

Hydrology Report

Goodman Logistics Center Fullerton
1223 S. State College Boulevard

Fullerton, CA. 92834

August 9, 2021

Revised: October 25, 2021

This Hydraulic Study has been prepared by, and under the direction of, the undersigned, a duly Registered Civil Engineer in the State of California. Except as noted, the undersigned attests to the technical information contained herein, and has judged to be acceptable the qualifications of any technical specialists providing engineering data for this report, upon which findings, conclusions, and recommendations are based.

Jacob Vandervis, P.E.

Registered Civil Engineer No. C46301

Exp.: 12/31/22

Prepared for:

Goodman
18201 Von Karman Ave.
Suite 1170
Irvine, CA 92612
Phone: T.B.D.

Prepared by:



Tait & Associates, Inc.
701 N. Parkcenter Drive
Santa Ana, CA 92705
(714) 560-8200

TAIT JOB # SP8454

Table of Contents

Section 1	Purpose and Scope.....	2
Section 2	Project Information.....	3
2.1	Project Description.....	3
2.1.1	Project Location.....	3
2.2	Hydrologic Setting.....	4
2.2.1	Watershed	4
2.2.2	Existing Topography and Facilities	4
2.2.3	Adjacent Land Use	4
2.2.4	Soil Conditions	4
2.2.5	Downstream Conditions.....	5
2.2.6	Existing Drainage Patterns.....	5
2.2.7	Proposed Drainage Patterns.....	5
2.2.8	Impervious Cover.....	6
Section 3	Design Criteria and Methodology.....	7
3.1	Design Criteria	7
3.1.1	Drainage Design Criteria	7
3.1.2	Flow-Based Numeric Sizing.....	7
3.1.3	Runoff Calculation Method	7
Section 4	Hydrology and Drainage Analysis	8
4.1	Drainage Delineation.....	8
4.2	Summary of Results.....	8
Section 5	Peak Runoff Reduction and Detention	9
Appendix A	– Soil Map	A
Appendix B	– Existing Hydrological Condition Map.....	B
Appendix C	– Existing Hydrological Calculations	C
Appendix D	– Proposed Hydrological Condition Map	D
Appendix E	– Proposed Hydrological Calculations	E

Appendix F – Goodman Logistic Center Hydrology Report	F
---	---

Section 1 Purpose and Scope

This hydrology study presents an analysis of the hydrologic effects of the redevelopment of 1.28 acres of an existing commercial development into a proposed parking lot, in the City of Fullerton, California.

This hydrology study addresses runoff from the project site and its impact to the existing downstream storm drainage system. The study includes calculations for the 25-year storm event for both the existing and proposed condition. The study also details the general project characteristics, the design, criteria and methodology applied to the analysis of the project. The report provides a design analysis for the drainage facilities proposed as part of the project, with the drainage improvements being designed to mitigate all rainfall event frequencies up to a 24-hour, for the 25-year storm event. A 100-year analysis was performed as the city has indicated that Kimberly Channel does not have the capacity for an increase in flows beyond the existing condition.

This Hydrology Study fulfills the requirements of the Orange County Hydrology Manual.

The plans and specifications in the Hydrology Study are not for construction purposes; the contractor shall refer to final approved construction documents for plans and specifications.

Section 2 Project Information

2.1 Project Description

The proposed construction involves the redevelopment of approximately 1.28 acres of an existing commercial development into a proposed parking lot, in the City of Fullerton, California. The proposed development is to include an asphalt parking lot with designated striping for tractor trailer parking.

2.1.1 Project Location

The project is located at 1223 S. State College Boulevard in the City of Fullerton, California, on the corner of S. State College Boulevard and E. Orangethorpe Avenue, as graphically shown in Figure 1 below.

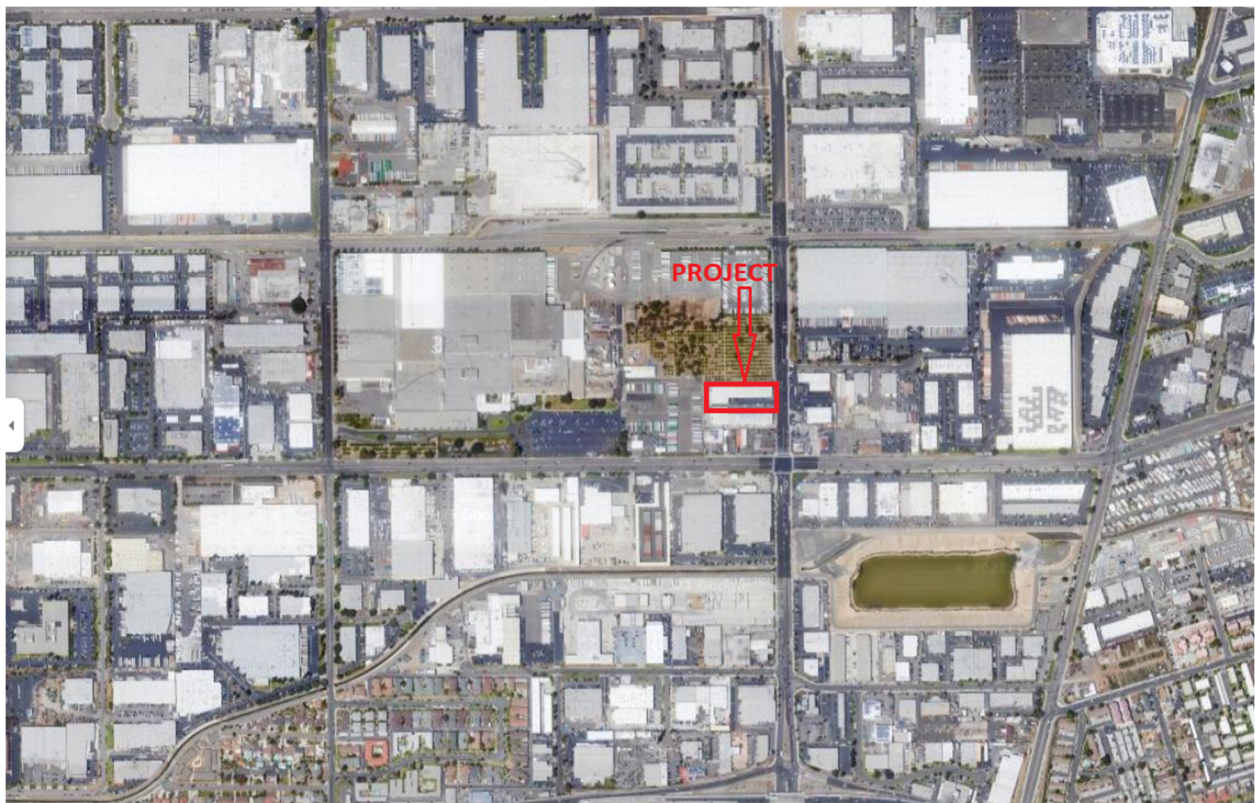


Figure 1 – Vicinity Map (Not To Scale)

2.2 Hydrologic Setting

This section summarizes the project's size and location in the context of the larger watershed perspective, topography, soil and vegetation conditions, percent impervious area, natural and infrastructure drainage features, and other relevant hydrologic and environmental factors to be protected specific to the project area's watershed.

2.2.1 Watershed

The project site is located within the Watershed A of the OCFCD Drainage System. The project discharges to the Kimberly Storm Channel which joins the Fullerton Creek Channel. From there, it goes to Coyote Creek; then to the San Gabriel River; and, ultimately, to the Pacific Ocean.

2.2.2 Existing Topography and Facilities

The existing topography of the project site is relatively flat with slopes varying from approximately 0.1% to 2% in paved areas. The existing site is entirely developed with an existing building and asphalt parking. Site elevations range from 184 to 185 above Mean Sea Level.

2.2.3 Adjacent Land Use

The project is bounded by manufacturing/industrial/commercial developments to the west and south, State College Boulevard to the east, and an existing field to the north.

2.2.4 Soil Conditions

In accordance with the Natural Resources Conservation Service Soil Survey, published in 2006, the project site is located within the hydrology soil group B.

Group B soils are typically silt loams and loams. They have a moderate infiltration rate when thoroughly wet. They consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

The project site location has been graphically shown on a soil group map and a USDA Soil Resource map, which have been included in the *Appendix A* section of this report.

2.2.5 Downstream Conditions

The project discharges to the Kimberly Storm Channel which joins the Fullerton Creek Channel. From there, it goes to Coyote Creek; then to the San Gabriel River; and, ultimately, to the Pacific Ocean.

Based on the results of this study, the project mitigation measures will prevent an increase in runoff. The report analyzes the Goodman logistics Center Detention an water quality treatment devices for capacity for the state college site. The following report found that there is adequate capacity. Therefore, the proposed project improvements will not have an adverse effect on the downstream storm drain system.

2.2.6 Existing Drainage Patterns

The existing project site is 1.28 acres, and it comprises of 2 drainage areas: A1, which is 0.59 acres, and A2, which is 0.69 acres. For A1 drainage, water flows northerly and then easterly via a concrete ribbon gutter to outfall 1 (184.02 Elevation) located at the property line boundary on South State College Boulevard. For A2 drainage, water flows southerly and then easterly via a concrete ribbon gutter to outfall 2 (184.17 Elevation) located at the property line boundary on South State College Boulevard. For both outfalls 1 and 2 water will flow southerly down South State College Boulevard to the intersection of South State College Boulevard and Orangethorpe Avenue. From there all flows will move westerly via gutter flow to the intersection of Orangethorpe Avenue and Acacia Avenue. Stormwater will then move north on Acacia Avenue to Kimberly Avenue. Flow will enter Kimberly Storm Channel via a catch basin on the Southeast corner of Kimberly Avenue and Acacia Avenue. The existing drainage patterns are graphically shown in *Appendix B* of this report.

2.2.7 Proposed Drainage Patterns

The proposed project site is 1.28 acres and the proposed drainage patterns will direct water flow generally from the Southeast (184.50 FS) to the Northwest direction (182.29 FS). Water will enter a proposed catch basin on the Northwest corner of the project site. All flows will be conveyed via storm drainpipe to Kimberly storm drain channel as described in the Goodman Logistics Center Fullerton Hydrology report, 2001 E Orangethorpe Ave, dated March 18th 2020

prepared by Tait & Associates. The proposed hydrology drainage pattern is shown in the proposed hydrological condition map included in *Appendix D*.

2.2.8 Impervious Cover

The existing 1.28 acres is comprised of an existing commercial building and asphalt parking lot. The existing site is 98 percent impervious. The proposed redevelopment of the site is to remain 92 percent impervious. The proposed project is to convert the existing lot into an asphalt parking area.

Section 3 Design Criteria and Methodology

3.1 Design Criteria

This section summarizes the design criteria and methodology applied during the drainage analysis of the project site. The design criteria and methodology follow the Orange County Hydrology Manual requirements.

3.1.1 Drainage Design Criteria

The project storm drain facilities (inlets, culverts, detention, etc.) have been designed to conform to Orange County standards.

3.1.2 Flow-Based Numeric Sizing

The 25-year and 100 year storm design storm was analyzed for the purposes of this report. The proposed site runoff is tributary to the Goodman logistics center detention and water quality treatment system. The GLC site was analyzed for the 100 year storm to determine that the facility had sufficient capacity to both treat and detain the peak runoff for the state college site.

3.1.3 Runoff Calculation Method

Computer models were made using AES RATSCX software with built in methodology following the 1986 Orange County Hydrology Criterion. The RATSCX module was used to analyze and route runoff through each subarea using elevations, relative slopes, flow lengths, soil types, and acreage inputs to calculate time of concentration and peak flow rates.

Design input criteria for the model were as follows:

Design Storm:	25 year & 100 year storm event
Antecedent Moisture Condition (AMC):	II for 25-year III for 100 year
SCS Soil Group:	Soil Type B
Existing Land Use:	"Commercial" (90% Impervious)
Proposed Land Use:	"Commercial" (90% Impervious)

Full on-site AES rational method analysis and values are included in Appendix C for the existing conditions and Appendix E for the proposed condition.

Section 4 Hydrology and Drainage Analysis

This section summarizes the quantitative hydrologic analysis of the existing and proposed conditions of the site.

4.1 Drainage Delineation

The *Appendix B* section of this report contains the existing condition hydrology map, which shows the existing drainage subareas and quantifies the peak flow for 24-hour, 25-year storm event and the 24 hour, 100-year storm event.

A hydrology map for the proposed condition has also been provided in the *Appendix D* section of this report, depicting subareas and quantifies the peak flow for 24-hour, 25-year storm event and the 24 hour 100- year storm event.

4.2 Summary of Results

The current study provides the existing and proposed condition hydrology analyses for the 25-year storm event. The following pages is a summary of the time of concentration and total peak discharge for existing and proposed condition for 25-year event.

Table 1 lists the existing peak flow rate for 25-year and 100 year event. For 25-year event, the time of concentration for existing drainage A is 10.41 minutes and its peak flow rate is 1.68 cubic feet per second (CFS). The 100 year storm event is 2.14 CFS. For existing drainage A2, the time of concentration is 10.52 minutes and the peak flow rate is 1.95 CFS for the 25 year and 2.49 CFS for the 100 year event. The total peak flow rate for both drainage is calculated as 3.63 and 4.62 CFS for the 25 year and 100 year storm events respectively.

Table 2 lists the proposed peak flow rate summary. The time of concentration for drainage A1 is 10.13 minutes, the proposed peak flow rate for 25-year event is 3.69 CFS while the 100 year peak flow rate is 4.72 CFS.

