q		
18+55	1.8256	1.83				Q		
19+ 0	1.7948	1.79				Q		
19+ 5	1.7654	1.77				Q		
19+10	1.7373	1.74				Q		
19+15	1.7104	1.71				Q		
19+20	1.6846	1.68				Q		
19+25	1.6599	1.66				Q		
19+30	1.6361	1.64				Q		
19+35	1.6133	1.61				Q		
19+40	1.5913	1.59				Q		
19+45	1.5701	1.57				Q		
19+50	1.5497	1.55				Q		
19+55	1.5300	1.53				Q		
20+ 0	1.5110	1.51				Q		
20+ 5	1.4927	1.49				Q		
20+10	1.4749	1.47				Q		
20+15	1.4577	1.46				Q		
20+20	1.4411	1.44				Q		
20+25	1.4250	1.42				Q		
20+30	1.4093	1.41				Q		
20+35	1.3941	1.39				Q		
20+40	1.3794	1.38				Q		
20+45	1.3651	1.37				Q		
20+50	1.3512	1.35				Q		
20+55	1.3377	1.34				Q		
21+ 0	1.3246	1.32				Q		
21+ 5	1.3118	1.31				Q		

21+10	1.2993	1.30	IQ				
21+15	1.2872	1.29	IQ				
21+20	1.2753	1.28	IQ				
21+25	1.2638	1.26	IQ				
21+30	1.2526	1.25	IQ				
21+35	1.2416	1.24	IQ				
21+40	1.2309	1.23	IQ				
21+45	1.2204	1.22	IQ				
21+50	1.2102	1.21	IQ				
21+55	1.2002	1.20	IQ				
22+ 0	1.1905	1.19	IQ				
22+ 5	1.1809	1.18	IQ				
22+10	1.1716	1.17	IQ				
22+15	1.1625	1.16	IQ				
22+20	1.1535	1.15	IQ				
22+25	1.1448	1.14	IQ				
22+30	1.1362	1.14	IQ				
22+35	1.1278	1.13	IQ				
22+40	1.1196	1.12	IQ				
22+45	1.1115	1.11	IQ				
22+50	1.1036	1.10	IQ				
22+55	1.0959	1.10	IQ				
23+ 0	1.0883	1.09	IQ				
23+ 5	1.0808	1.08	IQ				
23+10	1.0735	1.07	IQ				
23+15	1.0663	1.07	IQ				
23+20	1.0593	1.06	IQ				
23+25	1.0524	1.05	IQ				
23+30	1.0456	1.05	IQ				
23+35	1.0389	1.04	IQ				
23+40	1.0323	1.03	IQ				
23+45	1.0259	1.03	IQ				
23+50	1.0196	1.02	IQ				
23+55	1.0133	1.01	IQ				
24+ 0	1.0072	1.01	IQ				
24+ 5	0.9059	0.91	Q				
24+10	0.4293	0.43	Q				
24+15	0.0880	0.09	Q				
24+20	0.0169	0.02	Q				

*****HYDROGRAPH DATA*****

Number of intervals = 292

Time interval = 5.0 (Min.)

Maximum/Peak flow rate = 36.954 (CFS)

Total volume = 4.597 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	84.120	0.000	46.563	0.000
Vol (Ac.Ft)	0.000	44.904	0.000	13.145	0.000

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Process from Point/Station 13.000 to Point/Station 12.000

**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

 Total number of inflow hydrograph intervals = 292
 Hydrograph time unit = 5.000 (Min.)
 Initial depth in storage basin = 0.00 (Ft.)

 Initial basin depth = 0.00 (Ft.)
 Initial basin storage = 0.00 (Ac.Ft)
 Initial basin outflow = 0.00 (CFS)

 Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
1.000	0.017	1.160	0.013	0.021
2.000	0.063	2.970	0.053	0.073
3.000	0.114	5.200	0.096	0.132
4.000	0.171	7.630	0.145	0.197
5.000	0.252	9.210	0.220	0.284
6.000	0.348	10.530	0.312	0.384
7.000	0.448	11.700	0.408	0.488
8.000	0.547	12.750	0.503	0.591
9.000	0.637	20.570	0.566	0.708

 Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	0	9.2	18.48	27.72	36.95	Depth (Ft.)
0.083	0.10	0.02	0.000	O					0.02
0.167	0.57	0.14	0.002	O					0.12
0.250	0.91	0.37	0.005	O					0.32
0.333	0.98	0.59	0.009	O					0.51
0.417	1.00	0.74	0.011	O					0.64
0.500	1.00	0.84	0.012	O					0.72
0.583	1.01	0.90	0.013	O					0.78
0.667	1.01	0.94	0.014	O					0.81
0.750	1.01	0.97	0.014	O					0.84
0.833	1.02	0.99	0.014	O					0.85
0.917	1.02	1.00	0.015	O					0.86
1.000	1.02	1.01	0.015	O					0.87
1.083	1.03	1.01	0.015	O					0.87
1.167	1.03	1.02	0.015	O					0.88
1.250	1.03	1.02	0.015	O					0.88
1.333	1.04	1.03	0.015	O					0.89
1.417	1.04	1.03	0.015	O					0.89
1.500	1.04	1.04	0.015	O					0.89
1.583	1.05	1.04	0.015	O					0.90
1.667	1.05	1.04	0.015	O					0.90
1.750	1.05	1.05	0.015	O					0.90
1.833	1.06	1.05	0.015	O					0.90
1.917	1.06	1.05	0.015	O					0.91
2.000	1.06	1.06	0.015	O					0.91
2.083	1.07	1.06	0.016	O					0.91

2.167	1.07	1.06	0.016	O					0.92
2.250	1.07	1.07	0.016	O					0.92
2.333	1.08	1.07	0.016	O					0.92
2.417	1.08	1.07	0.016	O					0.93
2.500	1.09	1.08	0.016	O					0.93
2.583	1.09	1.08	0.016	O					0.93
2.667	1.09	1.08	0.016	O					0.94
2.750	1.10	1.09	0.016	O					0.94
2.833	1.10	1.09	0.016	O					0.94
2.917	1.10	1.10	0.016	O					0.94
3.000	1.11	1.10	0.016	O					0.95
3.083	1.11	1.10	0.016	O					0.95
3.167	1.12	1.11	0.016	O					0.96
3.250	1.12	1.11	0.016	O					0.96
3.333	1.12	1.12	0.016	O					0.96
3.417	1.13	1.12	0.016	O					0.97
3.500	1.13	1.12	0.016	O					0.97
3.583	1.14	1.13	0.017	O					0.97
3.667	1.14	1.13	0.017	O					0.98
3.750	1.15	1.14	0.017	O					0.98
3.833	1.15	1.14	0.017	O					0.98
3.917	1.15	1.15	0.017	O					0.99
4.000	1.16	1.15	0.017	OI					0.99
4.083	1.16	1.15	0.017	OI					0.99
4.167	1.17	1.16	0.017	IO					1.00
4.250	1.17	1.16	0.017	IO					1.00
4.333	1.18	1.16	0.017	IO					1.00
4.417	1.18	1.17	0.017	IO					1.00
4.500	1.19	1.17	0.017	IO					1.01
4.583	1.19	1.18	0.017	IO					1.01
4.667	1.20	1.18	0.018	IO					1.01
4.750	1.20	1.18	0.018	IO					1.01
4.833	1.21	1.19	0.018	IO					1.02
4.917	1.21	1.19	0.018	IO					1.02
5.000	1.22	1.20	0.018	IO					1.02
5.083	1.22	1.20	0.018	IO					1.02
5.167	1.23	1.21	0.018	IO					1.03
5.250	1.23	1.21	0.018	IO					1.03
5.333	1.24	1.22	0.018	IO					1.03
5.417	1.24	1.22	0.019	IO					1.04
5.500	1.25	1.23	0.019	IO					1.04
5.583	1.25	1.23	0.019	IO					1.04
5.667	1.26	1.24	0.019	IO					1.04
5.750	1.26	1.24	0.019	IO					1.05
5.833	1.27	1.25	0.019	IO					1.05
5.917	1.28	1.26	0.019	IO					1.05
6.000	1.28	1.26	0.020	IO					1.06
6.083	1.29	1.27	0.020	IO					1.06
6.167	1.29	1.27	0.020	IO					1.06
6.250	1.30	1.28	0.020	IO					1.07
6.333	1.31	1.28	0.020	IO					1.07
6.417	1.31	1.29	0.020	IO					1.07
6.500	1.32	1.30	0.020	IO					1.08
6.583	1.33	1.30	0.021	IO					1.08
6.667	1.33	1.31	0.021	IO					1.08
6.750	1.34	1.32	0.021	IO					1.09
6.833	1.35	1.32	0.021	IO					1.09
6.917	1.35	1.33	0.021	IO					1.09
7.000	1.36	1.33	0.021	IO					1.10

7.083	1.37	1.34	0.022	IO					1.10
7.167	1.37	1.35	0.022	IO					1.10
7.250	1.38	1.36	0.022	IO					1.11
7.333	1.39	1.36	0.022	IO					1.11
7.417	1.40	1.37	0.022	IO					1.12
7.500	1.40	1.38	0.022	IO					1.12
7.583	1.41	1.38	0.023	IO					1.12
7.667	1.42	1.39	0.023	IO					1.13
7.750	1.43	1.40	0.023	IO					1.13
7.833	1.43	1.41	0.023	IO					1.14
7.917	1.44	1.41	0.023	IO					1.14
8.000	1.45	1.42	0.024	IO					1.14
8.083	1.46	1.43	0.024	IO					1.15
8.167	1.47	1.44	0.024	IO					1.15
8.250	1.48	1.45	0.024	IO					1.16
8.333	1.49	1.45	0.024	IO					1.16
8.417	1.49	1.46	0.025	IO					1.17
8.500	1.50	1.47	0.025	IO					1.17
8.583	1.51	1.48	0.025	IO					1.18
8.667	1.52	1.49	0.025	IO					1.18
8.750	1.53	1.50	0.026	IO					1.19
8.833	1.54	1.51	0.026	IO					1.19
8.917	1.55	1.52	0.026	IO					1.20
9.000	1.56	1.53	0.026	IO					1.20
9.083	1.57	1.54	0.027	IO					1.21
9.167	1.58	1.55	0.027	IO					1.21
9.250	1.59	1.56	0.027	IO					1.22
9.333	1.60	1.57	0.027	IO					1.22
9.417	1.61	1.58	0.028	IO					1.23
9.500	1.63	1.59	0.028	IO					1.24
9.583	1.64	1.60	0.028	IO					1.24
9.667	1.65	1.61	0.028	IO					1.25
9.750	1.66	1.62	0.029	IO					1.25
9.833	1.67	1.63	0.029	IO					1.26
9.917	1.69	1.64	0.029	IO					1.27
10.000	1.70	1.66	0.030	IO					1.27
10.083	1.71	1.67	0.030	IO					1.28
10.167	1.73	1.68	0.030	IO					1.29
10.250	1.74	1.69	0.031	IO					1.29
10.333	1.75	1.71	0.031	IO					1.30
10.417	1.77	1.72	0.031	IO					1.31
10.500	1.78	1.73	0.032	IO					1.32
10.583	1.80	1.75	0.032	IO					1.32
10.667	1.81	1.76	0.032	IO					1.33
10.750	1.83	1.77	0.033	IO					1.34
10.833	1.84	1.79	0.033	IO					1.35
10.917	1.86	1.80	0.033	IO					1.36
11.000	1.88	1.82	0.034	IO					1.36
11.083	1.89	1.84	0.034	IO					1.37
11.167	1.91	1.85	0.035	IO					1.38
11.250	1.93	1.87	0.035	IO					1.39
11.333	1.95	1.89	0.035	IO					1.40
11.417	1.97	1.90	0.036	IO					1.41
11.500	1.99	1.92	0.036	IO					1.42
11.583	2.01	1.94	0.037	IO					1.43
11.667	2.03	1.96	0.037	IO					1.44
11.750	2.05	1.98	0.038	IO					1.45
11.833	2.07	2.00	0.038	IO					1.46
11.917	2.10	2.02	0.039	IO					1.47