Table 3 is the complete summary table for proposed and existing peak flow rate. The table also provides the delta difference in peak flow rate. The difference between the existing and prosed is 0.03 CFS for the 25 year and 0.09 for the 100 year event.

Table 1: Existing Peak Flow Rate

	Tc	25-year Qp (CFS)	Existing Total Peak 25-year Flow rate (CFS)	100 -Year Qp (CFS)	Existing Total Peak 100 – Year Flow rate (CFS)
EX A-1	10.41	1.68	3.63	2.14	4.63
EX A-2	10.52	1.95		2.49	

Table 2: Proposed Peak Flow Rate

	Tc	Proposed Peak 25-year Flow rate (CFS)	Proposed Peak 100 – Year Flow Rate (CFS)
PR A-1	10.13	3.69	4.72

Table 3: Peak Flow Rate Summary

	Existing Peak 25-year Flow rate (CFS)	Proposed Peak 25-year Flow rate (CFS)	25-year ΔQp (CFS)	Existing Total Peak 100 – Year Flow rate (CFS)	Proposed Peak 100 – Year Flow Rate (CFS)	100-year ΔQp (CFS)
Summary	3.63	3.69	+0.03	4.63	4.72	+0.09

Section 5 Peak Runoff Reduction and Detention

As show in section 4 the project will increase the 100 year peak flow rate slightly in the proposed condition. The project is tributary to the Goodman Logistic center storm drain system and ultimately the Kimberly Channel. As described in the Goodman Logistics Center Fullerton Hydrology report, 2001 E Orangethorpe Ave, dated March 18th 2020 prepared by Tait &

Associates, Stormwater from the state college site will be tributary to detention basin C and the corresponding Modular Wetland system. The detention basin and water quality system has been evaluated to ensure that there is adequate capacity for both the Goodman Logistics center site and the State College site and that the criteria to reduce the 100- year peak flow rate to pre project conditions tributary to the Kimberly Channel has been met.

The detention basin analysis was prepared using AES Small Unit Hydrograph method for each of the detention basins for areas A, B, and C which ultimately discharge to the private main line A that runs north of the site and discharges into Outfall #1, the Kimberly channel.

The weir structure for basin C will be raised in order to treat the DCV in the MWS on the GLC site. Basin C was analyzed with the new weir height and shown to have adequate capacity. The total peak discharge will reduce in the post project condition to 112 CFS in the 100-year storm. The 100-year storm event were analyzed, and a summary of the basins results is included below.

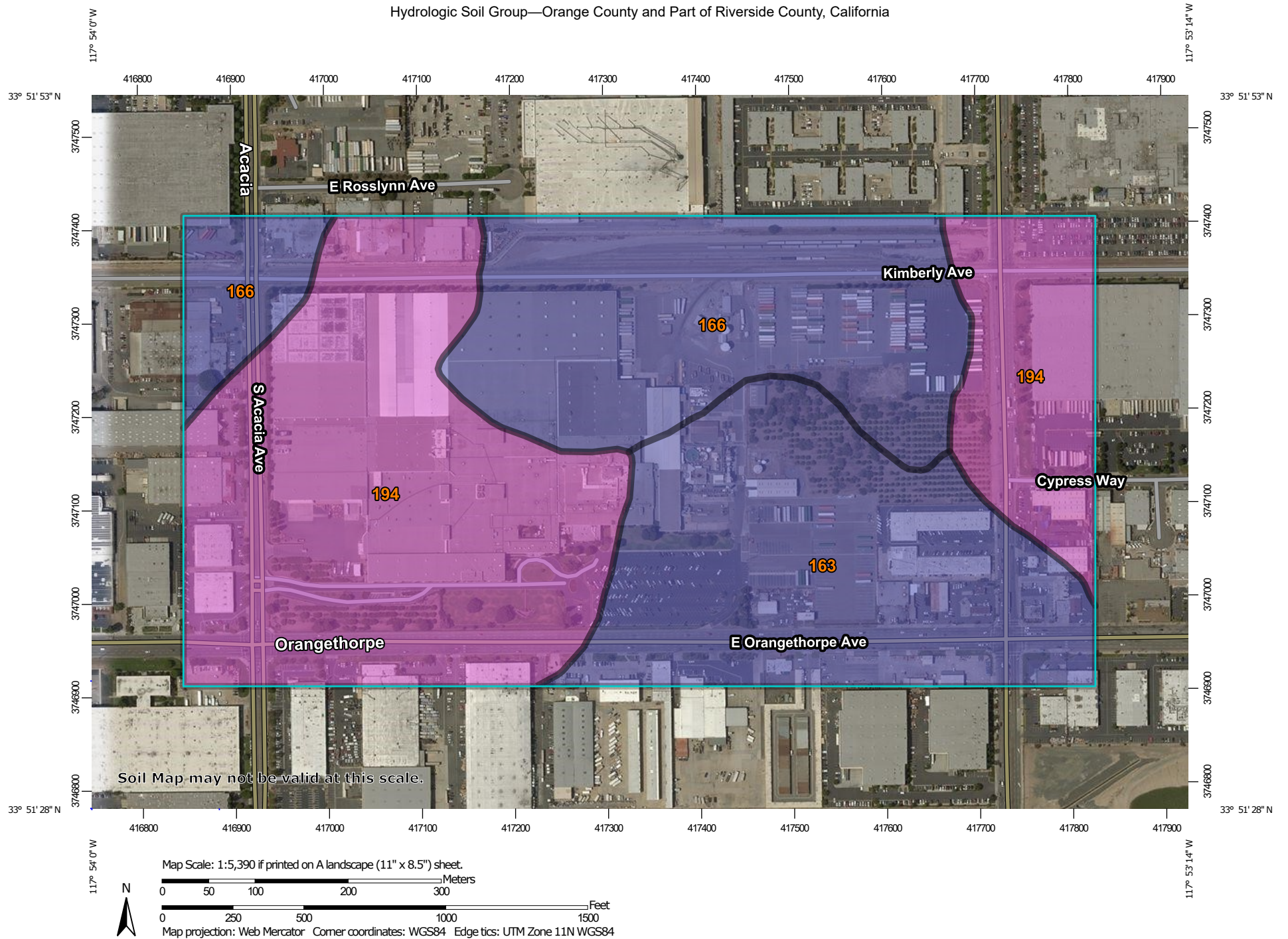
The calculations as shown on this report provides an adequate Basis of Design that demonstrates that the proposed project will not have a negative impact to the public storm drain system downstream of the project and that the GLC system has enough capacity for the State College Site.

Basin ID	Basin Volume (CF)	100-Year Unmitigated Peak Discharge (cfs)	100-Year Mitigated Peak Discharge (cfs)
Basin A	93,698	107.29	48.4
Basin B	92,683	99.20	49.6
Basin C	60,429	71.00	15.0

APPENDIX

Appendix A – Soil Map

Hydrologic Soil Group—Orange County and Part of Riverside County, California



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

Soil Rating Polygons

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

Soil Rating Lines

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

Soil Rating Points

 A
 A/D
 B
 B/D

 C
 C/D
 D
 Not rated or not available

Water Features

 Streams and Canals

Transportation

 Rails
 Interstate Highways
 US Routes
 Major Roads
 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Orange County and Part of Riverside County, California

Survey Area Data: Version 12, Sep 12, 2018

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

Date(s) aerial images were photographed: May 16, 2014—Feb 8, 2019

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
163	Metz loamy sand	B	32.5	26.5%
166	Mocho loam, 0 to 2 percent slopes, warm MAAT, MLRA 19	B	34.8	28.4%
194	San Emigdio fine sandy loam, 0 to 2 percent slopes	A	55.2	45.0%
Totals for Area of Interest			122.5	100.0%

Description

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

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

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

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

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

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

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

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher



G₃SoilWorks

GEOLOGY • GEOTECH • GROUNDWATER

GNAP Development LLC

18201 Von Karman Avenue, Suite 1170
Irvine, California 92612

May 25, 2021
Project No. 1-1200

Attention: Mr. Blair Dahl

Subject: Geologic / Geotechnical Due Diligence
1201-1223 State College Boulevard
Fullerton, California

References: See attached List of Selected References

Dear Mr. Dahl:

Pursuant to your request and authorization, G3SoilWorks, Inc. has performed a geologic / geotechnical due diligence investigation for the subject site, located at 1201-1223 State College Boulevard, in Fullerton, California (see Site Location Map, Figure 1). This property is identified as Assessor's Parcel No. 073-120-27, Legal Description POR. SE ¼, SEC. 35, T3S, R10W. This property is being evaluated for acquisition by GNAP Development, LLC and will be annexed and made part of the Fullerton GLC project addressed in Reference No. 1.

A summary of our findings and due diligence assessment for this property, from a geologic and engineering standpoint, and preliminary design considerations for the proposed site development are presented herein.

SCOPE OF WORK

The scope of our services for this due diligence evaluation included the following:

- Site reconnaissance (including photo and written documentation) from a geologic / geotechnical perspective;
- Desktop review of published reports, maps, and other documents relative to site surface / subsurface conditions and related geologic hazards, etc.;
- Preliminary identification of the potential for liquefaction, landsliding, lateral spreading, active faulting, seismic shaking potential, expansive soils and settlement / consolidation expressions based on the desktop study and field observations made during our site visit;
- Summary of any related distress or expressions indicative of potential settlement / consolidation of existing construction based on our field observations;

- Limited discussion of foundation type, expansion soils, and other design related aspects; and
- Preparation of this memorandum presenting preliminary findings and geotechnical design considerations for moving forward with this project.

The scope of our services specifically does not include investigation and/or evaluation of any hazardous materials or associated constraints that may be present on or under the site.

SITE LOCATION AND PROJECT DESCRIPTION

The subject site is located at 1201-1223 State College Boulevard, in Fullerton, California and covers approximately 1.27 acres in area. This property is currently occupied by a multi-tenant industrial building covering 24,600 square feet.

This property is located adjacent to and is planned to be an extension off the southeasterly extent of the Fullerton GLC site development addressed in the referenced report. Specifics / details regarding the tentatively proposed construction for this site are currently unknown. However, for the purposes of this due diligence study, it is assumed that construction similar to that planned for the Fullerton GLC project is tentatively being considered.

Based on an exterior walk-thru of the site by a representative of our office on May 24, 2021, the following conditions were noted:

- The site is occupied by an existing multi-tenant building which consists of single-story, concrete-panel construction, oriented in an east-west direction across the property.
- An asphalt paved drive and associated parking along the south side of the existing commercial building, with asphalt-paved delivery drive along the north side. A concrete-paved parking area is located on the westerly end of the building.
- The exterior of this building appeared acceptable for its age and did not display any apparent visual signs of distress indicative of unsuitable soils, settlement or expansive soils;
- The existing asphaltic concrete (AC) and Portland cement concrete (PCC) pavements on-site appeared to be intact and no visually apparent signs of distress were noted that would be suggestive of ground settlement or expansive soils phenomena.
- An existing power line alignment is located along the northern property line common with the current Fullerton GLC development site.

GEOLOGY

General

The geology of the adjacent Fullerton GLC site and vicinity were previously summarized in the referenced Fullerton GLC Investigation report (Reference No. 1). As the subject site is located directly adjacent and southeasterly of the Fullerton GLC site, the regional / local geologic conditions and potential seismic hazards presented in Reference No. 1 are also considered applicable for the subject site.

Based on review of Reference No. 1, the pertinent site geologic conditions and potential geologic hazards are summarized below:

- The site is located approximately 2.1 miles northwest of the modern Santa Ana River channel and underlain by Quaternary young alluvial-fan deposits (Qyf) of Holocene to late Pleistocene age.
- The site is not underlain by any known active faults (i.e., Holocene faults that have ruptured in last 11,000 years and are likely to rupture in the future per the Alquist-Priolo Earthquake Fault Zoning Act). According to the California Geological Survey's Earthquake Hazards Zone Application ("EQ Zapp") website / database, the nearest zoned "active" faults include the Whittier Fault Zone (5.7 miles northeast of the project site) and Newport-Inglewood Fault Zone (13.5 miles southwest of the project site). As shown on Figure 7 (attached), other nearby Quaternary and Late Quaternary faults include the El Modeno and Peralta Hills faults approximately 2.4-3.3 miles southeasterly of the site – which are considered inactive and/or potentially active (having ruptured within the last 700,000 years), respectively.
- Active faults do not appear to be present across the subject property. The site is not located in an Earthquake Fault Zone of Required Investigations and the nearest zoned active fault is located approximately 5.7 miles northeast of the project site. Risk of onsite ground rupture on a known active fault is considered nil.
- According to the California Geological Survey's Earthquake Hazards Zone Application (EQ Zapp; <https://maps.conservation.ca.gov/cgs/EQZApp/app/>) the project site is not located within a liquefaction hazards zone of required investigations and, as reported in Reference No. 1, the potential for soil liquefaction and associated risks are therefore considered very low to nil – however, the site may be susceptible to dry sand settlement during a major seismic event due to the potential presence of shallow, relatively loose alluvial soils.
- The project site is not located within an Earthquake-Induced Landslide Hazards Zone of Required Investigations according to the California Geological Survey's Earthquake Hazards Zone Application (EQ Zapp; <https://maps.conservation.ca.gov/cgs/EQZApp/app/>);

- Topographic and regional maps indicate that the subject site is more than 14.1 miles inland from the coast / Pacific Ocean, at an elevation approximately 181-189± feet above sea level, and is not located in an area of known tsunami hazards. Based on the above, risk of tsunami from the known sources occurring throughout the Pacific Ocean / Pacific Rim is considered nil. The site is also not near any significant pools, lakes, reservoirs, or similar. The potential risk of seiche-related effects from existing water bodies is considered very low to nil.

For a more detailed discussion regarding the above, reference should be made to the Geotechnical Investigation Report (Reference No. 1) for the Fullerton GLC Project site.

GEOTECHNICAL CONSIDERATIONS / PRELIMINARY RECOMMENDATIONS

The proposed development for this site is currently unknown, although it has been assumed that development will include concrete tilt-up industrial buildings similar to that planned for the Fullerton GLC or improvement for additional trailer parking. Based on our due diligence findings and our knowledge of the site conditions encountered and reported for the Fullerton GLC project (Reference No. 1), it is our opinion that the tentatively proposed development is feasible from a geologic / geotechnical standpoint, provided that the geotechnical considerations provided herein are accounted for in design and construction. It is our opinion that the subsurface conditions underlying this site are likely similar to those encountered at the Fullerton GLC site (Reference No. 1). However, if new building structures are considered further evaluation including subsurface exploration, laboratory testing, and related geotechnical engineering analyses should be performed to verify the applicability of the recommendations previously provided for the Fullerton GLC development and/or enable our office to develop site-specific recommendations, as appropriate, for use in design and construction of the proposed development.

Presented below is a generalized summary of preliminary geotechnical recommendations for consideration on this site.

Site Grading

- Prior to site grading, the demolition and removal of existing structures and appurtenant construction should include existing foundations and utilities;
- Site grading should include the full depth removal of any existing substructures / fill soils and replacement with approved engineered compacted fill;
- Removal / recompaction of near surface native soils should be expected to provide more uniform and acceptable support for foundations supporting proposed structures and ancillary construction.
- Temporary excavations four (4) feet or deeper will require temporary slopes and or shoring. Where proximal or along property lines, temporary excavations may require the use of slot-cut grading and/or temporary shoring to protect off-site properties / development.

- For soil conditions similar to that reported in Reference No. 1, potential soil shrinkage on the order of 15 percent may occur during removal / recompaction earthwork operations.

Foundations

- It is anticipated that construction similar to that planned for the Fullerton GLC development can be supported on shallow conventional footings with floor slab-on-grade. For preliminary planning purposes, footings may be designed based on an allowable bearing pressure of 2,500 pounds per square foot (psf) when embedded at least 2 feet below lowest adjacent finish grade.
- The potential for total and differential settlements under static plus seismic conditions should be accounted for and incorporated in the design of new construction. Based on Reference Nos. 1 and 2, total and differential settlements on the order of 3 inches and 1-inch in 50 feet, respectively, may be assumed for preliminary design purposes.
- The seismic design parameters provided in the referenced geotechnical report may be considered in the design of proposed structures / improvements, as appropriate.

Hardscape/ Pavements

- The recommendations presented in Reference No. 1 for pavement and hardscape construction may be considered for assumed similar loads / traffic loading conditions.

Soil Expansion and Corrosion

- For soil conditions similar to that encountered at the Fullerton GLC site, the site soils are expected to exhibit low soil expansion potential.
- The site soils should conservatively be considered highly corrosive to both concrete and buried metals. Concrete in contact with site soils should therefore conservatively be designed considering 4,500 psi concrete mix, water:cement ratio of 0.45, and Type V Portland cement.

LIMITATIONS

This report has been prepared for the exclusive use of GNAP Development, LLC and their design consultants relative to their preliminary due diligence assessment of the subject property. This report is not intended for other parties, and it may not contain sufficient information for other purposes.

The findings contained in this report are based upon our evaluation and interpretation of the information obtained from references and experience in the area only. The opinions and considerations provided were based on the assumption that the geotechnical conditions, which exist across the site, are similar to those described in referenced materials and internal proprietary information. The conditions and characteristics of the sub-surface materials may therefore be different and no representations are made as to their quality and engineering properties.

This report and its recommendations are predicated on the notion that we will be retained to perform the subsequent investigation / design / field observations / testing. If not, this report and its recommendations are null and void and any new consultant would need to do their own studies and develop their own recommendations.

The findings and considerations presented herein were developed in accordance with currently accepted professional engineering principles and practice in the field of engineering geology and geotechnical engineering and reflect our best professional judgment. We make no other warranty, either express or implied.

We trust that the information contained in this report is adequate for your needs at this time. Should you have any questions or need additional information, please contact the undersigned.

Respectfully submitted,

G3SoilWorks, Inc.

By: _____

Daniel J. Morikawa, P.E., G.E.
Director of Engineering
RGE 2726



By: _____

Erik C. Haaker, P.G., C.E.G.
Project Engineering Geologist
PG 9409, CEG 2708



Attachments: List of Selected References
Figure 1 – Site Location Map

LIST OF SELECTED REFERENCES

- 1) G3SoilWorks, Inc., Geotechnical Investigation, Proposed Goodman Logistics Center, 2001 East Orangethorpe Avenue, Fullerton, California, dated December 30, 2020, Project No. 1-1171.
- 2) G3SoilWorks, Inc. Response to Geotechnical Review Comments, Proposed Commercial / Industrial Development, 2001 East Orangethorpe avenue, Fullerton, California, dated April 13, 2021, Project No. 1-1171.

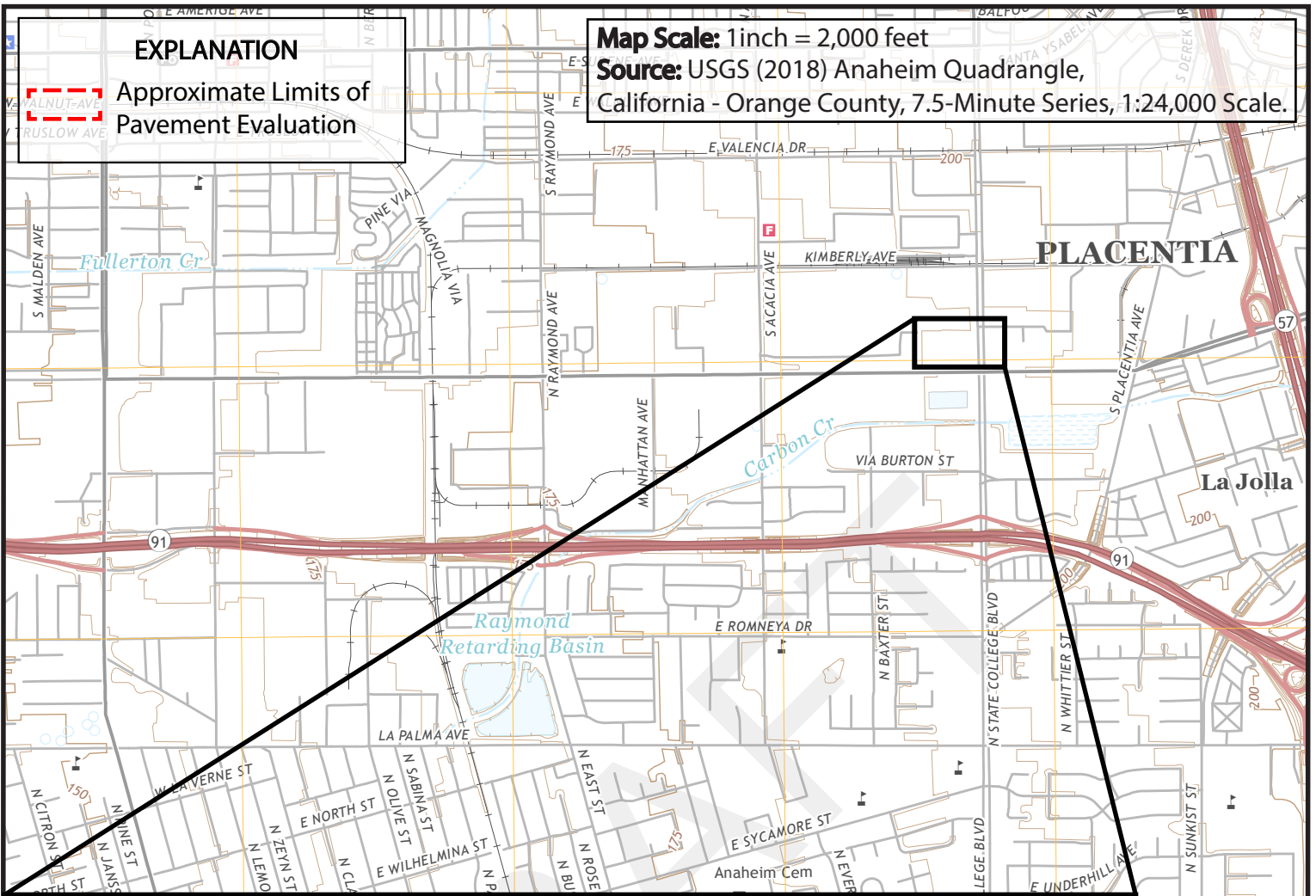
EXPLANATION



Approximate Limits of
Pavement Evaluation

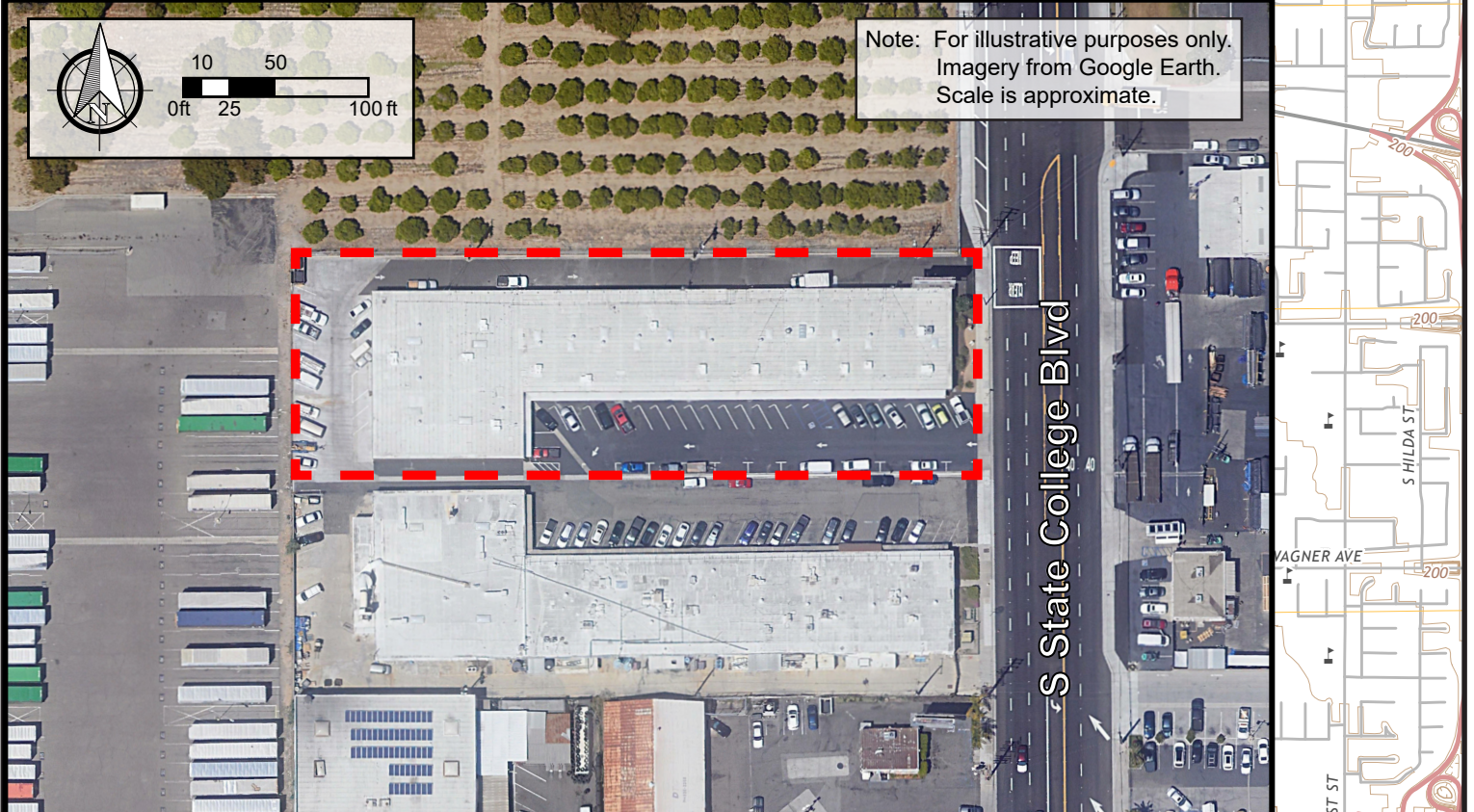
Map Scale: 1 inch = 2,000 feet

Source: USGS (2018) Anaheim Quadrangle,
California - Orange County, 7.5-Minute Series, 1:24,000 Scale.



10 50
0ft 25 100 ft

Note: For illustrative purposes only.
Imagery from Google Earth.
Scale is approximate.