12.000	2.12	2.04	0.039	O				1.49
12.083	2.18	2.07	0.040	O				1.50
12.167	2.38	2.12	0.041	OI				1.53
12.250	2.53	2.20	0.043	OI				1.57
12.333	2.58	2.28	0.046	OI				1.62
12.417	2.61	2.36	0.047	O				1.66
12.500	2.64	2.42	0.049	O				1.70
12.583	2.67	2.48	0.051	O				1.73
12.667	2.71	2.53	0.052	O				1.76
12.750	2.74	2.58	0.053	O				1.78
12.833	2.77	2.62	0.054	O				1.81
12.917	2.80	2.66	0.055	O				1.83
13.000	2.84	2.70	0.056	O				1.85
13.083	2.88	2.74	0.057	O				1.87
13.167	2.92	2.77	0.058	O				1.89
13.250	2.96	2.81	0.059	O				1.91
13.333	3.00	2.85	0.060	O				1.94
13.417	3.04	2.89	0.061	O				1.96
13.500	3.09	2.93	0.062	O				1.98
13.583	3.14	2.98	0.063	O				2.00
13.667	3.19	3.03	0.064	O				2.03
13.750	3.24	3.08	0.065	O				2.05
13.833	3.30	3.13	0.067	O				2.07
13.917	3.36	3.18	0.068	O				2.09
14.000	3.42	3.23	0.069	O				2.12
14.083	3.48	3.29	0.070	OI				2.14
14.167	3.56	3.35	0.072	OI				2.17
14.250	3.63	3.41	0.073	OI				2.20
14.333	3.71	3.48	0.075	O				2.23
14.417	3.79	3.55	0.076	O				2.26
14.500	3.89	3.63	0.078	O				2.30
14.583	3.98	3.71	0.080	O				2.33
14.667	4.09	3.80	0.082	O				2.37
14.750	4.20	3.89	0.084	O				2.41
14.833	4.33	3.99	0.086	O				2.46
14.917	4.47	4.10	0.089	O				2.50
15.000	4.62	4.21	0.091	OI				2.56
15.083	4.79	4.34	0.094	OI				2.62
15.167	4.98	4.48	0.098	OI				2.68
15.250	5.19	4.64	0.101	O				2.75
15.333	5.44	4.82	0.105	O				2.83
15.417	5.59	5.00	0.109	O				2.91
15.500	5.31	5.12	0.112	O				2.96
15.583	5.25	5.16	0.113	O				2.98
15.667	5.67	5.24	0.115	O				3.02
15.750	6.27	5.43	0.119	OI				3.09
15.833	7.28	5.77	0.127	O I				3.24
15.917	8.76	6.35	0.141	O I				3.47
16.000	11.79	7.35	0.164	O I				3.89
16.083	19.85	8.56	0.219	O	I			4.59
16.167	36.95	10.54	0.349	O			I	6.01
16.250	27.74	12.18	0.493	O		I		7.46
16.333	12.06	12.72	0.544	IO				7.97
16.417	7.37	12.51	0.524	I O				7.77
16.500	5.95	12.10	0.486	I O				7.38
16.583	5.61	11.65	0.444	I O				6.96
16.667	5.16	11.16	0.402	I O				6.54
16.750	4.78	10.68	0.361	I O				6.13
16.833	4.46	10.16	0.321	I O				5.72

16.917	4.20	9.63	0.283		I	O				5.32
17.000	3.97	9.10	0.246		I	O				4.93
17.083	3.79	8.44	0.213		I	O				4.52
17.167	3.62	7.85	0.182		I	O				4.14
17.250	3.48	6.97	0.156		I	O				3.73
17.333	3.35	6.06	0.134		I	O				3.35
17.417	3.23	5.35	0.118		I	O				3.06
17.500	3.13	4.79	0.105		I	O				2.81
17.583	3.04	4.34	0.094		IO					2.62
17.667	2.95	3.99	0.086		IO					2.46
17.750	2.87	3.71	0.080		IO					2.33
17.833	2.80	3.48	0.075		IO					2.23
17.917	2.73	3.29	0.070		O					2.14
18.000	2.67	3.14	0.067		O					2.08
18.083	2.58	3.00	0.064		O					2.01
18.167	2.35	2.87	0.060		O					1.95
18.250	2.17	2.73	0.057		IO					1.86
18.333	2.10	2.58	0.053		IO					1.79
18.417	2.05	2.46	0.050		IO					1.72
18.500	2.01	2.36	0.047		IO					1.66
18.583	1.97	2.27	0.045		O					1.61
18.667	1.93	2.19	0.043		O					1.57
18.750	1.89	2.12	0.042		O					1.53
18.833	1.86	2.07	0.040		O					1.50
18.917	1.83	2.01	0.039		O					1.47
19.000	1.79	1.96	0.037		O					1.44
19.083	1.77	1.92	0.036		O					1.42
19.167	1.74	1.88	0.035		O					1.40
19.250	1.71	1.84	0.034		O					1.38
19.333	1.68	1.81	0.033		O					1.36
19.417	1.66	1.78	0.033		O					1.34
19.500	1.64	1.75	0.032		O					1.32
19.583	1.61	1.72	0.031		O					1.31
19.667	1.59	1.69	0.030		O					1.29
19.750	1.57	1.66	0.030		O					1.28
19.833	1.55	1.64	0.029		O					1.26
19.917	1.53	1.62	0.029		O					1.25
20.000	1.51	1.59	0.028		O					1.24
20.083	1.49	1.57	0.027		O					1.23
20.167	1.47	1.55	0.027		O					1.22
20.250	1.46	1.53	0.026		O					1.20
20.333	1.44	1.51	0.026		O					1.19
20.417	1.42	1.49	0.025		O					1.18
20.500	1.41	1.47	0.025		O					1.17
20.583	1.39	1.46	0.025		O					1.16
20.667	1.38	1.44	0.024		O					1.15
20.750	1.37	1.42	0.024		O					1.15
20.833	1.35	1.41	0.023		O					1.14
20.917	1.34	1.39	0.023		O					1.13
21.000	1.32	1.38	0.023		O					1.12
21.083	1.31	1.36	0.022		O					1.11
21.167	1.30	1.35	0.022		O					1.10
21.250	1.29	1.34	0.021		O					1.10
21.333	1.28	1.32	0.021		O					1.09
21.417	1.26	1.31	0.021		O					1.08
21.500	1.25	1.30	0.021		O					1.08
21.583	1.24	1.29	0.020		O					1.07
21.667	1.23	1.27	0.020		O					1.06
21.750	1.22	1.26	0.020		O					1.06

21.833	1.21	1.25	0.019	IO					1.05
21.917	1.20	1.24	0.019	IO					1.04
22.000	1.19	1.23	0.019	IO					1.04
22.083	1.18	1.22	0.019	IO					1.03
22.167	1.17	1.21	0.018	IO					1.03
22.250	1.16	1.20	0.018	IO					1.02
22.333	1.15	1.19	0.018	IO					1.02
22.417	1.14	1.18	0.017	IO					1.01
22.500	1.14	1.17	0.017	IO					1.01
22.583	1.13	1.16	0.017	IO					1.00
22.667	1.12	1.15	0.017	O					0.99
22.750	1.11	1.14	0.017	O					0.98
22.833	1.10	1.12	0.016	O					0.97
22.917	1.10	1.12	0.016	O					0.96
23.000	1.09	1.11	0.016	O					0.95
23.083	1.08	1.10	0.016	O					0.95
23.167	1.07	1.09	0.016	O					0.94
23.250	1.07	1.08	0.016	O					0.93
23.333	1.06	1.07	0.016	O					0.93
23.417	1.05	1.07	0.016	O					0.92
23.500	1.05	1.06	0.016	O					0.91
23.583	1.04	1.05	0.015	O					0.91
23.667	1.03	1.05	0.015	O					0.90
23.750	1.03	1.04	0.015	O					0.90
23.833	1.02	1.03	0.015	O					0.89
23.917	1.01	1.03	0.015	O					0.89
24.000	1.01	1.02	0.015	O					0.88
24.083	0.91	1.00	0.015	O					0.86
24.167	0.43	0.87	0.013	O					0.75
24.250	0.09	0.64	0.009	O					0.55
24.333	0.02	0.42	0.006	O					0.36
24.417	0.00	0.26	0.004	O					0.22
24.500	0.00	0.16	0.002	O					0.14
24.583	0.00	0.10	0.001	O					0.09
24.667	0.00	0.06	0.001	O					0.05
24.750	0.00	0.04	0.001	O					0.03
24.833	0.00	0.02	0.000	O					0.02
24.917	0.00	0.01	0.000	O					0.01
25.000	0.00	0.01	0.000	O					0.01
25.083	0.00	0.01	0.000	O					0.00
25.167	0.00	0.00	0.000	O					0.00
25.250	0.00	0.00	0.000	O					0.00
25.333	0.00	0.00	0.000	O					0.00
25.417	0.00	0.00	0.000	O					0.00

*****HYDROGRAPH DATA*****

Number of intervals = 305
 Time interval = 5.0 (Min.)
 Maximum/Peak flow rate = 12.722 (CFS)
 Total volume = 4.597 (Ac.Ft)
 Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	84.120	0.000	46.563	0.000
Vol (Ac.Ft)	0.000	44.904	0.000	13.145	0.000

+++++
 Process from Point/Station 13.000 to Point/Station 12.000
 **** ADD/COMBINE/RECOVER HYDROGRAPHS ****

From stored stream number 4 the total
 volume of 13.15 (Ac.Ft) is being added to the
 current hydrograph at its original rate from user
 with a delay time to start of addition of 0.00 hours.