Site Location Map

Project No. 1-1200

May 2021

1201-1223 South State
College Boulevard

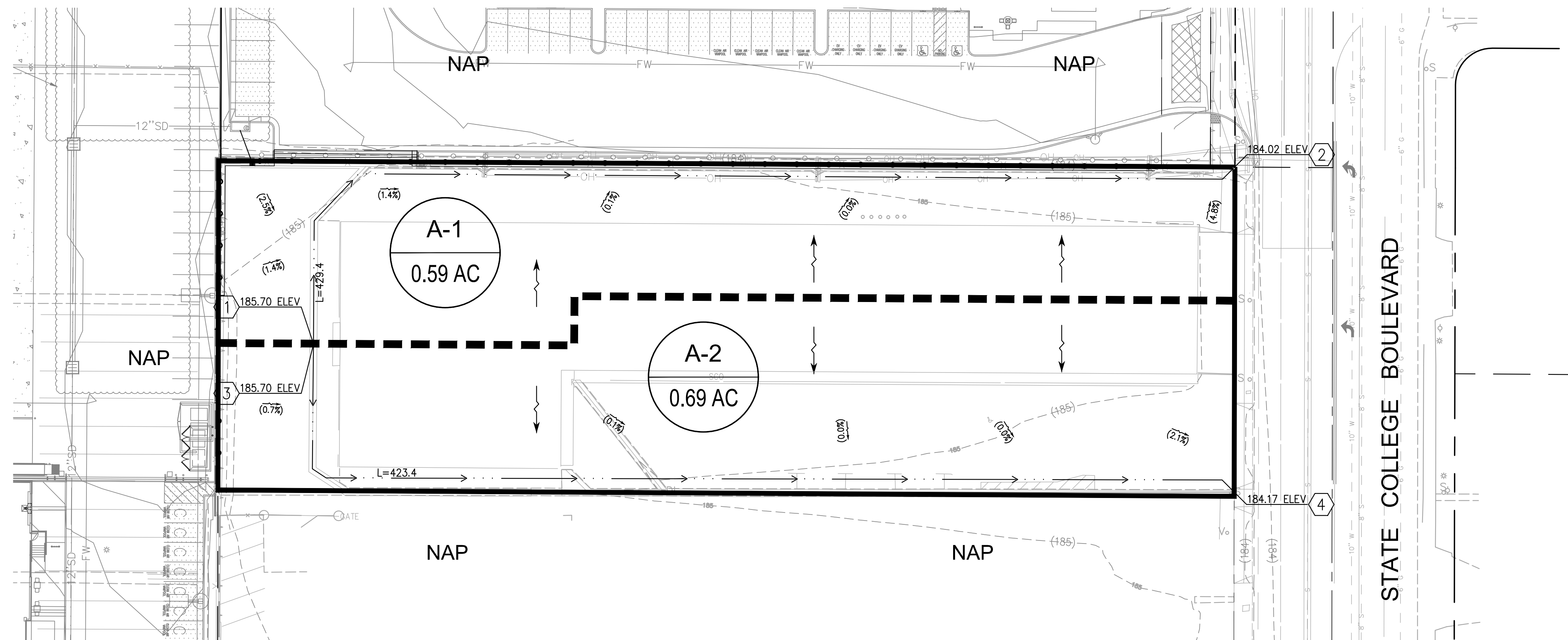
Fullerton, CA

Figure 1



350 Fischer Ave. Front
Costa Mesa, CA 92626
Phone: (714) 668 5600
www.G3SoilWorks.com

Appendix B –Existing Hydrological Condition Map

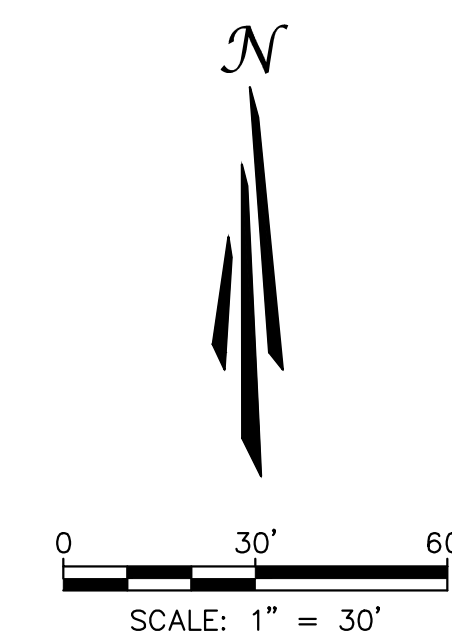


- LEGEND**
- 180--- EXISTING CONTOUR
 - FLOW LINE
 - (0.5%) EXISTING SLOPE
 - EXISTING STORM DRAIN
 - AREA BOUNDARY
 - SUB-AREA BOUNDARY
 - (#) NODE

X-# AREA ID

###AC AREA (AC)

- ABBREVIATIONS**
- | | |
|-----|------------------|
| EX | EXISTING |
| FS | FINISHED SURFACE |
| FG | FINISHED GRADE |
| INV | INVERT |
- * ASSUMES ROOF RUNOFF IS 2% FOR HYDROLOGY MODELING PURPOSES



Appendix C – Existing Hydrological Calculations

```

*****
RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
(c) Copyright 1983-2016 Advanced Engineering Software (aes)
Ver. 23.0 Release Date: 07/01/2016 License ID 1334

Analysis prepared by:

***** DESCRIPTION OF STUDY *****
* SP8454-F FULLERTON *
* RATIONAL METHOD A-1 *
* EXISTING 25 YEAR *
*****

FILE NAME: PR25.DAT
TIME/DATE OF STUDY: 09:19 08/09/2021
=====
USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
=====
--*TIME-OF-CONCENTRATION MODEL*--

USER SPECIFIED STORM EVENT(YEAR) = 25.00
SPECIFIED MINIMUM PIPE SIZE(INCH) = 6.00
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
*DATA BANK RAINFALL USED*
*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
  HALF- CROWN TO STREET-CROSSFALL: CURB GUTTER-GEOMETRIES: MANNING
  WIDTH CROSSFALL IN- / OUT-/PARK- HEIGHT WIDTH LIP HIKE FACTOR
NO. (FT) (FT) SIDE / SIDE/ WAY (FT) (FT) (FT) (FT) (n)
=== =====
39 1 30.0 20.0 0.018/0.018/0.020 0.67 2.00 0.0313 0.167 0.0150
40

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
1. Relative Flow-Depth = 0.00 FEET
   as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
2. (Depth)*(Velocity) Constraint = 6.0 (FT*FT/S)
*SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
*USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

*****
FLOW PROCESS FROM NODE 1.00 TO NODE 2.00 IS CODE = 21
=====
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
=====
INITIAL SUBAREA FLOW-LENGTH(FEET) = 429.40
ELEVATION DATA: UPSTREAM(FEET) = 185.70 DOWNSTREAM(FEET) = 184.02

Tc = K*[ (LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 10.412
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 3.185
SUBAREA Tc AND LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS Tc
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
64 COMMERCIAL B 0.59 0.30 0.100 56 10.41
65 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
66 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
67 SUBAREA RUNOFF(CFS) = 1.68
68 TOTAL AREA(ACRES) = 0.59 PEAK FLOW RATE(CFS) = 1.68
=====

```

```
70      END OF STUDY SUMMARY:
71      TOTAL AREA (ACRES)      =          0.6   TC (MIN.) =          10.41
72      EFFECTIVE AREA (ACRES) =          0.59   AREA-AVERAGED Fm (INCH/HR) =    0.03
73      AREA-AVERAGED Fp (INCH/HR) =    0.30   AREA-AVERAGED Ap =    0.100
74      PEAK FLOW RATE (CFS)    =          1.68
75      =====
76      =====
77      END OF RATIONAL METHOD ANALYSIS
78
79      
80
81
```

```

*****
RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
(c) Copyright 1983-2016 Advanced Engineering Software (aes)
Ver. 23.0 Release Date: 07/01/2016 License ID 1334

Analysis prepared by:

***** DESCRIPTION OF STUDY *****
* SP8454-F FULLERTON *
* RATIONAL METHOD EXISTING A-2 *
* 25 YEAR STORM *
*****

FILE NAME: EX25A2.DAT
TIME/DATE OF STUDY: 10:27 08/09/2021
=====
USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
=====
--*TIME-OF-CONCENTRATION MODEL*--

USER SPECIFIED STORM EVENT(YEAR) = 25.00
SPECIFIED MINIMUM PIPE SIZE(INCH) = 6.00
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
*DATA BANK RAINFALL USED*
*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
  HALF- CROWN TO STREET-CROSSFALL: CURB GUTTER-GEOMETRIES: MANNING
  WIDTH CROSSFALL IN- / OUT-/PARK- HEIGHT WIDTH LIP HIKE FACTOR
NO. (FT) (FT) SIDE / SIDE/ WAY (FT) (FT) (FT) (FT) (n)
=== =====
39 1 30.0 20.0 0.018/0.018/0.020 0.67 2.00 0.0313 0.167 0.0150
40

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
1. Relative Flow-Depth = 0.00 FEET
   as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
2. (Depth)*(Velocity) Constraint = 6.0 (FT*FT/S)
*SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
*USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

*****
FLOW PROCESS FROM NODE 3.00 TO NODE 4.00 IS CODE = 21
=====
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
=====
INITIAL SUBAREA FLOW-LENGTH( FEET) = 423.40
ELEVATION DATA: UPSTREAM( FEET) = 185.70 DOWNSTREAM( FEET) = 184.17

Tc = K*[ (LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 10.519
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 3.166
SUBAREA Tc AND LOSS RATE DATA(AMC II):
  DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS Tc
  LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
64 COMMERCIAL B 0.69 0.30 0.100 56 10.52
65 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
66 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
67 SUBAREA RUNOFF(CFS) = 1.95
68 TOTAL AREA(ACRES) = 0.69 PEAK FLOW RATE(CFS) = 1.95
=====

```

```
70      END OF STUDY SUMMARY:
71      TOTAL AREA (ACRES)      =          0.7   TC (MIN.) =          10.52
72      EFFECTIVE AREA (ACRES) =          0.69   AREA-AVERAGED Fm (INCH/HR) =    0.03
73      AREA-AVERAGED Fp (INCH/HR) =    0.30   AREA-AVERAGED Ap =    0.100
74      PEAK FLOW RATE (CFS)    =          1.95
75      =====
76      =====
77      END OF RATIONAL METHOD ANALYSIS
78
79      
80
81
```

```

*****
RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
(c) Copyright 1983-2016 Advanced Engineering Software (aes)
Ver. 23.0 Release Date: 07/01/2016 License ID 1334

Analysis prepared by:

***** DESCRIPTION OF STUDY *****
* SP8454-F FULLERTON *
* RATIONAL METHOD A-1 *
* EXISTING 100 YEAR *
*****

FILE NAME: EX100A1.DAT
TIME/DATE OF STUDY: 09:48 08/09/2021
=====
USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
=====
--*TIME-OF-CONCENTRATION MODEL*--

USER SPECIFIED STORM EVENT(YEAR) = 100.00
SPECIFIED MINIMUM PIPE SIZE(INCH) = 6.00
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
*DATA BANK RAINFALL USED*
*ANTECEDENT MOISTURE CONDITION (AMC) III ASSUMED FOR RATIONAL METHOD*

*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
  HALF- CROWN TO STREET-CROSSFALL: CURB GUTTER-GEOMETRIES: MANNING
  WIDTH CROSSFALL IN- / OUT-/PARK- HEIGHT WIDTH LIP HIKE FACTOR
NO. (FT) (FT) SIDE / SIDE/ WAY (FT) (FT) (FT) (FT) (n)
=== =====
39 1 30.0 20.0 0.018/0.018/0.020 0.67 2.00 0.0313 0.167 0.0150
40

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
1. Relative Flow-Depth = 0.00 FEET
   as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
2. (Depth)*(Velocity) Constraint = 6.0 (FT*FT/S)
*SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
*USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

*****
FLOW PROCESS FROM NODE 1.00 TO NODE 2.00 IS CODE = 21
=====
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
=====
INITIAL SUBAREA FLOW-LENGTH(FEET) = 429.40
ELEVATION DATA: UPSTREAM(FEET) = 185.70 DOWNSTREAM(FEET) = 184.02

Tc = K*[ (LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 10.412
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 4.064
SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS Tc
  LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
64 COMMERCIAL B 0.59 0.30 0.100 76 10.41
65 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
66 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
67 SUBAREA RUNOFF(CFS) = 2.14
68 TOTAL AREA(ACRES) = 0.59 PEAK FLOW RATE(CFS) = 2.14
=====