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PRINT OF STORM
 Run off Hydrograph

 Hydrograph in 5 Minute intervals (CFS)

Time (h+m)	Add q(CFS)	Tot. Q	0	14.8	29.5	44.3	59.1
0+ 5	0.0343	0.05	Q				
0+10	0.2697	0.41	Q				
0+15	0.8296	1.20	Q				
0+20	1.5450	2.13	IQ				
0+25	2.1378	2.88	IQ				
0+30	2.5025	3.34	IQQ				
0+35	2.6929	3.60	IQQ				
0+40	2.7861	3.73	IQQ				
0+45	2.8367	3.81	IQQ				
0+50	2.8667	3.85	IQQ				
0+55	2.8846	3.88	IQQ				
1+ 0	2.8974	3.91	IQQ				
1+ 5	2.9081	3.92	IQQ				
1+10	2.9181	3.94	IQQ				
1+15	2.9277	3.95	IQQ				
1+20	2.9371	3.97	IQQ				
1+25	2.9465	3.98	IQQ				
1+30	2.9559	3.99	IQ				
1+35	2.9653	4.00	IQ				
1+40	2.9748	4.02	IQ				
1+45	2.9844	4.03	IQ				
1+50	2.9940	4.04	IQ				
1+55	3.0037	4.06	IQ				
2+ 0	3.0135	4.07	IQ				
2+ 5	3.0234	4.08	IQ				
2+10	3.0334	4.10	IQ				
2+15	3.0435	4.11	IQ				
2+20	3.0537	4.12	IQ				
2+25	3.0640	4.14	IQ				
2+30	3.0743	4.15	IQ				
2+35	3.0848	4.17	IQ				
2+40	3.0954	4.18	IQ				
2+45	3.1061	4.19	IQ				
2+50	3.1168	4.21	IQ				
2+55	3.1277	4.22	IQ				
3+ 0	3.1387	4.24	IQ				
3+ 5	3.1498	4.25	IQ				
3+10	3.1610	4.27	IQ				
3+15	3.1723	4.28	IQ				
3+20	3.1837	4.30	IQ				
3+25	3.1952	4.32	IQ				
3+30	3.2069	4.33	IQ				

3+35	3.2187	4.35	Q				
3+40	3.2306	4.36	Q				
3+45	3.2426	4.38	Q				
3+50	3.2547	4.40	Q				
3+55	3.2670	4.41	Q				
4+ 0	3.2794	4.43	Q				
4+ 5	3.2919	4.45	qQ				
4+10	3.3046	4.46	qQ				
4+15	3.3174	4.48	qQ				
4+20	3.3303	4.50	qQ				
4+25	3.3434	4.51	qQ				
4+30	3.3566	4.53	qQ				
4+35	3.3700	4.55	qQ				
4+40	3.3835	4.56	qQ				
4+45	3.3971	4.58	qQ				
4+50	3.4110	4.60	qQ				
4+55	3.4249	4.62	qQ				
5+ 0	3.4391	4.64	qQ				
5+ 5	3.4534	4.66	qQ				
5+10	3.4678	4.68	qQ				
5+15	3.4825	4.70	qQ				
5+20	3.4973	4.72	qQ				
5+25	3.5123	4.74	qQ				
5+30	3.5274	4.76	qQ				
5+35	3.5428	4.78	qQ				
5+40	3.5583	4.80	qQ				
5+45	3.5741	4.82	qQ				
5+50	3.5900	4.84	qQ				
5+55	3.6061	4.86	qQ				
6+ 0	3.6224	4.88	qQ				
6+ 5	3.6389	4.91	qQ				
6+10	3.6557	4.93	qQ				
6+15	3.6726	4.95	qQ				
6+20	3.6898	4.97	qQ				
6+25	3.7072	5.00	qQ				
6+30	3.7248	5.02	qQ				
6+35	3.7427	5.05	qQ				
6+40	3.7608	5.07	qQ				
6+45	3.7791	5.09	qQ				
6+50	3.7977	5.12	qQ				
6+55	3.8166	5.14	qQ				
7+ 0	3.8357	5.17	qQ				
7+ 5	3.8551	5.20	qQ				
7+10	3.8747	5.22	qQ				
7+15	3.8947	5.25	qQ				
7+20	3.9149	5.28	qQ				
7+25	3.9354	5.30	qQ				
7+30	3.9563	5.33	qQ				
7+35	3.9774	5.36	qQ				
7+40	3.9988	5.39	qQ				
7+45	4.0206	5.42	qQ				
7+50	4.0427	5.45	qQ				
7+55	4.0651	5.48	qQ				
8+ 0	4.0879	5.51	qQ				
8+ 5	4.1111	5.54	qQ				
8+10	4.1346	5.57	qQ				
8+15	4.1585	5.60	qQ				
8+20	4.1828	5.64	qQ				
8+25	4.2075	5.67	qQ				

8+30	4.2325	5.70		qQ							
8+35	4.2581	5.74		qQ							
8+40	4.2840	5.77		qQ							
8+45	4.3104	5.81		qQ							
8+50	4.3372	5.84		qQ							
8+55	4.3645	5.88		qQ							
9+ 0	4.3923	5.92		q Q							
9+ 5	4.4206	5.96		q Q							
9+10	4.4494	6.00		qQ							
9+15	4.4787	6.03		qQ							
9+20	4.5086	6.07		qQ							
9+25	4.5390	6.12		qQ							
9+30	4.5700	6.16		qQ							
9+35	4.6016	6.20		qQ							
9+40	4.6338	6.24		qQ							
9+45	4.6667	6.29		qQ							
9+50	4.7002	6.33		qQ							
9+55	4.7343	6.38		qQ							
10+ 0	4.7692	6.42		qQ							
10+ 5	4.8048	6.47		qQ							
10+10	4.8411	6.52		qQ							
10+15	4.8783	6.57		qQ							
10+20	4.9162	6.62		qQ							
10+25	4.9549	6.67		qQ							
10+30	4.9945	6.73		qQ							
10+35	5.0350	6.78		qQ							
10+40	5.0764	6.84		qQ							
10+45	5.1188	6.89		qQ							
10+50	5.1622	6.95		qQ							
10+55	5.2066	7.01		qQ							
11+ 0	5.2521	7.07		qQ							
11+ 5	5.2987	7.13		qQ							
11+10	5.3465	7.20		qQ							
11+15	5.3955	7.26		qQ							
11+20	5.4458	7.33		qQ							
11+25	5.4973	7.40		q Q							
11+30	5.5503	7.47		q Q							
11+35	5.6047	7.54		q Q							
11+40	5.6606	7.62		q Q							
11+45	5.7181	7.70		q Q							
11+50	5.7773	7.78		q Q							
11+55	5.8381	7.86		q Q							
12+ 0	5.9008	7.94		q Q							
12+ 5	5.9779	8.04		qQ							
12+10	6.1301	8.25		qQ							
12+15	6.4021	8.60		qQ							
12+20	6.7321	9.01		q Q							
12+25	7.0191	9.38		q Q							
12+30	7.2255	9.65		q Q							
12+35	7.3711	9.85		q Q							
12+40	7.4839	10.01		qQ							
12+45	7.5840	10.16		qQ							
12+50	7.6795	10.30		qQ							
12+55	7.7738	10.43		q Q							
13+ 0	7.8695	10.57		q Q							
13+ 5	7.9681	10.70		q Q							
13+10	8.0701	10.84		q Q							
13+15	8.1759	10.99		q Q							
13+20	8.2861	11.14		q Q							

13+25	8.4008	11.29		q Q					
13+30	8.5204	11.45		q Q					
13+35	8.6454	11.62		q Q					
13+40	8.7761	11.80		q Q					
13+45	8.9046	11.98		q Q					
13+50	9.0273	12.15		q Q					
13+55	9.1549	12.33		q Q					
14+ 0	9.2965	12.53		q Q					
14+ 5	9.4518	12.74		q Q					
14+10	9.6197	12.97		q Q					
14+15	9.8004	13.21		q Q					
14+20	9.9938	13.48		q Q					
14+25	10.1997	13.75		q Q					
14+30	10.4189	14.05		q Q					
14+35	10.6527	14.36		q Q					
14+40	10.9029	14.70		q Q					
14+45	11.1719	15.06		q Q					
14+50	11.4622	15.45		q Q					
14+55	11.7769	15.87		q Q					
15+ 0	12.1199	16.33		q Q					
15+ 5	12.4955	16.84		q Q					
15+10	12.9097	17.39		q Q					
15+15	13.3694	18.01		q Q					
15+20	13.8842	18.70		q Q					
15+25	14.4323	19.43		q Q					
15+30	14.8631	19.98		q Q					
15+35	15.0516	20.21		q Q					
15+40	15.1599	20.40		q Q					
15+45	15.5111	20.94		q Q					
15+50	16.3626	22.13		q Q					
15+55	17.8914	24.24		q Q					
16+ 0	20.3842	27.74		q Q					
16+ 5	25.6417	34.20		q Q		Q			
16+10	34.1393	44.68				q	Q		
16+15	41.6807	53.86					q	Q	
16+20	46.0978	58.82					q	Q	
16+25	46.5628	59.07					q	Q	
16+30	44.9314	57.03					q	Q	
16+35	41.8971	53.55					q	Q	
16+40	38.1122	49.28				q		Q	
16+45	33.9732	44.66				q	Q		
16+50	29.5295	39.69			q	Q			
16+55	24.9423	34.58			q	Q			
17+ 0	19.9486	29.05			q	Q			
17+ 5	16.3338	24.78			q	Q			
17+10	13.9457	21.79			q	Q			
17+15	12.4179	19.39			q	Q			
17+20	11.3940	17.45			q	Q			
17+25	10.6583	16.01			q	Q			
17+30	10.0956	14.88			q	Q			
17+35	9.6428	13.98			q	Q			
17+40	9.2638	13.25			q	Q			
17+45	8.9187	12.63			q	Q			
17+50	8.5512	12.03			q	Q			
17+55	8.2618	11.55			q	Q			
18+ 0	8.0256	11.16			q	Q			
18+ 5	7.8063	10.81			q	Q			
18+10	7.5335	10.40			q	Q			
18+15	7.1584	9.88		q Q					

18+20	6.7407	9.32		q Q					
18+25	6.3798	8.84		qQ					
18+30	6.1120	8.47		qQ					
18+35	5.9163	8.19		qQ					
18+40	5.7638	7.96		q Q					
18+45	5.6338	7.76		q Q					
18+50	5.5175	7.58		q Q					
18+55	5.4113	7.42		q Q					
19+ 0	5.3122	7.28		qQ					
19+ 5	5.2186	7.14		qQ					
19+10	5.1298	7.01		qQ					
19+15	5.0452	6.89		qQ					
19+20	4.9644	6.77		qQ					
19+25	4.8871	6.66		qQ					
19+30	4.8132	6.56		qQ					
19+35	4.7423	6.46		qQ					
19+40	4.6742	6.36		qQ					
19+45	4.6087	6.27		qQ					
19+50	4.5458	6.18		qQ					
19+55	4.4852	6.10		qQ					
20+ 0	4.4268	6.02		q Q					
20+ 5	4.3704	5.94		q Q					
20+10	4.3160	5.87		qQ					
20+15	4.2635	5.79		qQ					
20+20	4.2126	5.72		qQ					
20+25	4.1635	5.66		qQ					
20+30	4.1159	5.59		qQ					
20+35	4.0697	5.53		qQ					
20+40	4.0250	5.47		qQ					
20+45	3.9816	5.41		qQ					
20+50	3.9395	5.35		qQ					
20+55	3.8987	5.29		qQ					
21+ 0	3.8589	5.24		qQ					
21+ 5	3.8203	5.18		qQ					
21+10	3.7827	5.13		qQ					
21+15	3.7461	5.08		qQ					
21+20	3.7105	5.03		qQ					
21+25	3.6759	4.99		qQ					
21+30	3.6421	4.94		qQ					
21+35	3.6091	4.89		qQ					
21+40	3.5770	4.85		qQ					
21+45	3.5457	4.81		qQ					
21+50	3.5151	4.77		qQ					
21+55	3.4852	4.73		qQ					
22+ 0	3.4560	4.69		qQ					
22+ 5	3.4275	4.65		qQ					
22+10	3.3996	4.61		qQ					
22+15	3.3724	4.57		qQ					
22+20	3.3457	4.53		qQ					
22+25	3.3197	4.50		qQ					
22+30	3.2941	4.46		qQ					
22+35	3.2692	4.43		Q					
22+40	3.2447	4.39		Q					
22+45	3.2207	4.36		Q					
22+50	3.1973	4.32		Q					
22+55	3.1743	4.29		Q					
23+ 0	3.1517	4.26		Q					
23+ 5	3.1296	4.23		Q					
23+10	3.1079	4.20		Q					

23+15	3.0866	4.17	Q				
23+20	3.0658	4.14	Q				
23+25	3.0453	4.11	Q				
23+30	3.0252	4.09	Q				
23+35	3.0054	4.06	Q				
23+40	2.9860	4.03	Q				
23+45	2.9670	4.01	Q				
23+50	2.9482	3.98	qQ				
23+55	2.9298	3.96	qQ				
24+ 0	2.9118	3.93	qQ				
24+ 5	2.8597	3.86	qQ				
24+10	2.6076	3.48	qQ				
24+15	2.0337	2.67	Q				
24+20	1.3097	1.72	qQ				
24+25	0.7146	0.98	Q				
24+30	0.3524	0.51	Q				
24+35	0.1676	0.27	Q				
24+40	0.0816	0.14	Q				
24+45	0.0390	0.08	Q				
24+50	0.0174	0.04	Q				
24+55	0.0070	0.02	Q				
25+ 0	0.0036	0.01	Q				
25+ 5	0.0020	0.01	Q				
25+10	0.0000	0.00	Q				
25+15	0.0000	0.00	Q				
25+20	0.0000	0.00	Q				
25+25	0.0000	0.00	Q				

*****HYDROGRAPH DATA*****

Number of intervals = 305
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 59.073 (CFS)
Total volume = 17.742 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	84.120	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	44.904	0.000	0.000	0.000

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Process from Point/Station 12.000 to Point/Station 20.000

**** STREAM ROUTING SCS CONVEX METHOD ****

HYDROGRAPH STREAM ROUTING DATA:

Length of stream = 650.00 (Ft.)
Elevation difference = 2.60 (Ft.)
Slope of channel = 0.004000 (Vert/Horiz)
Channel type - Pipe

Pipe length = 650.00 (Ft.) Elevation difference = 2.60 (Ft.)
Manning's N = 0.013 No. of pipes = 1
Pipe evaluation using mean flow rate of hydrograph
Required pipe flow = 9.526 (CFS)
Nearest computed pipe diameter = 21.00 (In.)
Calculated individual pipe flow = 9.526 (CFS)

Normal flow depth in pipe = 16.36(In.)
 Flow top width inside pipe = 17.43(In.)
 Critical Depth = 1.15(Ft.)
 Pipe flow velocity = 4.74(Ft/s)
 Travel time through pipe = 2.28 min.

Pipe length = 650.00(Ft.) Elevation difference = 2.60(Ft.)
 Manning's N = 0.013 No. of pipes = 1
 Pipe evaluation using maximum flow rate of hydrograph
 Required pipe flow = 59.073(CFS)
 Nearest computed pipe diameter = 42.00(In.)
 Calculated individual pipe flow = 59.073(CFS)
 Normal flow depth in pipe = 32.02(In.)
 Flow top width inside pipe = 35.76(In.)
 Critical Depth = 2.41(Ft.)
 Pipe flow velocity = 7.51(Ft/s)
 Travel time through pipe = 1.44 min.

***** SCS CONVEX CHANNEL ROUTING *****

Convex method of stream routing data items:

Using equation: Outflow =

$O(t+dt) = (1-c^*)O(t+dt-dt^*) + \text{Input}(c^*)$

where $c^* = 1 - (1-c)^e$ and $dt = c(\text{length})/\text{velocity}$

$c(v/v+1.7) = 0.8154$ Travel time = 1.44 (min.)

$dt^*(\text{unit time interval}) = 5.00(\text{min.}), e = 3.1676$

$dt(\text{routing time-step}) = 1.18 (\text{min.}), c^* = 0.9953$

Output hydrograph delayed by 0 unit time increments

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P R I N T O F S T O R M

R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals (CFS)

Time(h+m) Out = O(CFS) In = I 0 14.8 29.5 44.3 59.1

0+ 5	0.0400	0.05	O				
0+10	0.3224	0.41	O				
0+15	1.0070	1.20	O				
0+20	1.9071	2.13	O				
0+25	2.6990	2.88	O				
0+30	3.2313	3.34	O				
0+35	3.5355	3.60	O				
0+40	3.6978	3.73	O				
0+45	3.7881	3.81	O				
0+50	3.8425	3.85	O				
0+55	3.8765	3.88	O				
1+ 0	3.8999	3.91	O				
1+ 5	3.9182	3.92	O				
1+10	3.9339	3.94	O				
1+15	3.9483	3.95	O				
1+20	3.9619	3.97	O				
1+25	3.9751	3.98	O				
1+30	3.9881	3.99	O				

1+35	4.0010	4.00		O					
1+40	4.0139	4.02		O					
1+45	4.0269	4.03		O					
1+50	4.0400	4.04		O					
1+55	4.0531	4.06		O					
2+ 0	4.0664	4.07		O					
2+ 5	4.0797	4.08		O					
2+10	4.0932	4.10		O					
2+15	4.1068	4.11		O					
2+20	4.1206	4.12		O					
2+25	4.1344	4.14		O					
2+30	4.1484	4.15		O					
2+35	4.1625	4.17		O					
2+40	4.1767	4.18		O					
2+45	4.1911	4.19		O					
2+50	4.2057	4.21		O					
2+55	4.2203	4.22		O					
3+ 0	4.2351	4.24		O					
3+ 5	4.2501	4.25		O					
3+10	4.2652	4.27		O					
3+15	4.2804	4.28		O					
3+20	4.2958	4.30		O					
3+25	4.3114	4.32		O					
3+30	4.3271	4.33		O					
3+35	4.3429	4.35		O					
3+40	4.3590	4.36		O					
3+45	4.3752	4.38		O					
3+50	4.3915	4.40		O					
3+55	4.4081	4.41		O					
4+ 0	4.4248	4.43		O					
4+ 5	4.4417	4.45		O					
4+10	4.4587	4.46		O					
4+15	4.4752	4.48		O					
4+20	4.4913	4.50		O					
4+25	4.5077	4.51		O					
4+30	4.5246	4.53		O					
4+35	4.5419	4.55		O					
4+40	4.5595	4.56		O					
4+45	4.5775	4.58		O					
4+50	4.5957	4.60		O					
4+55	4.6143	4.62		O					
5+ 0	4.6331	4.64		O					
5+ 5	4.6521	4.66		O					
5+10	4.6715	4.68		O					
5+15	4.6910	4.70		O					
5+20	4.7108	4.72		O					
5+25	4.7309	4.74		O					
5+30	4.7512	4.76		O					
5+35	4.7718	4.78		O					
5+40	4.7926	4.80		O					
5+45	4.8137	4.82		O					
5+50	4.8350	4.84		O					
5+55	4.8566	4.86		O					
6+ 0	4.8785	4.88		O					
6+ 5	4.9006	4.91		O					
6+10	4.9231	4.93		O					
6+15	4.9458	4.95		O					
6+20	4.9688	4.97		O					
6+25	4.9922	5.00		O					

6+30	5.0158	5.02		O				
6+35	5.0397	5.05		O				
6+40	5.0640	5.07		O				
6+45	5.0886	5.09		O				
6+50	5.1135	5.12		O				
6+55	5.1388	5.14		O				
7+ 0	5.1644	5.17		O				
7+ 5	5.1904	5.20		O				
7+10	5.2167	5.22		O				
7+15	5.2434	5.25		O				
7+20	5.2705	5.28		O				
7+25	5.2980	5.30		O				
7+30	5.3259	5.33		O				
7+35	5.3542	5.36		O				
7+40	5.3829	5.39		O				
7+45	5.4120	5.42		O				
7+50	5.4416	5.45		O				
7+55	5.4717	5.48		O				
8+ 0	5.5022	5.51		O				
8+ 5	5.5332	5.54		O				
8+10	5.5647	5.57		O				
8+15	5.5966	5.60		O				
8+20	5.6291	5.64		O				
8+25	5.6622	5.67		O				
8+30	5.6957	5.70		O				
8+35	5.7299	5.74		O				
8+40	5.7646	5.77		O				
8+45	5.7999	5.81		O				
8+50	5.8357	5.84		O				
8+55	5.8723	5.88		O				
9+ 0	5.9094	5.92		O				
9+ 5	5.9472	5.96		O				
9+10	5.9857	6.00		O				
9+15	6.0249	6.03		O				
9+20	6.0649	6.07		O				
9+25	6.1055	6.12		O				
9+30	6.1470	6.16		O				
9+35	6.1892	6.20		O				
9+40	6.2322	6.24		O				
9+45	6.2761	6.29		O				
9+50	6.3208	6.33		O				
9+55	6.3665	6.38		O				
10+ 0	6.4130	6.42		O				
10+ 5	6.4605	6.47		O				
10+10	6.5091	6.52		O				
10+15	6.5586	6.57		O				
10+20	6.6092	6.62		O				
10+25	6.6609	6.67		O				
10+30	6.7137	6.73		O				
10+35	6.7677	6.78		O				
10+40	6.8230	6.84		O				
10+45	6.8795	6.89		O				
10+50	6.9373	6.95		O				
10+55	6.9965	7.01		O				
11+ 0	7.0571	7.07		O				
11+ 5	7.1192	7.13		O				
11+10	7.1829	7.20		O				
11+15	7.2481	7.26		O				
11+20	7.3150	7.33		O				

11+25	7.3837	7.40		OI					
11+30	7.4542	7.47		O					
11+35	7.5266	7.54		O					
11+40	7.6010	7.62		O					
11+45	7.6774	7.70		O					
11+50	7.7561	7.78		O					
11+55	7.8370	7.86		O					
12+ 0	7.9203	7.94		O					
12+ 5	8.0188	8.04		O					
12+10	8.1978	8.25		O					
12+15	8.5143	8.60		O					
12+20	8.9145	9.01		O					
12+25	9.2896	9.38		O					
12+30	9.5828	9.65		O					
12+35	9.8015	9.85		O					
12+40	9.9740	10.01		O					
12+45	10.1241	10.16		O					
12+50	10.2641	10.30		O					
12+55	10.3998	10.43		O					
13+ 0	10.5347	10.57		O					
13+ 5	10.6714	10.70		O					
13+10	10.8111	10.84		O					
13+15	10.9547	10.99		O					
13+20	11.1030	11.14		O					
13+25	11.2567	11.29		O					
13+30	11.4163	11.45		O					
13+35	11.5829	11.62		O					
13+40	11.7596	11.80		O					
13+45	11.9377	11.98		O					
13+50	12.1121	12.15		O					
13+55	12.2907	12.33		O					
14+ 0	12.4831	12.53		O					
14+ 5	12.6916	12.74		O					
14+10	12.9159	12.97		O					
14+15	13.1563	13.21		O					
14+20	13.4129	13.48		O					
14+25	13.6861	13.75		O					
14+30	13.9766	14.05		O					
14+35	14.2862	14.36		O					
14+40	14.6173	14.70		O					
14+45	14.9728	15.06		O					
14+50	15.3562	15.45		O					
14+55	15.7712	15.87		O					
15+ 0	16.2229	16.33		OI					
15+ 5	16.7170	16.84		O					
15+10	17.2610	17.39		O					
15+15	17.8636	18.01		O					
15+20	18.5373	18.70		O					
15+25	19.2588	19.43		O					
15+30	19.8512	19.98		O					
15+35	20.1582	20.21		O					
15+40	20.3543	20.40		O					
15+45	20.8085	20.94		O					
15+50	21.8478	22.13		O					
15+55	23.7346	24.24		O					
16+ 0	26.8987	27.74		O					
16+ 5	32.6532	34.20		OI					
16+10	42.1663	44.68				O I			
16+15	51.6535	53.86						O I	