```



```
70     END OF STUDY SUMMARY:
71     TOTAL AREA (ACRES)      =          0.6   TC (MIN.) =          10.41
72     EFFECTIVE AREA (ACRES) =          0.59   AREA-AVERAGED Fm (INCH/HR) =    0.03
73     AREA-AVERAGED Fp (INCH/HR) =    0.30   AREA-AVERAGED Ap =    0.100
74     PEAK FLOW RATE (CFS)    =          2.14
75     =====
76     =====
77     END OF RATIONAL METHOD ANALYSIS
78
79     H H
80
81
```

```

*****
RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
(c) Copyright 1983-2016 Advanced Engineering Software (aes)
Ver. 23.0 Release Date: 07/01/2016 License ID 1334

Analysis prepared by:

***** DESCRIPTION OF STUDY *****
* SP8454-F FULLERTON *
* RATIONAL METHOD A2 *
* EXISTING 100 YEAR STORM *
*****

FILE NAME: EX100A2.DAT
TIME/DATE OF STUDY: 09:53 08/09/2021
=====
USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
=====
--*TIME-OF-CONCENTRATION MODEL*--

USER SPECIFIED STORM EVENT(YEAR) = 100.00
SPECIFIED MINIMUM PIPE SIZE(INCH) = 6.00
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
*DATA BANK RAINFALL USED*
*ANTECEDENT MOISTURE CONDITION (AMC) III ASSUMED FOR RATIONAL METHOD*

*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
  HALF- CROWN TO STREET-CROSSFALL: CURB GUTTER-GEOMETRIES: MANNING
  WIDTH CROSSFALL IN- / OUT-/PARK- HEIGHT WIDTH LIP HIKE FACTOR
NO. (FT) (FT) SIDE / SIDE/ WAY (FT) (FT) (FT) (FT) (n)
=== =====
39 1 30.0 20.0 0.018/0.018/0.020 0.67 2.00 0.0313 0.167 0.0150
40

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
1. Relative Flow-Depth = 0.00 FEET
as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
2. (Depth)*(Velocity) Constraint = 6.0 (FT*FT/S)
*SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
*USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

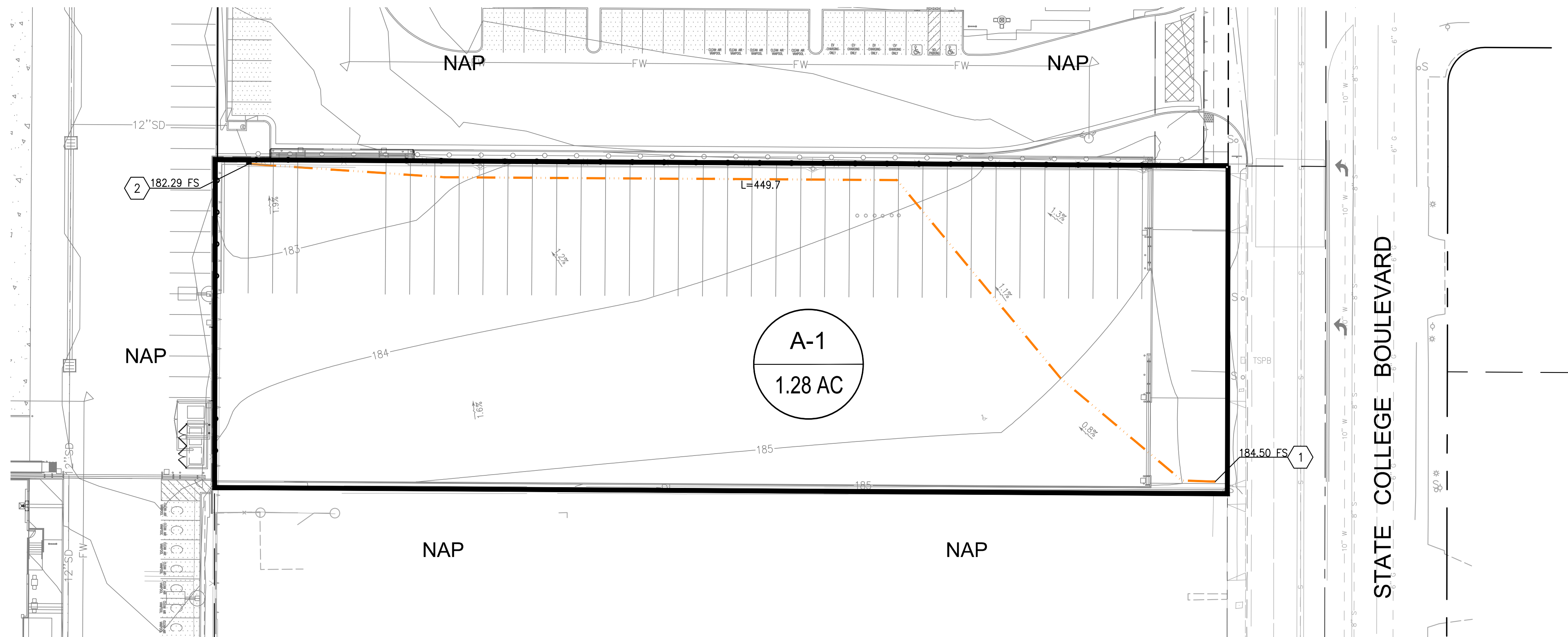
*****
FLOW PROCESS FROM NODE 3.00 TO NODE 4.00 IS CODE = 21
=====
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
=====
INITIAL SUBAREA FLOW-LENGTH(FEET) = 423.40
ELEVATION DATA: UPSTREAM(FEET) = 185.70 DOWNSTREAM(FEET) = 184.17

Tc = K*[ (LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 10.519
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 4.040
SUBAREA Tc AND LOSS RATE DATA(AMC III):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS Tc
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
64 COMMERCIAL B 0.69 0.30 0.100 76 10.52
65 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
66 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
67 SUBAREA RUNOFF(CFS) = 2.49
68 TOTAL AREA(ACRES) = 0.69 PEAK FLOW RATE(CFS) = 2.49
=====

```

```
70      END OF STUDY SUMMARY:
71      TOTAL AREA (ACRES)      =          0.7   TC (MIN.) =          10.52
72      EFFECTIVE AREA (ACRES) =          0.69   AREA-AVERAGED Fm (INCH/HR) =    0.03
73      AREA-AVERAGED Fp (INCH/HR) =    0.30   AREA-AVERAGED Ap =    0.100
74      PEAK FLOW RATE (CFS)    =          2.49
75      =====
76      =====
77      END OF RATIONAL METHOD ANALYSIS
78
79      
80
81
```

Appendix D – Proposed Hydrological Condition Map

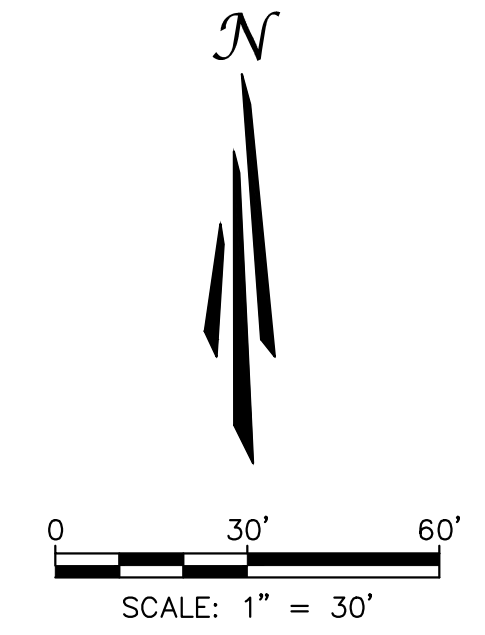


LEGEND

- 180 PROPOSED CONTOUR
- FLOW LINE
- SURFACE DIRECTION OF FLOW
- EXISTING STORM DRAIN
- SD PROPOSED STORM DRAIN ≤ 12"
- PROPOSED STORM DRAIN > 12"
- STORM DRAIN PIPE FLOW
- AREA BOUNDARY
- SUB-AREA BOUNDARY
- 1 NODE
- X-# AREA ID
- ###AC AREA (AC)

ABBREVIATIONS

- FG FINISHED GRADE
- INV INVERT
- FPE FINISHED FLOOR ELEVATION
- PE PAD ELEVATION
- CF CUBIC FEET
- MWS MODULAR WETLAND SYSTEM



Appendix E – Proposed Hydrological Calculations

```

*****
RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
(c) Copyright 1983-2016 Advanced Engineering Software (aes)
Ver. 23.0 Release Date: 07/01/2016 License ID 1334

Analysis prepared by:

***** DESCRIPTION OF STUDY *****
* SP8454-F FULLERTON *
* RATIONAL METHOD A1 *
* PROPOSED 25 YEAR STORM *
*****

FILE NAME: PR25A1.DAT
TIME/DATE OF STUDY: 10:16 08/09/2021
=====
USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
=====
--*TIME-OF-CONCENTRATION MODEL*--

USER SPECIFIED STORM EVENT(YEAR) = 25.00
SPECIFIED MINIMUM PIPE SIZE(INCH) = 6.00
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
*DATA BANK RAINFALL USED*
*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
  HALF- CROWN TO STREET-CROSSFALL: CURB GUTTER-GEOMETRIES: MANNING
  WIDTH CROSSFALL IN- / OUT-/PARK- HEIGHT WIDTH LIP HIKE FACTOR
NO. (FT) (FT) SIDE / SIDE/ WAY (FT) (FT) (FT) (FT) (n)
=== =====
39 1 30.0 20.0 0.018/0.018/0.020 0.67 2.00 0.0313 0.167 0.0150
40

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
1. Relative Flow-Depth = 0.00 FEET
as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
2. (Depth)*(Velocity) Constraint = 6.0 (FT*FT/S)
*SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
*USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

*****
FLOW PROCESS FROM NODE 1.00 TO NODE 2.00 IS CODE = 21
=====
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
=====
INITIAL SUBAREA FLOW-LENGTH( FEET) = 449.70
ELEVATION DATA: UPSTREAM( FEET) = 184.50 DOWNSTREAM( FEET) = 182.29

Tc = K*[ (LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 10.133
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 3.234
SUBAREA Tc AND LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS Tc
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
64 COMMERCIAL B 1.28 0.30 0.100 56 10.13
65 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
66 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
67 SUBAREA RUNOFF(CFS) = 3.69
68 TOTAL AREA(ACRES) = 1.28 PEAK FLOW RATE(CFS) = 3.69
=====

```



```
70      END OF STUDY SUMMARY:
71      TOTAL AREA (ACRES)      =          1.3   TC (MIN.) =          10.13
72      EFFECTIVE AREA (ACRES) =          1.28   AREA-AVERAGED Fm (INCH/HR) =    0.03
73      AREA-AVERAGED Fp (INCH/HR) =    0.30   AREA-AVERAGED Ap =    0.100
74      PEAK FLOW RATE (CFS)    =          3.69
75      =====
76      =====
77      END OF RATIONAL METHOD ANALYSIS
78
79      
80
81
```

```

*****
RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
(c) Copyright 1983-2016 Advanced Engineering Software (aes)
Ver. 23.0 Release Date: 07/01/2016 License ID 1334

Analysis prepared by:

***** DESCRIPTION OF STUDY *****
* SP8454-F FULLERTON *
* RATIONAL METHOD A1 *
* PROPOSED 100 YEAR STORM *
*****

FILE NAME: PR100A1.DAT
TIME/DATE OF STUDY: 10:41 08/09/2021
=====
USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
=====
--*TIME-OF-CONCENTRATION MODEL*--

USER SPECIFIED STORM EVENT(YEAR) = 100.00
SPECIFIED MINIMUM PIPE SIZE(INCH) = 6.00
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
*DATA BANK RAINFALL USED*
*ANTECEDENT MOISTURE CONDITION (AMC) III ASSUMED FOR RATIONAL METHOD*

*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
  HALF- CROWN TO STREET-CROSSFALL: CURB GUTTER-GEOMETRIES: MANNING
  WIDTH CROSSFALL IN- / OUT-/PARK- HEIGHT WIDTH LIP HIKE FACTOR
NO. (FT) (FT) SIDE / SIDE/ WAY (FT) (FT) (FT) (FT) (n)
=== =====
39 1 30.0 20.0 0.018/0.018/0.020 0.67 2.00 0.0313 0.167 0.0150
40

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
1. Relative Flow-Depth = 0.00 FEET
as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
2. (Depth)*(Velocity) Constraint = 6.0 (FT*FT/S)
*SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
*USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

*****
FLOW PROCESS FROM NODE 1.00 TO NODE 2.00 IS CODE = 21
=====
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
=====
INITIAL SUBAREA FLOW-LENGTH(FEET) = 449.70
ELEVATION DATA: UPSTREAM(FEET) = 184.50 DOWNSTREAM(FEET) = 182.29

Tc = K*[ (LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 10.133
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 4.128
SUBAREA Tc AND LOSS RATE DATA(AMC III):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS Tc
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
64 COMMERCIAL B 1.28 0.30 0.100 76 10.13
65 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
66 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
67 SUBAREA RUNOFF(CFS) = 4.72
68 TOTAL AREA(ACRES) = 1.28 PEAK FLOW RATE(CFS) = 4.72
=====

```

```
70      END OF STUDY SUMMARY:
71      TOTAL AREA (ACRES)      =          1.3   TC (MIN.) =          10.13
72      EFFECTIVE AREA (ACRES) =          1.28   AREA-AVERAGED Fm (INCH/HR) =    0.03
73      AREA-AVERAGED Fp (INCH/HR) =    0.30   AREA-AVERAGED Ap =    0.100
74      PEAK FLOW RATE (CFS)    =          4.72
75      =====
76      =====
77      END OF RATIONAL METHOD ANALYSIS
78
79      
80
81
```

FLOOD ROUTING ANALYSIS
USING COUNTY HYDROLOGY MANUAL OF ORANGE(1986)
(c) Copyright 1989-2016 Advanced Engineering Software (aes)
Ver. 23.0 Release Date: 07/01/2016 License ID 1334

Analysis prepared by:

***** DESCRIPTION OF STUDY *****
* SP8454 - GOODMAN LOGISTICS CENTER FULLERTON + STATE COLLEGE SITE *
* PROPOSED SMALL AREA UNIT HYDROGRAPH WITH RM TC *
* 100 YEAR STORM *

FILE NAME: GL100HP.DAT
TIME/DATE OF STUDY: 08:49 10/25/2021

The Small Area Unit Hydrograph Procedures in Section J
of the Hydrology Manual provides estimates of runoff
hydrograph and runoff volume for watersheds whose time of
concentration is less than 25 minutes. The PROGRAM User
should check the applicability of using the small area unit
hydrograph procedures, and follow the guidelines in
Sections J and K.5 in complex watershed modeling.

FLOW PROCESS FROM NODE 100.00 TO NODE 580.00 IS CODE = 1.2

>>>>SUBAREA RUNOFF (SMALL AREA UNIT-HYDROGRAPH ANALYSIS) <<<<
=====

(SMALL AREA UNIT-HYDROGRAPH ADDED TO STREAM #1)

RATIONAL METHOD CALIBRATION COEFFICIENT = 0.90
TOTAL CATCHMENT AREA(ACRES) = 22.00
SOIL-LOSS RATE, Fm,(INCH/HR) = 0.040
LOW LOSS FRACTION = 0.040
TIME OF CONCENTRATION(MIN.) = 6.28
SMALL AREA PEAK Q COMPUTED USING PEAK FLOW RATE FORMULA
ORANGE COUNTY "VALLEY" RAINFALL VALUES ARE USED:
RETURN FREQUENCY(YEARS) = 100
5-MINUTE POINT RAINFALL VALUE(INCHES) = 0.52

30-MINUTE POINT RAINFALL VALUE(INCHES) = 1.09
1-HOUR POINT RAINFALL VALUE(INCHES) = 1.45
3-HOUR POINT RAINFALL VALUE(INCHES) = 2.43
6-HOUR POINT RAINFALL VALUE(INCHES) = 3.36
24-HOUR POINT RAINFALL VALUE(INCHES) = 5.63

TOTAL CATCHMENT RUNOFF VOLUME(ACRE-FEET) = 8.90
TOTAL CATCHMENT SOIL-LOSS VOLUME(ACRE-FEET) = 1.42

▲

24 - HOUR STORM
RUNOFF HYDROGRAPH

=====

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

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	26.8	53.6	80.5	107.3
0.017	0.0002	0.15	Q	.	.	.	.
0.033	0.0008	0.46	Q	.	.	.	.
0.050	0.0019	0.76	Q	.	.	.	.
0.067	0.0034	1.07	Q	.	.	.	.
0.083	0.0053	1.37	Q	.	.	.	.
0.100	0.0075	1.63	Q	.	.	.	.
0.117	0.0098	1.66	Q	.	.	.	.
0.133	0.0121	1.66	Q	.	.	.	.
0.150	0.0144	1.66	Q	.	.	.	.
0.167	0.0167	1.67	Q	.	.	.	.
0.183	0.0190	1.67	Q	.	.	.	.
0.200	0.0213	1.67	Q	.	.	.	.
0.217	0.0236	1.67	Q	.	.	.	.
0.233	0.0259	1.67	Q	.	.	.	.
0.250	0.0282	1.67	Q	.	.	.	.
0.267	0.0305	1.67	Q	.	.	.	.
0.283	0.0328	1.67	Q	.	.	.	.
0.300	0.0351	1.67	Q	.	.	.	.
0.317	0.0374	1.67	Q	.	.	.	.
0.333	0.0397	1.68	Q	.	.	.	.
0.350	0.0420	1.68	Q	.	.	.	.
0.367	0.0443	1.68	Q	.	.	.	.
0.383	0.0466	1.68	Q	.	.	.	.
0.400	0.0489	1.68	Q	.	.	.	.
0.417	0.0513	1.68	Q	.	.	.	.

0.433	0.0536	1.68	Q	.	.	.	.
0.450	0.0559	1.68	Q	.	.	.	.
0.467	0.0582	1.68	Q	.	.	.	.
0.483	0.0605	1.69	Q	.	.	.	.
0.500	0.0629	1.69	Q	.	.	.	.
0.517	0.0652	1.69	Q	.	.	.	.
0.533	0.0675	1.69	Q	.	.	.	.
0.550	0.0698	1.69	Q	.	.	.	.
0.567	0.0722	1.69	Q	.	.	.	.
0.583	0.0745	1.69	Q	.	.	.	.
0.600	0.0768	1.69	Q	.	.	.	.
0.617	0.0792	1.70	Q	.	.	.	.
0.633	0.0815	1.70	Q	.	.	.	.
0.650	0.0839	1.70	Q	.	.	.	.
0.667	0.0862	1.70	Q	.	.	.	.
0.683	0.0885	1.70	Q	.	.	.	.
0.700	0.0909	1.70	Q	.	.	.	.
0.717	0.0932	1.70	Q	.	.	.	.
0.733	0.0956	1.70	Q	.	.	.	.
0.750	0.0979	1.70	Q	.	.	.	.
0.767	0.1003	1.71	Q	.	.	.	.
0.783	0.1026	1.71	Q	.	.	.	.
0.800	0.1050	1.71	Q	.	.	.	.
0.817	0.1073	1.71	Q	.	.	.	.
0.833	0.1097	1.71	Q	.	.	.	.
0.850	0.1120	1.71	Q	.	.	.	.
0.867	0.1144	1.71	Q	.	.	.	.
0.883	0.1168	1.71	Q	.	.	.	.
0.900	0.1191	1.71	Q	.	.	.	.
0.917	0.1215	1.72	Q	.	.	.	.
0.933	0.1238	1.72	Q	.	.	.	.
0.950	0.1262	1.72	Q	.	.	.	.
0.967	0.1286	1.72	Q	.	.	.	.
0.983	0.1309	1.72	Q	.	.	.	.
1.000	0.1333	1.72	Q	.	.	.	.
1.017	0.1357	1.72	Q	.	.	.	.
1.033	0.1381	1.73	Q	.	.	.	.
1.050	0.1404	1.73	Q	.	.	.	.
1.067	0.1428	1.73	Q	.	.	.	.
1.083	0.1452	1.73	Q	.	.	.	.
1.100	0.1476	1.73	Q	.	.	.	.
1.117	0.1500	1.73	Q	.	.	.	.
1.133	0.1524	1.73	Q	.	.	.	.
1.150	0.1547	1.73	Q	.	.	.	.
1.167	0.1571	1.73	Q	.	.	.	.
1.183	0.1595	1.73	Q	.	.	.	.
1.200	0.1619	1.74	Q	.	.	.	.
1.217	0.1643	1.74	Q	.	.	.	.
1.233	0.1667	1.74	Q	.	.	.	.
1.250	0.1691	1.74	Q	.	.	.	.

1.267	0.1715	1.74	Q	.	.	.	.
1.283	0.1739	1.74	Q	.	.	.	.
1.300	0.1763	1.74	Q	.	.	.	.
1.317	0.1787	1.74	Q	.	.	.	.
1.333	0.1811	1.75	Q	.	.	.	.
1.350	0.1835	1.75	Q	.	.	.	.
1.367	0.1859	1.75	Q	.	.	.	.
1.383	0.1883	1.75	Q	.	.	.	.
1.400	0.1907	1.75	Q	.	.	.	.
1.417	0.1932	1.75	Q	.	.	.	.
1.433	0.1956	1.75	Q	.	.	.	.
1.450	0.1980	1.76	Q	.	.	.	.
1.467	0.2004	1.76	Q	.	.	.	.
1.483	0.2028	1.76	Q	.	.	.	.
1.500	0.2053	1.76	Q	.	.	.	.
1.517	0.2077	1.76	Q	.	.	.	.
1.533	0.2101	1.76	Q	.	.	.	.
1.550	0.2125	1.76	Q	.	.	.	.
1.567	0.2150	1.76	Q	.	.	.	.
1.583	0.2174	1.76	Q	.	.	.	.
1.600	0.2198	1.77	Q	.	.	.	.
1.617	0.2223	1.77	Q	.	.	.	.
1.633	0.2247	1.77	QV	.	.	.	.
1.650	0.2271	1.77	QV	.	.	.	.
1.667	0.2296	1.77	QV	.	.	.	.
1.683	0.2320	1.77	QV	.	.	.	.
1.700	0.2345	1.77	QV	.	.	.	.
1.717	0.2369	1.78	QV	.	.	.	.
1.733	0.2394	1.78	QV	.	.	.	.
1.750	0.2418	1.78	QV	.	.	.	.
1.767	0.2443	1.78	QV	.	.	.	.
1.783	0.2467	1.78	QV	.	.	.	.
1.800	0.2492	1.78	QV	.	.	.	.
1.817	0.2516	1.78	QV	.	.	.	.
1.833	0.2541	1.78	QV	.	.	.	.
1.850	0.2565	1.79	QV	.	.	.	.
1.867	0.2590	1.79	QV	.	.	.	.
1.883	0.2615	1.79	QV	.	.	.	.
1.900	0.2639	1.79	QV	.	.	.	.
1.917	0.2664	1.79	QV	.	.	.	.
1.933	0.2689	1.79	QV	.	.	.	.
1.950	0.2713	1.79	QV	.	.	.	.
1.967	0.2738	1.79	QV	.	.	.	.
1.983	0.2763	1.80	QV	.	.	.	.
2.000	0.2788	1.80	QV	.	.	.	.
2.017	0.2812	1.80	QV	.	.	.	.
2.033	0.2837	1.80	QV	.	.	.	.
2.050	0.2862	1.80	QV	.	.	.	.
2.067	0.2887	1.80	QV	.	.	.	.
2.083	0.2912	1.81	QV	.	.	.	.

2.100	0.2937	1.81	QV	.	.	.	.
2.117	0.2961	1.81	QV	.	.	.	.
2.133	0.2986	1.81	QV	.	.	.	.
2.150	0.3011	1.81	QV	.	.	.	.
2.167	0.3036	1.81	QV	.	.	.	.
2.183	0.3061	1.81	QV	.	.	.	.
2.200	0.3086	1.81	QV	.	.	.	.
2.217	0.3111	1.81	QV	.	.	.	.
2.233	0.3136	1.82	QV	.	.	.	.
2.250	0.3161	1.82	QV	.	.	.	.
2.267	0.3186	1.82	QV	.	.	.	.
2.283	0.3211	1.82	QV	.	.	.	.
2.300	0.3236	1.82	QV	.	.	.	.
2.317	0.3262	1.82	QV	.	.	.	.
2.333	0.3287	1.83	QV	.	.	.	.
2.350	0.3312	1.83	QV	.	.	.	.
2.367	0.3337	1.83	QV	.	.	.	.
2.383	0.3362	1.83	QV	.	.	.	.
2.400	0.3387	1.83	QV	.	.	.	.
2.417	0.3413	1.83	QV	.	.	.	.
2.433	0.3438	1.83	QV	.	.	.	.
2.450	0.3463	1.83	QV	.	.	.	.
2.467	0.3488	1.84	QV	.	.	.	.
2.483	0.3514	1.84	QV	.	.	.	.
2.500	0.3539	1.84	QV	.	.	.	.
2.517	0.3564	1.84	QV	.	.	.	.
2.533	0.3590	1.84	QV	.	.	.	.
2.550	0.3615	1.84	QV	.	.	.	.
2.567	0.3641	1.84	QV	.	.	.	.
2.583	0.3666	1.85	QV	.	.	.	.
2.600	0.3692	1.85	QV	.	.	.	.
2.617	0.3717	1.85	QV	.	.	.	.
2.633	0.3742	1.85	QV	.	.	.	.
2.650	0.3768	1.85	QV	.	.	.	.
2.667	0.3793	1.85	QV	.	.	.	.
2.683	0.3819	1.86	QV	.	.	.	.
2.700	0.3845	1.86	QV	.	.	.	.
2.717	0.3870	1.86	QV	.	.	.	.
2.733	0.3896	1.86	QV	.	.	.	.
2.750	0.3921	1.86	QV	.	.	.	.
2.767	0.3947	1.86	QV	.	.	.	.
2.783	0.3973	1.86	QV	.	.	.	.
2.800	0.3998	1.86	QV	.	.	.	.
2.817	0.4024	1.86	QV	.	.	.	.
2.833	0.4050	1.87	QV	.	.	.	.
2.850	0.4076	1.87	QV	.	.	.	.
2.867	0.4101	1.87	QV	.	.	.	.
2.883	0.4127	1.87	QV	.	.	.	.
2.900	0.4153	1.87	QV	.	.	.	.
2.917	0.4179	1.88	QV	.	.	.	.