16+20	57.6246	58.82						O
16+25	59.0071	59.07						OI
16+30	57.5173	57.03						O
16+35	54.3796	53.55						O
16+40	50.2989	49.28					IO	
16+45	45.7646	44.66					O	
16+50	40.8818	39.69				IO		
16+55	35.8029	34.58				IO		
17+ 0	30.3753	29.05			IO			
17+ 5	25.8043	24.78			IO			
17+10	22.5106	21.79			IO			
17+15	19.9666	19.39			O			
17+20	17.9191	17.45			IO			
17+25	16.3569	16.01			IO			
17+30	15.1536	14.88			O			
17+35	14.2002	13.98			O			
17+40	13.4285	13.25			IO			
17+45	12.7763	12.63			O			
17+50	12.1733	12.03			O			
17+55	11.6687	11.55			O			
18+ 0	11.2572	11.16			O			
18+ 5	10.8942	10.81			O			
18+10	10.5015	10.40			O			
18+15	10.0083	9.88			O			
18+20	9.4589	9.32			O			
18+25	8.9579	8.84			IO			
18+30	8.5594	8.47			O			
18+35	8.2538	8.19			O			
18+40	8.0111	7.96			O			
18+45	7.8059	7.76			O			
18+50	7.6248	7.58			O			
18+55	7.4614	7.42			O			
19+ 0	7.3112	7.28			O			
19+ 5	7.1715	7.14			O			
19+10	7.0404	7.01			O			
19+15	6.9169	6.89			O			
19+20	6.7999	6.77			O			
19+25	6.6889	6.66			O			
19+30	6.5833	6.56			O			
19+35	6.4825	6.46			O			
19+40	6.3862	6.36			O			
19+45	6.2939	6.27			O			
19+50	6.2054	6.18			O			
19+55	6.1204	6.10			O			
20+ 0	6.0387	6.02			O			
20+ 5	5.9600	5.94			O			
20+10	5.8841	5.87			O			
20+15	5.8110	5.79			O			
20+20	5.7403	5.72			O			
20+25	5.6720	5.66			O			
20+30	5.6059	5.59			O			
20+35	5.5420	5.53			O			
20+40	5.4800	5.47			O			
20+45	5.4200	5.41			O			
20+50	5.3617	5.35			O			
20+55	5.3052	5.29			O			
21+ 0	5.2503	5.24			O			
21+ 5	5.1969	5.18			O			
21+10	5.1451	5.13			O			

21+15	5.0946	5.08		O				
21+20	5.0455	5.03		O				
21+25	4.9977	4.99		O				
21+30	4.9512	4.94		O				
21+35	4.9058	4.89		O				
21+40	4.8616	4.85		O				
21+45	4.8184	4.81		O				
21+50	4.7763	4.77		O				
21+55	4.7352	4.73		O				
22+ 0	4.6951	4.69		O				
22+ 5	4.6559	4.65		O				
22+10	4.6176	4.61		O				
22+15	4.5802	4.57		O				
22+20	4.5436	4.53		O				
22+25	4.5078	4.50		O				
22+30	4.4727	4.46		O				
22+35	4.4385	4.43		IO				
22+40	4.4014	4.39		O				
22+45	4.3648	4.36		O				
22+50	4.3302	4.32		O				
22+55	4.2973	4.29		O				
23+ 0	4.2657	4.26		O				
23+ 5	4.2350	4.23		O				
23+10	4.2052	4.20		O				
23+15	4.1760	4.17		O				
23+20	4.1475	4.14		O				
23+25	4.1196	4.11		O				
23+30	4.0923	4.09		O				
23+35	4.0654	4.06		O				
23+40	4.0391	4.03		O				
23+45	4.0132	4.01		O				
23+50	3.9878	3.98		O				
23+55	3.9628	3.96		O				
24+ 0	3.9382	3.93		O				
24+ 5	3.8743	3.86		O				
24+10	3.5689	3.48		O				
24+15	2.8650	2.67		O				
24+20	1.9520	1.72		O				
24+25	1.1552	0.98		O				
24+30	0.6248	0.51		O				
24+35	0.3269	0.27		O				
24+40	0.1734	0.14		O				
24+45	0.0933	0.08		O				
24+50	0.0498	0.04		O				
24+55	0.0264	0.02		O				
25+ 0	0.0149	0.01		O				
25+ 5	0.0089	0.01		O				
25+10	0.0045	0.00		O				
25+15	0.0025	0.00		O				
25+20	0.0015	0.00		O				
25+25	0.0010	0.00		O				
25+30	0.0000	0.00		O				

*****HYDROGRAPH DATA*****

Number of intervals = 306

Time interval = 5.0 (Min.)

Maximum/Peak flow rate = 59.007 (CFS)

Total volume = 17.742 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	84.120	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	44.904	0.000	0.000	0.000

+++++

Process from Point/Station 12.000 to Point/Station 20.000

**** ADD/COMBINE/RECOVER HYDROGRAPHS ****

From stored stream number 2 the total
volume of 44.90 (Ac.Ft) is being added to the
current hydrograph at its original rate from user
with a delay time to start of addition of 0.00 hours.

+++++

P R I N T O F S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals (CFS)

Time(h+m)	Add q(CFS)	Tot. Q	0	33.9	67.9	101.8	135.8
-----------	------------	--------	---	------	------	-------	-------

0+ 5	0.0731	0.11	Q				
0+10	0.5001	0.82	Q				
0+15	1.2398	2.25	Q				
0+20	1.8968	3.80	qQ				
0+25	2.4791	5.18	qQ				
0+30	3.0062	6.24	qQ				
0+35	3.4856	7.02	lqQ				
0+40	3.9034	7.60	lqQ				
0+45	4.2727	8.06	lqQ				
0+50	4.5990	8.44	lqQ				
0+55	4.8881	8.76	lqQ				
1+ 0	5.1455	9.05	lqQ				
1+ 5	5.3760	9.29	lqQ				
1+10	5.5835	9.52	lqQ				
1+15	5.7715	9.72	lqQ				
1+20	5.9429	9.90	lqQ				
1+25	6.1002	10.08	lqQ				
1+30	6.2453	10.23	lq Q				
1+35	6.3802	10.38	lq Q				
1+40	6.5061	10.52	lq Q				
1+45	6.6246	10.65	lq Q				
1+50	6.7364	10.78	lq Q				
1+55	6.8428	10.90	l qQ				
2+ 0	6.9442	11.01	l qQ				
2+ 5	7.0415	11.12	l qQ				
2+10	7.1304	11.22	l qQ				
2+15	7.2116	11.32	l qQ				
2+20	7.2888	11.41	l qQ				
2+25	7.3639	11.50	l qQ				
2+30	7.4370	11.59	l qQ				
2+35	7.5086	11.67	l qQ				
2+40	7.5786	11.76	l qQ				
2+45	7.6475	11.84	l qQ				
2+50	7.7153	11.92	l qQ				

2+55	7.7822	12.00	qQ				
3+ 0	7.8482	12.08	qQ				
3+ 5	7.9135	12.16	qQ				
3+10	7.9781	12.24	qQ				
3+15	8.0423	12.32	qQ				
3+20	8.1059	12.40	qQ				
3+25	8.1691	12.48	qQ				
3+30	8.2318	12.56	qQ				
3+35	8.2943	12.64	qQ				
3+40	8.3564	12.72	qQ				
3+45	8.4184	12.79	qQ				
3+50	8.4800	12.87	qQ				
3+55	8.5415	12.95	qQ				
4+ 0	8.6027	13.03	qQ				
4+ 5	8.6639	13.11	qQ				
4+10	8.7249	13.18	qQ				
4+15	8.7858	13.26	qQ				
4+20	8.8466	13.34	qQ				
4+25	8.9074	13.42	qQ				
4+30	8.9681	13.49	qQ				
4+35	9.0288	13.57	qQ				
4+40	9.0894	13.65	q Q				
4+45	9.1502	13.73	q Q				
4+50	9.2108	13.81	q Q				
4+55	9.2717	13.89	q Q				
5+ 0	9.3324	13.97	q Q				
5+ 5	9.3934	14.05	q Q				
5+10	9.4543	14.13	q Q				
5+15	9.5154	14.21	q Q				
5+20	9.5765	14.29	q Q				
5+25	9.6379	14.37	q Q				
5+30	9.6993	14.45	q Q				
5+35	9.7610	14.53	q Q				
5+40	9.8227	14.62	q Q				
5+45	9.8848	14.70	q Q				
5+50	9.9469	14.78	q Q				
5+55	10.0093	14.87	q Q				
6+ 0	10.0719	14.95	q Q				
6+ 5	10.1349	15.04	q Q				
6+10	10.1979	15.12	qQ				
6+15	10.2615	15.21	qQ				
6+20	10.3251	15.29	qQ				
6+25	10.3892	15.38	qQ				
6+30	10.4535	15.47	qQ				
6+35	10.5183	15.56	qQ				
6+40	10.5833	15.65	qQ				
6+45	10.6488	15.74	qQ				
6+50	10.7145	15.83	qQ				
6+55	10.7809	15.92	qQ				
7+ 0	10.8474	16.01	qQ				
7+ 5	10.9146	16.10	qQ				
7+10	10.9821	16.20	qQ				
7+15	11.0503	16.29	qQ				
7+20	11.1189	16.39	qQ				
7+25	11.1900	16.49	qQ				
7+30	11.2625	16.59	qQ				
7+35	11.3359	16.69	qQ				
7+40	11.4095	16.79	qQ				
7+45	11.4840	16.90	qQ				

7+50	11.5588	17.00		q Q					
7+55	11.6345	17.11		q Q					
8+ 0	11.7106	17.21		q Q					
8+ 5	11.7876	17.32		q Q					
8+10	11.8650	17.43		q Q					
8+15	11.9434	17.54		q Q					
8+20	12.0223	17.65		q Q					
8+25	12.1022	17.76		q Q					
8+30	12.1826	17.88		q Q					
8+35	12.2641	17.99		q Q					
8+40	12.3462	18.11		q Q					
8+45	12.4295	18.23		q Q					
8+50	12.5134	18.35		q Q					
8+55	12.5985	18.47		q Q					
9+ 0	12.6844	18.59		q Q					
9+ 5	12.7715	18.72		q Q					
9+10	12.8594	18.85		q Q					
9+15	12.9486	18.97		q Q					
9+20	13.0380	19.10		q Q					
9+25	13.1265	19.23		q Q					
9+30	13.2161	19.36		q Q					
9+35	13.3071	19.50		q Q					
9+40	13.3992	19.63		q Q					
9+45	13.4930	19.77		q Q					
9+50	13.5879	19.91		qQ					
9+55	13.6845	20.05		qQ					
10+ 0	13.7823	20.20		qQ					
10+ 5	13.8820	20.34		qQ					
10+10	13.9830	20.49		q Q					
10+15	14.0859	20.64		q Q					
10+20	14.1903	20.80		q Q					
10+25	14.2968	20.96		q Q					
10+30	14.4047	21.12		q Q					
10+35	14.5150	21.28		q Q					
10+40	14.6269	21.45		q Q					
10+45	14.7412	21.62		q Q					
10+50	14.8572	21.79		q Q					
10+55	14.9759	21.97		q Q					
11+ 0	15.0965	22.15		q Q					
11+ 5	15.2199	22.34		q Q					
11+10	15.3453	22.53		q Q					
11+15	15.4738	22.72		q Q					
11+20	15.6045	22.92		q Q					
11+25	15.7385	23.12		q Q					
11+30	15.8749	23.33		q Q					
11+35	16.0149	23.54		q Q					
11+40	16.1575	23.76		q Q					
11+45	16.3040	23.98		q Q					
11+50	16.4534	24.21		q Q					
11+55	16.6070	24.44		q Q					
12+ 0	16.7638	24.68		q Q					
12+ 5	16.9513	24.97		q Q					
12+10	17.2473	25.45		q Q					
12+15	17.6283	26.14		q Q					
12+20	17.9529	26.87		q Q					
12+25	18.2456	27.54		q Q					
12+30	18.5296	28.11		q Q					
12+35	18.8154	28.62		q Q					
12+40	19.0965	29.07		q Q					

12+45	19.3779	29.50		q	Q							
12+50	19.6586	29.92		q	Q							
12+55	19.9408	30.34		q	Q							
13+ 0	20.2235	30.76		q	Q							
13+ 5	20.5092	31.18		q	Q							
13+10	20.7967	31.61		q	Q							
13+15	21.0888	32.04		q	Q							
13+20	21.3842	32.49		q	Q							
13+25	21.6857	32.94		q	Q							
13+30	21.9920	33.41		q	Q							
13+35	22.3060	33.89		q	Q							
13+40	22.6264	34.39		q	Q							
13+45	22.9563	34.89		q	Q							
13+50	23.2944	35.41		q	Q							
13+55	23.6442	35.93		q	Q							
14+ 0	24.0041	36.49		q	Q							
14+ 5	24.3784	37.07		q	Q							
14+10	24.7659	37.68		q	Q							
14+15	25.1716	38.33		q	Q							
14+20	25.5934	39.01		q	Q							
14+25	26.0363	39.72		q	Q							
14+30	26.4986	40.48		q	Q							
14+35	26.9864	41.27		q	Q							
14+40	27.4984	42.12		q	Q							
14+45	28.0421	43.01		q	Q							
14+50	28.6017	43.96		q	Q							
14+55	29.1825	44.95		q	Q							
15+ 0	29.7959	46.02		q	Q							
15+ 5	30.4606	47.18		q	Q							
15+10	31.1819	48.44		q	Q							
15+15	31.9795	49.84		q	Q							
15+20	32.8610	51.40		q	Q							
15+25	33.7512	53.01		q	Q							
15+30	34.2854	54.14		q	Q							
15+35	34.6031	54.76		q	Q							
15+40	35.3342	55.69		q	Q							
15+45	36.5102	57.32		q	Q							
15+50	38.1721	60.02		q	Q							
15+55	40.5835	64.32		q	Q							
16+ 0	44.5539	71.45			q		Q					
16+ 5	53.6158	86.27			q			Q				
16+10	72.7915	114.96					q		Q			
16+15	84.1196	135.77						q		Q		
16+20	74.6264	132.25					q				Q	
16+25	66.9008	125.91						q				Q
16+30	63.5463	121.06						q				
16+35	62.4828	116.86						q				
16+40	60.9848	111.28						q				
16+45	59.8169	105.58						q				
16+50	58.6725	99.55						q				
16+55	57.5620	93.36						q				
17+ 0	56.4659	86.84						q				
17+ 5	55.3490	81.15						q				
17+10	54.1188	76.63						q				
17+15	52.8329	72.80						q				
17+20	51.5676	69.49						q				
17+25	50.3410	66.70						q				
17+30	49.1545	64.31						q				
17+35	48.0080	62.21						q				

17+40	46.9010	60.33			q	Q			
17+45	45.8306	58.61			q	Q			
17+50	44.7584	56.93			q	Q			
17+55	43.6979	55.37			q	Q			
18+ 0	42.6748	53.93			q	Q			
18+ 5	41.6681	52.56			q	Q			
18+10	40.5800	51.08			q	Q			
18+15	39.4430	49.45			q	Q			
18+20	38.4101	47.87			q	Q			
18+25	37.4576	46.42			q	Q			
18+30	36.5565	45.12			q	Q			
18+35	35.6937	43.95			q	Q			
18+40	34.8200	42.83			q	Q			
18+45	33.9294	41.74			q	Q			
18+50	33.0640	40.69			q	Q			
18+55	32.2439	39.71			q	Q			
19+ 0	31.4700	38.78			q	Q			
19+ 5	30.7394	37.91			q	Q			
19+10	30.0491	37.09			q	Q			
19+15	29.3965	36.31			q	Q			
19+20	28.7790	35.58			q	Q			
19+25	28.1942	34.88			q	Q			
19+30	27.6400	34.22			q	Q			
19+35	27.1144	33.60			q	Q			
19+40	26.6154	33.00			q	Q			
19+45	26.1414	32.44			q	Q			
19+50	25.6906	31.90			q	Q			
19+55	25.2864	31.41			q	Q			
20+ 0	24.9188	30.96			q	Q			
20+ 5	24.5685	30.53			qQ				
20+10	24.2344	30.12			qQ				
20+15	23.9153	29.73			qQ				
20+20	23.6104	29.35			q	Q			
20+25	23.2698	28.94			q	Q			
20+30	22.8812	28.49			q	Q			
20+35	22.4939	28.04			q	Q			
20+40	22.1376	27.62			q	Q			
20+45	21.8140	27.23			q	Q			
20+50	21.5187	26.88			qQ				
20+55	21.2478	26.55			qQ				
21+ 0	20.9979	26.25			qQ				
21+ 5	20.7661	25.96			qQ				
21+10	20.5499	25.69			qQ				
21+15	20.3473	25.44			q	Q			
21+20	20.1564	25.20			q	Q			
21+25	19.9759	24.97			q	Q			
21+30	19.8043	24.76			q	Q			
21+35	19.6407	24.55			q	Q			
21+40	19.4840	24.35			q	Q			
21+45	19.3335	24.15			q	Q			
21+50	19.1884	23.96			q	Q			
21+55	19.0482	23.78			q	Q			
22+ 0	18.9125	23.61			qQ				
22+ 5	18.7806	23.44			qQ				
22+10	18.6524	23.27			qQ				
22+15	18.5250	23.11			qQ				
22+20	18.3988	22.94			qQ				
22+25	18.2752	22.78			qQ				
22+30	18.1540	22.63			qQ				

22+35	18.0353	22.47		qQ					
22+40	17.9188	22.32		qQ					
22+45	17.8043	22.17		qQ					
22+50	17.6918	22.02		qQ					
22+55	17.5812	21.88		qQ					
23+ 0	17.4723	21.74		qQ					
23+ 5	17.3651	21.60		qQ					
23+10	17.2594	21.46		qQ					
23+15	17.1554	21.33		qQ					
23+20	17.0527	21.20		qQ					
23+25	16.9515	21.07		q Q					
23+30	16.8516	20.94		q Q					
23+35	16.7531	20.82		q Q					
23+40	16.6558	20.69		q Q					
23+45	16.5598	20.57		q Q					
23+50	16.4650	20.45		q Q					
23+55	16.3713	20.33		qQ					
24+ 0	16.2787	20.22		qQ					
24+ 5	16.1160	19.99		qQ					
24+10	15.6106	19.18		qQ					
24+15	14.8116	17.68		qQ					
24+20	14.1105	16.06		Q					
24+25	13.4921	14.65		qQ					
24+30	12.9341	13.56		Q					
24+35	12.4282	12.76		Q					
24+40	11.9875	12.16		Q					
24+45	11.5986	11.69		Q					
24+50	11.2553	11.31		Q					
24+55	10.9493	10.98		Q					
25+ 0	10.6710	10.69		Q					
25+ 5	10.4188	10.43		Q					
25+10	10.1909	10.20		Q					
25+15	9.9841	9.99		Q					
25+20	9.7951	9.80		Q					
25+25	9.6215	9.62		Q					
25+30	9.4610	9.46		Q					
25+35	9.3118	9.31		Q					
25+40	9.1723	9.17		Q					
25+45	9.0413	9.04		Q					
25+50	8.9174	8.92		Q					
25+55	8.7998	8.80		Q					
26+ 0	8.6878	8.69		Q					
26+ 5	8.5805	8.58		Q					
26+10	8.4669	8.47		Q					
26+15	8.3570	8.36		Q					
26+20	8.2509	8.25		Q					
26+25	8.1481	8.15		Q					
26+30	8.0483	8.05		Q					
26+35	7.9513	7.95		Q					
26+40	7.8569	7.86		Q					
26+45	7.7648	7.76		Q					
26+50	7.6748	7.67		Q					
26+55	7.5868	7.59		Q					
27+ 0	7.4906	7.49		Q					
27+ 5	7.3810	7.38		Q					
27+10	7.2676	7.27		Q					
27+15	7.1559	7.16		Q					
27+20	7.0463	7.05		Q					
27+25	6.9387	6.94		Q					

27+30	6.8302	6.83	I Q				
27+35	6.7246	6.72	I Q				
27+40	6.6230	6.62	I Q				
27+45	6.5236	6.52	I Q				
27+50	6.4259	6.43	I Q				
27+55	6.3297	6.33	I Q				
28+ 0	6.2352	6.24	I Q				
28+ 5	6.1421	6.14	I Q				
28+10	6.0506	6.05	I Q				
28+15	5.9605	5.96	I Q				
28+20	5.8720	5.87	I Q				
28+25	5.7848	5.78	I Q				
28+30	5.6990	5.70	I Q				
28+35	5.6147	5.61	I Q				
28+40	5.5317	5.53	I Q				
28+45	5.4500	5.45	I Q				
28+50	5.3696	5.37	I Q				
28+55	5.2905	5.29	I Q				
29+ 0	5.2127	5.21	I Q				
29+ 5	5.1361	5.14	I Q				
29+10	5.0607	5.06	I Q				
29+15	4.9865	4.99	I Q				
29+20	4.9135	4.91	I Q				
29+25	4.8417	4.84	I Q				
29+30	4.7710	4.77	I Q				
29+35	4.7034	4.70	I Q				
29+40	4.6384	4.64	I Q				
29+45	4.5747	4.57	I Q				
29+50	4.5121	4.51	I Q				
29+55	4.4503	4.45	I Q				
30+ 0	4.3895	4.39	I Q				
30+ 5	4.3296	4.33	I Q				
30+10	4.2706	4.27	I Q				
30+15	4.2125	4.21	I Q				
30+20	4.1553	4.16	I Q				
30+25	4.0989	4.10	I Q				
30+30	4.0434	4.04	I Q				
30+35	3.9887	3.99	I Q				
30+40	3.9348	3.93	I Q				
30+45	3.8817	3.88	I Q				
30+50	3.8294	3.83	I Q				
30+55	3.7778	3.78	I Q				
31+ 0	3.7271	3.73	I Q				
31+ 5	3.6770	3.68	I Q				
31+10	3.6278	3.63	I Q				
31+15	3.5792	3.58	I Q				
31+20	3.5313	3.53	I Q				
31+25	3.4842	3.48	I Q				
31+30	3.4377	3.44	I Q				
31+35	3.3919	3.39	Q				
31+40	3.3468	3.35	Q				
31+45	3.3023	3.30	Q				
31+50	3.2584	3.26	Q				
31+55	3.2152	3.22	Q				
32+ 0	3.1727	3.17	Q				
32+ 5	3.1307	3.13	Q				
32+10	3.0893	3.09	Q				
32+15	3.0486	3.05	Q				
32+20	3.0084	3.01	Q				