2.933	0.4205	1.88	QV	.	.	.	.
2.950	0.4231	1.88	QV	.	.	.	.
2.967	0.4256	1.88	QV	.	.	.	.
2.983	0.4282	1.88	QV	.	.	.	.
3.000	0.4308	1.88	QV	.	.	.	.
3.017	0.4334	1.88	QV	.	.	.	.
3.033	0.4360	1.88	QV	.	.	.	.
3.050	0.4386	1.89	QV	.	.	.	.
3.067	0.4412	1.89	QV	.	.	.	.
3.083	0.4438	1.89	QV	.	.	.	.
3.100	0.4464	1.89	Q V	.	.	.	.
3.117	0.4490	1.89	Q V	.	.	.	.
3.133	0.4516	1.90	Q V	.	.	.	.
3.150	0.4543	1.90	Q V	.	.	.	.
3.167	0.4569	1.90	Q V	.	.	.	.
3.183	0.4595	1.90	Q V	.	.	.	.
3.200	0.4621	1.90	Q V	.	.	.	.
3.217	0.4647	1.90	Q V	.	.	.	.
3.233	0.4674	1.90	Q V	.	.	.	.
3.250	0.4700	1.90	Q V	.	.	.	.
3.267	0.4726	1.91	Q V	.	.	.	.
3.283	0.4752	1.91	Q V	.	.	.	.
3.300	0.4779	1.91	Q V	.	.	.	.
3.317	0.4805	1.91	Q V	.	.	.	.
3.333	0.4831	1.91	Q V	.	.	.	.
3.350	0.4858	1.92	Q V	.	.	.	.
3.367	0.4884	1.92	Q V	.	.	.	.
3.383	0.4911	1.92	Q V	.	.	.	.
3.400	0.4937	1.92	Q V	.	.	.	.
3.417	0.4963	1.92	Q V	.	.	.	.
3.433	0.4990	1.92	Q V	.	.	.	.
3.450	0.5016	1.92	Q V	.	.	.	.
3.467	0.5043	1.92	Q V	.	.	.	.
3.483	0.5069	1.93	Q V	.	.	.	.
3.500	0.5096	1.93	Q V	.	.	.	.
3.517	0.5123	1.93	Q V	.	.	.	.
3.533	0.5149	1.93	Q V	.	.	.	.
3.550	0.5176	1.94	Q V	.	.	.	.
3.567	0.5203	1.94	Q V	.	.	.	.
3.583	0.5229	1.94	Q V	.	.	.	.
3.600	0.5256	1.94	Q V	.	.	.	.
3.617	0.5283	1.94	Q V	.	.	.	.
3.633	0.5309	1.94	Q V	.	.	.	.
3.650	0.5336	1.94	Q V	.	.	.	.
3.667	0.5363	1.94	Q V	.	.	.	.
3.683	0.5390	1.95	Q V	.	.	.	.
3.700	0.5417	1.95	Q V	.	.	.	.
3.717	0.5444	1.95	Q V	.	.	.	.
3.733	0.5470	1.95	Q V	.	.	.	.
3.750	0.5497	1.96	Q V	.	.	.	.

3.767	0.5524	1.96	Q V	.	.	.	.
3.783	0.5551	1.96	Q V	.	.	.	.
3.800	0.5578	1.96	Q V	.	.	.	.
3.817	0.5605	1.96	Q V	.	.	.	.
3.833	0.5632	1.96	Q V	.	.	.	.
3.850	0.5659	1.96	Q V	.	.	.	.
3.867	0.5686	1.96	Q V	.	.	.	.
3.883	0.5713	1.97	Q V	.	.	.	.
3.900	0.5741	1.97	Q V	.	.	.	.
3.917	0.5768	1.97	Q V	.	.	.	.
3.933	0.5795	1.97	Q V	.	.	.	.
3.950	0.5822	1.97	Q V	.	.	.	.
3.967	0.5849	1.98	Q V	.	.	.	.
3.983	0.5877	1.98	Q V	.	.	.	.
4.000	0.5904	1.98	Q V	.	.	.	.
4.017	0.5931	1.98	Q V	.	.	.	.
4.033	0.5958	1.98	Q V	.	.	.	.
4.050	0.5986	1.98	Q V	.	.	.	.
4.067	0.6013	1.98	Q V	.	.	.	.
4.083	0.6040	1.99	Q V	.	.	.	.
4.100	0.6068	1.99	Q V	.	.	.	.
4.117	0.6095	1.99	Q V	.	.	.	.
4.133	0.6123	1.99	Q V	.	.	.	.
4.150	0.6150	2.00	Q V	.	.	.	.
4.167	0.6178	2.00	Q V	.	.	.	.
4.183	0.6205	2.00	Q V	.	.	.	.
4.200	0.6233	2.00	Q V	.	.	.	.
4.217	0.6260	2.00	Q V	.	.	.	.
4.233	0.6288	2.00	Q V	.	.	.	.
4.250	0.6316	2.00	Q V	.	.	.	.
4.267	0.6343	2.01	Q V	.	.	.	.
4.283	0.6371	2.01	Q V	.	.	.	.
4.300	0.6398	2.01	Q V	.	.	.	.
4.317	0.6426	2.01	Q V	.	.	.	.
4.333	0.6454	2.01	Q V	.	.	.	.
4.350	0.6482	2.02	Q V	.	.	.	.
4.367	0.6510	2.02	Q V	.	.	.	.
4.383	0.6537	2.02	Q V	.	.	.	.
4.400	0.6565	2.02	Q V	.	.	.	.
4.417	0.6593	2.02	Q V	.	.	.	.
4.433	0.6621	2.03	Q V	.	.	.	.
4.450	0.6649	2.03	Q V	.	.	.	.
4.467	0.6677	2.03	Q V	.	.	.	.
4.483	0.6705	2.03	Q V	.	.	.	.
4.500	0.6733	2.03	Q V	.	.	.	.
4.517	0.6761	2.03	Q V	.	.	.	.
4.533	0.6789	2.04	Q V	.	.	.	.
4.550	0.6817	2.04	Q V	.	.	.	.
4.567	0.6845	2.04	Q V	.	.	.	.
4.583	0.6873	2.04	Q V	.	.	.	.

4.600	0.6901	2.04	Q V	.	.	.	.
4.617	0.6929	2.05	Q V	.	.	.	.
4.633	0.6958	2.05	Q V	.	.	.	.
4.650	0.6986	2.05	Q V	.	.	.	.
4.667	0.7014	2.05	Q V	.	.	.	.
4.683	0.7042	2.05	Q V	.	.	.	.
4.700	0.7071	2.05	Q V	.	.	.	.
4.717	0.7099	2.05	Q V	.	.	.	.
4.733	0.7127	2.06	Q V	.	.	.	.
4.750	0.7156	2.06	Q V	.	.	.	.
4.767	0.7184	2.06	Q V	.	.	.	.
4.783	0.7212	2.07	Q V	.	.	.	.
4.800	0.7241	2.07	Q V	.	.	.	.
4.817	0.7269	2.07	Q V	.	.	.	.
4.833	0.7298	2.07	Q V	.	.	.	.
4.850	0.7327	2.07	Q V	.	.	.	.
4.867	0.7355	2.07	Q V	.	.	.	.
4.883	0.7384	2.07	Q V	.	.	.	.
4.900	0.7412	2.08	Q V	.	.	.	.
4.917	0.7441	2.08	Q V	.	.	.	.
4.933	0.7470	2.08	Q V	.	.	.	.
4.950	0.7498	2.08	Q V	.	.	.	.
4.967	0.7527	2.09	Q V	.	.	.	.
4.983	0.7556	2.09	Q V	.	.	.	.
5.000	0.7584	2.09	Q V	.	.	.	.
5.017	0.7613	2.09	Q V	.	.	.	.
5.033	0.7642	2.09	Q V	.	.	.	.
5.050	0.7671	2.10	Q V	.	.	.	.
5.067	0.7700	2.10	Q V	.	.	.	.
5.083	0.7729	2.10	Q V	.	.	.	.
5.100	0.7758	2.10	Q V	.	.	.	.
5.117	0.7787	2.10	Q V	.	.	.	.
5.133	0.7816	2.10	Q V	.	.	.	.
5.150	0.7845	2.11	Q V	.	.	.	.
5.167	0.7874	2.11	Q V	.	.	.	.
5.183	0.7903	2.11	Q V	.	.	.	.
5.200	0.7932	2.11	Q V	.	.	.	.
5.217	0.7961	2.12	Q V	.	.	.	.
5.233	0.7990	2.12	Q V	.	.	.	.
5.250	0.8019	2.12	Q V	.	.	.	.
5.267	0.8049	2.12	Q V	.	.	.	.
5.283	0.8078	2.12	Q V	.	.	.	.
5.300	0.8107	2.12	Q V	.	.	.	.
5.317	0.8136	2.13	Q V	.	.	.	.
5.333	0.8166	2.13	Q V	.	.	.	.
5.350	0.8195	2.13	Q V	.	.	.	.
5.367	0.8224	2.13	Q V	.	.	.	.
5.383	0.8254	2.14	Q V	.	.	.	.
5.400	0.8283	2.14	Q V	.	.	.	.
5.417	0.8313	2.14	Q V	.	.	.	.

5.433	0.8342	2.14	Q	V	.	.	.	.
5.450	0.8372	2.15	Q	V	.	.	.	.
5.467	0.8402	2.15	Q	V	.	.	.	.
5.483	0.8431	2.15	Q	V	.	.	.	.
5.500	0.8461	2.15	Q	V	.	.	.	.
5.517	0.8490	2.15	Q	V	.	.	.	.
5.533	0.8520	2.15	Q	V	.	.	.	.
5.550	0.8550	2.15	Q	V	.	.	.	.
5.567	0.8579	2.16	Q	V	.	.	.	.
5.583	0.8609	2.16	Q	V	.	.	.	.
5.600	0.8639	2.16	Q	V	.	.	.	.
5.617	0.8669	2.17	Q	V	.	.	.	.
5.633	0.8699	2.17	Q	V	.	.	.	.
5.650	0.8729	2.17	Q	V	.	.	.	.
5.667	0.8759	2.17	Q	V	.	.	.	.
5.683	0.8789	2.17	Q	V	.	.	.	.
5.700	0.8818	2.18	Q	V	.	.	.	.
5.717	0.8848	2.18	Q	V	.	.	.	.
5.733	0.8879	2.18	Q	V	.	.	.	.
5.750	0.8909	2.18	Q	V	.	.	.	.
5.767	0.8939	2.18	Q	V	.	.	.	.
5.783	0.8969	2.19	Q	V	.	.	.	.
5.800	0.8999	2.19	Q	V	.	.	.	.
5.817	0.9029	2.19	Q	V	.	.	.	.
5.833	0.9059	2.20	Q	V	.	.	.	.
5.850	0.9090	2.20	Q	V	.	.	.	.
5.867	0.9120	2.20	Q	V	.	.	.	.
5.883	0.9150	2.20	Q	V	.	.	.	.
5.900	0.9181	2.20	Q	V	.	.	.	.
5.917	0.9211	2.20	Q	V	.	.	.	.
5.933	0.9241	2.21	Q	V	.	.	.	.
5.950	0.9272	2.21	Q	V	.	.	.	.
5.967	0.9302	2.21	Q	V	.	.	.	.
5.983	0.9333	2.21	Q	V	.	.	.	.
6.000	0.9363	2.22	Q	V	.	.	.	.
6.017	0.9394	2.22	Q	V	.	.	.	.
6.033	0.9424	2.22	Q	V	.	.	.	.
6.050	0.9455	2.23	Q	V	.	.	.	.
6.067	0.9486	2.23	Q	V	.	.	.	.
6.083	0.9516	2.23	Q	V	.	.	.	.
6.100	0.9547	2.23	Q	V	.	.	.	.
6.117	0.9578	2.23	Q	V	.	.	.	.
6.133	0.9609	2.23	Q	V	.	.	.	.
6.150	0.9640	2.24	Q	V	.	.	.	.
6.167	0.9670	2.24	Q	V	.	.	.	.
6.183	0.9701	2.24	Q	V	.	.	.	.
6.200	0.9732	2.24	Q	V	.	.	.	.
6.217	0.9763	2.25	Q	V	.	.	.	.
6.233	0.9794	2.25	Q	V	.	.	.	.
6.250	0.9825	2.25	Q	V	.	.	.	.

6.267	0.9856	2.26	Q	V	.	.	.	.
6.283	0.9887	2.26	Q	V	.	.	.	.
6.300	0.9918	2.26	Q	V	.	.	.	.
6.317	0.9950	2.26	Q	V	.	.	.	.
6.333	0.9981	2.26	Q	V	.	.	.	.
6.350	1.0012	2.27	Q	V	.	.	.	.
6.367	1.0043	2.27	Q	V	.	.	.	.
6.383	1.0074	2.27	Q	V	.	.	.	.
6.400	1.0106	2.27	Q	V	.	.	.	.
6.417	1.0137	2.28	Q	V	.	.	.	.
6.433	1.0168	2.28	Q	V	.	.	.	.
6.450	1.0200	2.28	Q	V	.	.	.	.
6.467	1.0231	2.29	Q	V	.	.	.	.
6.483	1.0263	2.29	Q	V	.	.	.	.
6.500	1.0294	2.29	Q	V	.	.	.	.
6.517	1.0326	2.29	Q	V	.	.	.	.
6.533	1.0358	2.29	Q	V	.	.	.	.
6.550	1.0389	2.30	Q	V	.	.	.	.
6.567	1.0421	2.30	Q	V	.	.	.	.
6.583	1.0452	2.30	Q	V	.	.	.	.
6.600	1.0484	2.30	Q	V	.	.	.	.
6.617	1.0516	2.30	Q	V	.	.	.	.
6.633	1.0548	2.31	Q	V	.	.	.	.
6.650	1.0580	2.31	Q	V	.	.	.	.
6.667	1.0611	2.32	Q	V	.	.	.	.
6.683	1.0643	2.32	Q	V	.	.	.	.
6.700	1.0675	2.32	Q	V	.	.	.	.
6.717	1.0707	2.32	Q	V	.	.	.	.
6.733	1.0739	2.32	Q	V	.	.	.	.
6.750	1.0771	2.33	Q	V	.	.	.	.
6.767	1.0804	2.33	Q	V	.	.	.	.
6.783	1.0836	2.33	Q	V	.	.	.	.
6.800	1.0868	2.33	Q	V	.	.	.	.
6.817	1.0900	2.34	Q	V	.	.	.	.
6.833	1.0932	2.34	Q	V	.	.	.	.
6.850	1.0964	2.34	Q	V	.	.	.	.
6.867	1.0997	2.35	Q	V	.	.	.	.
6.883	1.1029	2.35	Q	V	.	.	.	.
6.900	1.1061	2.35	Q	V	.	.	.	.
6.917	1.1094	2.36	Q	V	.	.	.	.
6.933	1.1126	2.36	Q	V	.	.	.	.
6.950	1.1159	2.36	Q	V	.	.	.	.
6.967	1.1191	2.36	Q	V	.	.	.	.
6.983	1.1224	2.36	Q	V	.	.	.	.
7.000	1.1256	2.36	Q	V	.	.	.	.
7.017	1.1289	2.37	Q	V	.	.	.	.
7.033	1.1322	2.37	Q	V	.	.	.	.
7.050	1.1354	2.37	Q	V	.	.	.	.
7.067	1.1387	2.38	Q	V	.	.	.	.
7.083	1.1420	2.38	Q	V	.	.	.	.