32+25	2.9688	2.97	Q				
32+30	2.9297	2.93	Q				
32+35	2.8913	2.89	Q				
32+40	2.8533	2.85	Q				
32+45	2.8159	2.82	Q				
32+50	2.7790	2.78	Q				
32+55	2.7427	2.74	Q				
33+ 0	2.7069	2.71	Q				
33+ 5	2.6715	2.67	Q				
33+10	2.6367	2.64	Q				
33+15	2.6024	2.60	Q				
33+20	2.5692	2.57	Q				
33+25	2.5384	2.54	Q				
33+30	2.5089	2.51	Q				
33+35	2.4799	2.48	Q				
33+40	2.4513	2.45	Q				
33+45	2.4230	2.42	Q				
33+50	2.3951	2.40	Q				
33+55	2.3675	2.37	Q				
34+ 0	2.3403	2.34	Q				
34+ 5	2.3135	2.31	Q				
34+10	2.2870	2.29	Q				
34+15	2.2608	2.26	Q				
34+20	2.2350	2.23	Q				
34+25	2.2095	2.21	Q				
34+30	2.1843	2.18	Q				
34+35	2.1594	2.16	Q				
34+40	2.1349	2.13	Q				
34+45	2.1106	2.11	Q				
34+50	2.0867	2.09	Q				
34+55	2.0631	2.06	Q				
35+ 0	2.0397	2.04	Q				
35+ 5	2.0167	2.02	Q				
35+10	1.9939	1.99	Q				
35+15	1.9714	1.97	Q				
35+20	1.9492	1.95	Q				
35+25	1.9273	1.93	Q				
35+30	1.9056	1.91	Q				
35+35	1.8842	1.88	Q				
35+40	1.8631	1.86	Q				
35+45	1.8422	1.84	Q				
35+50	1.8216	1.82	Q				
35+55	1.8012	1.80	Q				
36+ 0	1.7811	1.78	Q				
36+ 5	0.0000	0.00	Q				
36+10	0.0000	0.00	Q				
36+15	0.0000	0.00	Q				
36+20	0.0000	0.00	Q				
36+25	0.0000	0.00	Q				
36+30	0.0000	0.00	Q				
36+35	0.0000	0.00	Q				
36+40	0.0000	0.00	Q				
36+45	0.0000	0.00	Q				
36+50	0.0000	0.00	Q				
36+55	0.0000	0.00	Q				
37+ 0	0.0000	0.00	Q				
37+ 5	0.0000	0.00	Q				
37+10	0.0000	0.00	Q				
37+15	0.0000	0.00	Q				

37+20	0.0000	0.00	Q				
37+25	0.0000	0.00	Q				
37+30	0.0000	0.00	Q				
37+35	0.0000	0.00	Q				
37+40	0.0000	0.00	Q				
37+45	0.0000	0.00	Q				
37+50	0.0000	0.00	Q				
37+55	0.0000	0.00	Q				
38+ 0	0.0000	0.00	Q				
38+ 5	0.0000	0.00	Q				
38+10	0.0000	0.00	Q				
38+15	0.0000	0.00	Q				
38+20	0.0000	0.00	Q				
38+25	0.0000	0.00	Q				
38+30	0.0000	0.00	Q				
38+35	0.0000	0.00	Q				
38+40	0.0000	0.00	Q				
38+45	0.0000	0.00	Q				
38+50	0.0000	0.00	Q				
38+55	0.0000	0.00	Q				
39+ 0	0.0000	0.00	Q				
39+ 5	0.0000	0.00	Q				
39+10	0.0000	0.00	Q				
39+15	0.0000	0.00	Q				
39+20	0.0000	0.00	Q				
39+25	0.0000	0.00	Q				
39+30	0.0000	0.00	Q				
39+35	0.0000	0.00	Q				
39+40	0.0000	0.00	Q				
39+45	0.0000	0.00	Q				
39+50	0.0000	0.00	Q				
39+55	0.0000	0.00	Q				
40+ 0	0.0000	0.00	Q				
40+ 5	0.0000	0.00	Q				
40+10	0.0000	0.00	Q				
40+15	0.0000	0.00	Q				
40+20	0.0000	0.00	Q				
40+25	0.0000	0.00	Q				
40+30	0.0000	0.00	Q				
40+35	0.0000	0.00	Q				
40+40	0.0000	0.00	Q				
40+45	0.0000	0.00	Q				
40+50	0.0000	0.00	Q				
40+55	0.0000	0.00	Q				
41+ 0	0.0000	0.00	Q				
41+ 5	0.0000	0.00	Q				
41+10	0.0000	0.00	Q				
41+15	0.0000	0.00	Q				
41+20	0.0000	0.00	Q				
41+25	0.0000	0.00	Q				
41+30	0.0000	0.00	Q				
41+35	0.0000	0.00	Q				
41+40	0.0000	0.00	Q				
41+45	0.0000	0.00	Q				
41+50	0.0000	0.00	Q				
41+55	0.0000	0.00	Q				
42+ 0	0.0000	0.00	Q				
42+ 5	0.0000	0.00	Q				
42+10	0.0000	0.00	Q				

42+15	0.0000	0.00	Q				
42+20	0.0000	0.00	Q				
42+25	0.0000	0.00	Q				
42+30	0.0000	0.00	Q				
42+35	0.0000	0.00	Q				
42+40	0.0000	0.00	Q				
42+45	0.0000	0.00	Q				
42+50	0.0000	0.00	Q				
42+55	0.0000	0.00	Q				
43+ 0	0.0000	0.00	Q				
43+ 5	0.0000	0.00	Q				
43+10	0.0000	0.00	Q				
43+15	0.0000	0.00	Q				
43+20	0.0000	0.00	Q				
43+25	0.0000	0.00	Q				
43+30	0.0000	0.00	Q				
43+35	0.0000	0.00	Q				
43+40	0.0000	0.00	Q				
43+45	0.0000	0.00	Q				
43+50	0.0000	0.00	Q				
43+55	0.0000	0.00	Q				
44+ 0	0.0000	0.00	Q				
44+ 5	0.0000	0.00	Q				
44+10	0.0000	0.00	Q				
44+15	0.0000	0.00	Q				
44+20	0.0000	0.00	Q				
44+25	0.0000	0.00	Q				
44+30	0.0000	0.00	Q				
44+35	0.0000	0.00	Q				
44+40	0.0000	0.00	Q				
44+45	0.0000	0.00	Q				
44+50	0.0000	0.00	Q				
44+55	0.0000	0.00	Q				
45+ 0	0.0000	0.00	Q				
45+ 5	0.0000	0.00	Q				
45+10	0.0000	0.00	Q				
45+15	0.0000	0.00	Q				
45+20	0.0000	0.00	Q				
45+25	0.0000	0.00	Q				
45+30	0.0000	0.00	Q				
45+35	0.0000	0.00	Q				
45+40	0.0000	0.00	Q				
45+45	0.0000	0.00	Q				
45+50	0.0000	0.00	Q				
45+55	0.0000	0.00	Q				
46+ 0	0.0000	0.00	Q				
46+ 5	0.0000	0.00	Q				
46+10	0.0000	0.00	Q				
46+15	0.0000	0.00	Q				
46+20	0.0000	0.00	Q				
46+25	0.0000	0.00	Q				
46+30	0.0000	0.00	Q				
46+35	0.0000	0.00	Q				
46+40	0.0000	0.00	Q				
46+45	0.0000	0.00	Q				
46+50	0.0000	0.00	Q				
46+55	0.0000	0.00	Q				
47+ 0	0.0000	0.00	Q				
47+ 5	0.0000	0.00	Q				

47+10	0.0000	0.00	Q				
47+15	0.0000	0.00	Q				
47+20	0.0000	0.00	Q				
47+25	0.0000	0.00	Q				
47+30	0.0000	0.00	Q				
47+35	0.0000	0.00	Q				
47+40	0.0000	0.00	Q				
47+45	0.0000	0.00	Q				
47+50	0.0000	0.00	Q				
47+55	0.0000	0.00	Q				
48+ 0	0.0000	0.00	Q				
48+ 5	0.0000	0.00	Q				
48+10	0.0000	0.00	Q				
48+15	0.0000	0.00	Q				
48+20	0.0000	0.00	Q				
48+25	0.0000	0.00	Q				
48+30	0.0000	0.00	Q				
48+35	0.0000	0.00	Q				
48+40	0.0000	0.00	Q				
48+45	0.0000	0.00	Q				
48+50	0.0000	0.00	Q				
48+55	0.0000	0.00	Q				
49+ 0	0.0000	0.00	Q				
49+ 5	0.0000	0.00	Q				
49+10	0.0000	0.00	Q				
49+15	0.0000	0.00	Q				
49+20	0.0000	0.00	Q				
49+25	0.0000	0.00	Q				
49+30	0.0000	0.00	Q				
49+35	0.0000	0.00	Q				
49+40	0.0000	0.00	Q				
49+45	0.0000	0.00	Q				
49+50	0.0000	0.00	Q				
49+55	0.0000	0.00	Q				
50+ 0	0.0000	0.00	Q				
50+ 5	0.0000	0.00	Q				
50+10	0.0000	0.00	Q				
50+15	0.0000	0.00	Q				
50+20	0.0000	0.00	Q				
50+25	0.0000	0.00	Q				
50+30	0.0000	0.00	Q				
50+35	0.0000	0.00	Q				
50+40	0.0000	0.00	Q				
50+45	0.0000	0.00	Q				
50+50	0.0000	0.00	Q				
50+55	0.0000	0.00	Q				
51+ 0	0.0000	0.00	Q				
51+ 5	0.0000	0.00	Q				
51+10	0.0000	0.00	Q				
51+15	0.0000	0.00	Q				
51+20	0.0000	0.00	Q				
51+25	0.0000	0.00	Q				
51+30	0.0000	0.00	Q				
51+35	0.0000	0.00	Q				
51+40	0.0000	0.00	Q				
51+45	0.0000	0.00	Q				
51+50	0.0000	0.00	Q				
51+55	0.0000	0.00	Q				
52+ 0	0.0000	0.00	Q				

52+ 5	0.0000	0.00	Q				
52+10	0.0000	0.00	Q				
52+15	0.0000	0.00	Q				
52+20	0.0000	0.00	Q				
52+25	0.0000	0.00	Q				
52+30	0.0000	0.00	Q				
52+35	0.0000	0.00	Q				
52+40	0.0000	0.00	Q				
52+45	0.0000	0.00	Q				
52+50	0.0000	0.00	Q				
52+55	0.0000	0.00	Q				
53+ 0	0.0000	0.00	Q				
53+ 5	0.0000	0.00	Q				
53+10	0.0000	0.00	Q				
53+15	0.0000	0.00	Q				
53+20	0.0000	0.00	Q				
53+25	0.0000	0.00	Q				
53+30	0.0000	0.00	Q				
53+35	0.0000	0.00	Q				
53+40	0.0000	0.00	Q				
53+45	0.0000	0.00	Q				
53+50	0.0000	0.00	Q				
53+55	0.0000	0.00	Q				
54+ 0	0.0000	0.00	Q				
54+ 5	0.0000	0.00	Q				
54+10	0.0000	0.00	Q				
54+15	0.0000	0.00	Q				
54+20	0.0000	0.00	Q				
54+25	0.0000	0.00	Q				
54+30	0.0000	0.00	Q				
54+35	0.0000	0.00	Q				
54+40	0.0000	0.00	Q				
54+45	0.0000	0.00	Q				
54+50	0.0000	0.00	Q				
54+55	0.0000	0.00	Q				
55+ 0	0.0000	0.00	Q				
55+ 5	0.0000	0.00	Q				
55+10	0.0000	0.00	Q				
55+15	0.0000	0.00	Q				
55+20	0.0000	0.00	Q				
55+25	0.0000	0.00	Q				
55+30	0.0000	0.00	Q				
55+35	0.0000	0.00	Q				
55+40	0.0000	0.00	Q				
55+45	0.0000	0.00	Q				
55+50	0.0000	0.00	Q				
55+55	0.0000	0.00	Q				
56+ 0	0.0000	0.00	Q				
56+ 5	0.0000	0.00	Q				
56+10	0.0000	0.00	Q				
56+15	0.0000	0.00	Q				
56+20	0.0000	0.00	Q				
56+25	0.0000	0.00	Q				
56+30	0.0000	0.00	Q				
56+35	0.0000	0.00	Q				
56+40	0.0000	0.00	Q				
56+45	0.0000	0.00	Q				
56+50	0.0000	0.00	Q				
56+55	0.0000	0.00	Q				

57+ 0	0.0000	0.00	Q				
57+ 5	0.0000	0.00	Q				
57+10	0.0000	0.00	Q				
57+15	0.0000	0.00	Q				
57+20	0.0000	0.00	Q				
57+25	0.0000	0.00	Q				
57+30	0.0000	0.00	Q				
57+35	0.0000	0.00	Q				
57+40	0.0000	0.00	Q				
57+45	0.0000	0.00	Q				
57+50	0.0000	0.00	Q				
57+55	0.0000	0.00	Q				
58+ 0	0.0000	0.00	Q				
58+ 5	0.0000	0.00	Q				
58+10	0.0000	0.00	Q				
58+15	0.0000	0.00	Q				
58+20	0.0000	0.00	Q				
58+25	0.0000	0.00	Q				
58+30	0.0000	0.00	Q				
58+35	0.0000	0.00	Q				
58+40	0.0000	0.00	Q				
58+45	0.0000	0.00	Q				
58+50	0.0000	0.00	Q				
58+55	0.0000	0.00	Q				
59+ 0	0.0000	0.00	Q				
59+ 5	0.0000	0.00	Q				
59+10	0.0000	0.00	Q				
59+15	0.0000	0.00	Q				
59+20	0.0000	0.00	Q				
59+25	0.0000	0.00	Q				
59+30	0.0000	0.00	Q				
59+35	0.0000	0.00	Q				
59+40	0.0000	0.00	Q				
59+45	0.0000	0.00	Q				
59+50	0.0000	0.00	Q				
59+55	0.0000	0.00	Q				
60+ 0	0.0000	0.00	Q				
60+ 5	0.0000	0.00	Q				
60+10	0.0000	0.00	Q				
60+15	0.0000	0.00	Q				
60+20	0.0000	0.00	Q				
60+25	0.0000	0.00	Q				
60+30	0.0000	0.00	Q				
60+35	0.0000	0.00	Q				
60+40	0.0000	0.00	Q				
60+45	0.0000	0.00	Q				
60+50	0.0000	0.00	Q				
60+55	0.0000	0.00	Q				
61+ 0	0.0000	0.00	Q				
61+ 5	0.0000	0.00	Q				
61+10	0.0000	0.00	Q				
61+15	0.0000	0.00	Q				
61+20	0.0000	0.00	Q				
61+25	0.0000	0.00	Q				
61+30	0.0000	0.00	Q				
61+35	0.0000	0.00	Q				
61+40	0.0000	0.00	Q				
61+45	0.0000	0.00	Q				
61+50	0.0000	0.00	Q				

61+55	0.0000	0.00	Q				
62+ 0	0.0000	0.00	Q				
62+ 5	0.0000	0.00	Q				
62+10	0.0000	0.00	Q				
62+15	0.0000	0.00	Q				
62+20	0.0000	0.00	Q				
62+25	0.0000	0.00	Q				
62+30	0.0000	0.00	Q				
62+35	0.0000	0.00	Q				
62+40	0.0000	0.00	Q				
62+45	0.0000	0.00	Q				
62+50	0.0000	0.00	Q				
62+55	0.0000	0.00	Q				
63+ 0	0.0000	0.00	Q				
63+ 5	0.0000	0.00	Q				
63+10	0.0000	0.00	Q				
63+15	0.0000	0.00	Q				
63+20	0.0000	0.00	Q				
63+25	0.0000	0.00	Q				
63+30	0.0000	0.00	Q				
63+35	0.0000	0.00	Q				
63+40	0.0000	0.00	Q				
63+45	0.0000	0.00	Q				
63+50	0.0000	0.00	Q				
63+55	0.0000	0.00	Q				
64+ 0	0.0000	0.00	Q				
64+ 5	0.0000	0.00	Q				
64+10	0.0000	0.00	Q				
64+15	0.0000	0.00	Q				
64+20	0.0000	0.00	Q				
64+25	0.0000	0.00	Q				
64+30	0.0000	0.00	Q				
64+35	0.0000	0.00	Q				
64+40	0.0000	0.00	Q				
64+45	0.0000	0.00	Q				
64+50	0.0000	0.00	Q				
64+55	0.0000	0.00	Q				
65+ 0	0.0000	0.00	Q				
65+ 5	0.0000	0.00	Q				
65+10	0.0000	0.00	Q				
65+15	0.0000	0.00	Q				
65+20	0.0000	0.00	Q				
65+25	0.0000	0.00	Q				
65+30	0.0000	0.00	Q				
65+35	0.0000	0.00	Q				
65+40	0.0000	0.00	Q				
65+45	0.0000	0.00	Q				
65+50	0.0000	0.00	Q				
65+55	0.0000	0.00	Q				
66+ 0	0.0000	0.00	Q				
66+ 5	0.0000	0.00	Q				
66+10	0.0000	0.00	Q				
66+15	0.0000	0.00	Q				
66+20	0.0000	0.00	Q				
66+25	0.0000	0.00	Q				
66+30	0.0000	0.00	Q				
66+35	0.0000	0.00	Q				
66+40	0.0000	0.00	Q				
66+45	0.0000	0.00	Q				

66+50	0.0000	0.00	Q				
66+55	0.0000	0.00	Q				
67+ 0	0.0000	0.00	Q				
67+ 5	0.0000	0.00	Q				
67+10	0.0000	0.00	Q				
67+15	0.0000	0.00	Q				
67+20	0.0000	0.00	Q				
67+25	0.0000	0.00	Q				
67+30	0.0000	0.00	Q				
67+35	0.0000	0.00	Q				
67+40	0.0000	0.00	Q				
67+45	0.0000	0.00	Q				
67+50	0.0000	0.00	Q				
67+55	0.0000	0.00	Q				
68+ 0	0.0000	0.00	Q				
68+ 5	0.0000	0.00	Q				
68+10	0.0000	0.00	Q				
68+15	0.0000	0.00	Q				
68+20	0.0000	0.00	Q				
68+25	0.0000	0.00	Q				
68+30	0.0000	0.00	Q				
68+35	0.0000	0.00	Q				
68+40	0.0000	0.00	Q				
68+45	0.0000	0.00	Q				
68+50	0.0000	0.00	Q				
68+55	0.0000	0.00	Q				
69+ 0	0.0000	0.00	Q				
69+ 5	0.0000	0.00	Q				
69+10	0.0000	0.00	Q				
69+15	0.0000	0.00	Q				
69+20	0.0000	0.00	Q				
69+25	0.0000	0.00	Q				
69+30	0.0000	0.00	Q				
69+35	0.0000	0.00	Q				
69+40	0.0000	0.00	Q				
69+45	0.0000	0.00	Q				
69+50	0.0000	0.00	Q				
69+55	0.0000	0.00	Q				
70+ 0	0.0000	0.00	Q				
70+ 5	0.0000	0.00	Q				
70+10	0.0000	0.00	Q				
70+15	0.0000	0.00	Q				
70+20	0.0000	0.00	Q				
70+25	0.0000	0.00	Q				
70+30	0.0000	0.00	Q				
70+35	0.0000	0.00	Q				
70+40	0.0000	0.00	Q				
70+45	0.0000	0.00	Q				
70+50	0.0000	0.00	Q				
70+55	0.0000	0.00	Q				
71+ 0	0.0000	0.00	Q				
71+ 5	0.0000	0.00	Q				
71+10	0.0000	0.00	Q				
71+15	0.0000	0.00	Q				
71+20	0.0000	0.00	Q				
71+25	0.0000	0.00	Q				
71+30	0.0000	0.00	Q				
71+35	0.0000	0.00	Q				
71+40	0.0000	0.00	Q				

71+45	0.0000	0.00	Q				
71+50	0.0000	0.00	Q				
71+55	0.0000	0.00	Q				
72+ 0	0.0000	0.00	Q				
72+ 5	0.0000	0.00	Q				
72+10	0.0000	0.00	Q				
72+15	0.0000	0.00	Q				
72+20	0.0000	0.00	Q				
72+25	0.0000	0.00	Q				
72+30	0.0000	0.00	Q				
72+35	0.0000	0.00	Q				
72+40	0.0000	0.00	Q				
72+45	0.0000	0.00	Q				
72+50	0.0000	0.00	Q				
72+55	0.0000	0.00	Q				
73+ 0	0.0000	0.00	Q				
73+ 5	0.0000	0.00	Q				
73+10	0.0000	0.00	Q				
73+15	0.0000	0.00	Q				
73+20	0.0000	0.00	Q				
73+25	0.0000	0.00	Q				
73+30	0.0000	0.00	Q				
73+35	0.0000	0.00	Q				
73+40	0.0000	0.00	Q				
73+45	0.0000	0.00	Q				
73+50	0.0000	0.00	Q				
73+55	0.0000	0.00	Q				
74+ 0	0.0000	0.00	Q				
74+ 5	0.0000	0.00	Q				
74+10	0.0000	0.00	Q				
74+15	0.0000	0.00	Q				
74+20	0.0000	0.00	Q				
74+25	0.0000	0.00	Q				
74+30	0.0000	0.00	Q				
74+35	0.0000	0.00	Q				
74+40	0.0000	0.00	Q				
74+45	0.0000	0.00	Q				
74+50	0.0000	0.00	Q				
74+55	0.0000	0.00	Q				
75+ 0	0.0000	0.00	Q				
75+ 5	0.0000	0.00	Q				
75+10	0.0000	0.00	Q				
75+15	0.0000	0.00	Q				
75+20	0.0000	0.00	Q				
75+25	0.0000	0.00	Q				
75+30	0.0000	0.00	Q				
75+35	0.0000	0.00	Q				
75+40	0.0000	0.00	Q				
75+45	0.0000	0.00	Q				
75+50	0.0000	0.00	Q				
75+55	0.0000	0.00	Q				
76+ 0	0.0000	0.00	Q				
76+ 5	0.0000	0.00	Q				
76+10	0.0000	0.00	Q				
76+15	0.0000	0.00	Q				
76+20	0.0000	0.00	Q				
76+25	0.0000	0.00	Q				
76+30	0.0000	0.00	Q				
76+35	0.0000	0.00	Q				

76+40	0.0000	0.00	Q				
76+45	0.0000	0.00	Q				
76+50	0.0000	0.00	Q				
76+55	0.0000	0.00	Q				
77+ 0	0.0000	0.00	Q				
77+ 5	0.0000	0.00	Q				
77+10	0.0000	0.00	Q				
77+15	0.0000	0.00	Q				
77+20	0.0000	0.00	Q				
77+25	0.0000	0.00	Q				
77+30	0.0000	0.00	Q				
77+35	0.0000	0.00	Q				
77+40	0.0000	0.00	Q				
77+45	0.0000	0.00	Q				
77+50	0.0000	0.00	Q				
77+55	0.0000	0.00	Q				
78+ 0	0.0000	0.00	Q				
78+ 5	0.0000	0.00	Q				
78+10	0.0000	0.00	Q				
78+15	0.0000	0.00	Q				
78+20	0.0000	0.00	Q				
78+25	0.0000	0.00	Q				
78+30	0.0000	0.00	Q				
78+35	0.0000	0.00	Q				
78+40	0.0000	0.00	Q				
78+45	0.0000	0.00	Q				
78+50	0.0000	0.00	Q				
78+55	0.0000	0.00	Q				

*****HYDROGRAPH DATA*****

Number of intervals = 947

Time interval = 5.0 (Min.)

Maximum/Peak flow rate = 135.773 (CFS)

Total volume = 62.646 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000