7.100	1.1453	2.39	Q	V	.	.	.	.
7.117	1.1486	2.39	Q	V	.	.	.	.
7.133	1.1519	2.39	Q	V	.	.	.	.
7.150	1.1552	2.39	Q	V	.	.	.	.
7.167	1.1585	2.39	Q	V	.	.	.	.
7.183	1.1618	2.40	Q	V	.	.	.	.
7.200	1.1651	2.40	Q	V	.	.	.	.
7.217	1.1684	2.40	Q	V	.	.	.	.
7.233	1.1717	2.40	Q	V	.	.	.	.
7.250	1.1750	2.41	Q	V	.	.	.	.
7.267	1.1783	2.41	Q	V	.	.	.	.
7.283	1.1816	2.42	Q	V	.	.	.	.
7.300	1.1850	2.42	Q	V	.	.	.	.
7.317	1.1883	2.42	Q	V	.	.	.	.
7.333	1.1917	2.43	Q	V	.	.	.	.
7.350	1.1950	2.43	Q	V	.	.	.	.
7.367	1.1983	2.43	Q	V	.	.	.	.
7.383	1.2017	2.43	Q	V	.	.	.	.
7.400	1.2050	2.43	Q	V	.	.	.	.
7.417	1.2084	2.43	Q	V	.	.	.	.
7.433	1.2118	2.44	Q	V	.	.	.	.
7.450	1.2151	2.44	Q	V	.	.	.	.
7.467	1.2185	2.45	Q	V	.	.	.	.
7.483	1.2219	2.45	Q	V	.	.	.	.
7.500	1.2252	2.45	Q	V	.	.	.	.
7.517	1.2286	2.46	Q	V	.	.	.	.
7.533	1.2320	2.46	Q	V	.	.	.	.
7.550	1.2354	2.46	Q	V	.	.	.	.
7.567	1.2388	2.47	Q	V	.	.	.	.
7.583	1.2422	2.47	Q	V	.	.	.	.
7.600	1.2456	2.47	Q	V	.	.	.	.
7.617	1.2490	2.47	Q	V	.	.	.	.
7.633	1.2524	2.47	Q	V	.	.	.	.
7.650	1.2558	2.48	Q	V	.	.	.	.
7.667	1.2592	2.48	Q	V	.	.	.	.
7.683	1.2627	2.49	Q	V	.	.	.	.
7.700	1.2661	2.49	Q	V	.	.	.	.
7.717	1.2695	2.49	Q	V	.	.	.	.
7.733	1.2730	2.50	Q	V	.	.	.	.
7.750	1.2764	2.50	Q	V	.	.	.	.
7.767	1.2799	2.50	Q	V	.	.	.	.
7.783	1.2833	2.50	Q	V	.	.	.	.
7.800	1.2868	2.51	Q	V	.	.	.	.
7.817	1.2902	2.51	Q	V	.	.	.	.
7.833	1.2937	2.51	Q	V	.	.	.	.
7.850	1.2971	2.51	Q	V	.	.	.	.
7.867	1.3006	2.52	Q	V	.	.	.	.
7.883	1.3041	2.52	Q	V	.	.	.	.
7.900	1.3076	2.53	Q	V	.	.	.	.
7.917	1.3111	2.53	Q	V	.	.	.	.

7.933	1.3145	2.54	Q	V	.	.	.	.
7.950	1.3180	2.54	Q	V	.	.	.	.
7.967	1.3215	2.54	Q	V	.	.	.	.
7.983	1.3251	2.54	Q	V	.	.	.	.
8.000	1.3286	2.55	Q	V	.	.	.	.
8.017	1.3321	2.55	Q	V	.	.	.	.
8.033	1.3356	2.55	Q	V	.	.	.	.
8.050	1.3391	2.55	Q	V	.	.	.	.
8.067	1.3426	2.56	Q	V	.	.	.	.
8.083	1.3461	2.56	Q	V	.	.	.	.
8.100	1.3497	2.57	Q	V	.	.	.	.
8.117	1.3532	2.57	Q	V	.	.	.	.
8.133	1.3568	2.57	Q	V	.	.	.	.
8.150	1.3603	2.58	Q	V	.	.	.	.
8.167	1.3639	2.58	Q	V	.	.	.	.
8.183	1.3674	2.58	Q	V	.	.	.	.
8.200	1.3710	2.59	Q	V	.	.	.	.
8.217	1.3746	2.59	Q	V	.	.	.	.
8.233	1.3781	2.59	Q	V	.	.	.	.
8.250	1.3817	2.59	Q	V	.	.	.	.
8.267	1.3853	2.60	Q	V	.	.	.	.
8.283	1.3889	2.60	Q	V	.	.	.	.
8.300	1.3925	2.61	Q	V	.	.	.	.
8.317	1.3961	2.61	Q	V	.	.	.	.
8.333	1.3997	2.62	Q	V	.	.	.	.
8.350	1.4033	2.62	Q	V	.	.	.	.
8.367	1.4069	2.62	Q	V	.	.	.	.
8.383	1.4105	2.63	Q	V	.	.	.	.
8.400	1.4141	2.63	Q	V	.	.	.	.
8.417	1.4178	2.63	Q	V	.	.	.	.
8.433	1.4214	2.63	Q	V	.	.	.	.
8.450	1.4250	2.64	Q	V	.	.	.	.
8.467	1.4287	2.64	Q	V	.	.	.	.
8.483	1.4323	2.64	Q	V	.	.	.	.
8.500	1.4359	2.65	Q	V	.	.	.	.
8.517	1.4396	2.65	Q	V	.	.	.	.
8.533	1.4433	2.66	Q	V	.	.	.	.
8.550	1.4469	2.66	Q	V	.	.	.	.
8.567	1.4506	2.67	Q	V	.	.	.	.
8.583	1.4543	2.67	Q	V	.	.	.	.
8.600	1.4580	2.67	Q	V	.	.	.	.
8.617	1.4616	2.68	Q	V	.	.	.	.
8.633	1.4653	2.68	Q	V	.	.	.	.
8.650	1.4690	2.68	Q	V	.	.	.	.
8.667	1.4727	2.68	.Q	V	.	.	.	.
8.683	1.4764	2.69	.Q	V	.	.	.	.
8.700	1.4801	2.69	.Q	V	.	.	.	.
8.717	1.4839	2.70	.Q	V	.	.	.	.
8.733	1.4876	2.70	.Q	V	.	.	.	.
8.750	1.4913	2.71	.Q	V	.	.	.	.

8.767	1.4950	2.71	.Q	V	.	.	.	.
8.783	1.4988	2.72	.Q	V	.	.	.	.
8.800	1.5025	2.72	.Q	V	.	.	.	.
8.817	1.5063	2.72	.Q	V	.	.	.	.
8.833	1.5100	2.73	.Q	V	.	.	.	.
8.850	1.5138	2.73	.Q	V	.	.	.	.
8.867	1.5176	2.73	.Q	V	.	.	.	.
8.883	1.5213	2.73	.Q	V	.	.	.	.
8.900	1.5251	2.74	.Q	V	.	.	.	.
8.917	1.5289	2.74	.Q	V	.	.	.	.
8.933	1.5327	2.75	.Q	V	.	.	.	.
8.950	1.5365	2.75	.Q	V	.	.	.	.
8.967	1.5403	2.76	.Q	V	.	.	.	.
8.983	1.5441	2.77	.Q	V	.	.	.	.
9.000	1.5479	2.77	.Q	V	.	.	.	.
9.017	1.5517	2.77	.Q	V	.	.	.	.
9.033	1.5555	2.78	.Q	V	.	.	.	.
9.050	1.5594	2.78	.Q	V	.	.	.	.
9.067	1.5632	2.78	.Q	V	.	.	.	.
9.083	1.5670	2.78	.Q	V	.	.	.	.
9.100	1.5709	2.79	.Q	V	.	.	.	.
9.117	1.5747	2.79	.Q	V	.	.	.	.
9.133	1.5786	2.80	.Q	V	.	.	.	.
9.150	1.5824	2.80	.Q	V	.	.	.	.
9.167	1.5863	2.81	.Q	V	.	.	.	.
9.183	1.5902	2.81	.Q	V	.	.	.	.
9.200	1.5940	2.82	.Q	V	.	.	.	.
9.217	1.5979	2.82	.Q	V	.	.	.	.
9.233	1.6018	2.83	.Q	V	.	.	.	.
9.250	1.6057	2.83	.Q	V	.	.	.	.
9.267	1.6096	2.83	.Q	V	.	.	.	.
9.283	1.6135	2.84	.Q	V	.	.	.	.
9.300	1.6174	2.84	.Q	V	.	.	.	.
9.317	1.6214	2.84	.Q	V	.	.	.	.
9.333	1.6253	2.85	.Q	V	.	.	.	.
9.350	1.6292	2.85	.Q	V	.	.	.	.
9.367	1.6332	2.86	.Q	V	.	.	.	.
9.383	1.6371	2.87	.Q	V	.	.	.	.
9.400	1.6411	2.87	.Q	V	.	.	.	.
9.417	1.6450	2.88	.Q	V	.	.	.	.
9.433	1.6490	2.88	.Q	V	.	.	.	.
9.450	1.6530	2.88	.Q	V	.	.	.	.
9.467	1.6569	2.89	.Q	V	.	.	.	.
9.483	1.6609	2.89	.Q	V	.	.	.	.
9.500	1.6649	2.89	.Q	V	.	.	.	.
9.517	1.6689	2.90	.Q	V	.	.	.	.
9.533	1.6729	2.90	.Q	V	.	.	.	.
9.550	1.6769	2.91	.Q	V	.	.	.	.
9.567	1.6809	2.91	.Q	V	.	.	.	.
9.583	1.6849	2.92	.Q	V	.	.	.	.

9.600	1.6890	2.93	.Q	V	.	.	.	.
9.617	1.6930	2.93	.Q	V	.	.	.	.
9.633	1.6970	2.94	.Q	V	.	.	.	.
9.650	1.7011	2.94	.Q	V	.	.	.	.
9.667	1.7051	2.94	.Q	V	.	.	.	.
9.683	1.7092	2.95	.Q	V	.	.	.	.
9.700	1.7133	2.95	.Q	V	.	.	.	.
9.717	1.7173	2.95	.Q	V	.	.	.	.
9.733	1.7214	2.96	.Q	V	.	.	.	.
9.750	1.7255	2.96	.Q	V	.	.	.	.
9.767	1.7296	2.97	.Q	V	.	.	.	.
9.783	1.7337	2.98	.Q	V	.	.	.	.
9.800	1.7378	2.98	.Q	V	.	.	.	.
9.817	1.7419	2.99	.Q	V	.	.	.	.
9.833	1.7460	3.00	.Q	V	.	.	.	.
9.850	1.7502	3.00	.Q	V	.	.	.	.
9.867	1.7543	3.00	.Q	V	.	.	.	.
9.883	1.7584	3.01	.Q	V	.	.	.	.
9.900	1.7626	3.01	.Q	V	.	.	.	.
9.917	1.7667	3.01	.Q	V	.	.	.	.
9.933	1.7709	3.02	.Q	V	.	.	.	.
9.950	1.7751	3.02	.Q	V	.	.	.	.
9.967	1.7792	3.03	.Q	V	.	.	.	.
9.983	1.7834	3.04	.Q	V	.	.	.	.
10.000	1.7876	3.04	.Q	V	.	.	.	.
10.017	1.7918	3.05	.Q	V	.	.	.	.
10.033	1.7960	3.06	.Q	V	.	.	.	.
10.050	1.8002	3.06	.Q	V	.	.	.	.
10.067	1.8045	3.07	.Q	V	.	.	.	.
10.083	1.8087	3.07	.Q	V	.	.	.	.
10.100	1.8129	3.07	.Q	V	.	.	.	.
10.117	1.8172	3.08	.Q	V	.	.	.	.
10.133	1.8214	3.08	.Q	V	.	.	.	.
10.150	1.8257	3.09	.Q	V	.	.	.	.
10.167	1.8299	3.09	.Q	V	.	.	.	.
10.183	1.8342	3.10	.Q	V	.	.	.	.
10.200	1.8385	3.11	.Q	V	.	.	.	.
10.217	1.8428	3.11	.Q	V	.	.	.	.
10.233	1.8471	3.12	.Q	V	.	.	.	.
10.250	1.8514	3.13	.Q	V	.	.	.	.
10.267	1.8557	3.13	.Q	V	.	.	.	.
10.283	1.8600	3.14	.Q	V	.	.	.	.
10.300	1.8643	3.14	.Q	V	.	.	.	.
10.317	1.8687	3.14	.Q	V	.	.	.	.
10.333	1.8730	3.15	.Q	V	.	.	.	.
10.350	1.8773	3.15	.Q	V	.	.	.	.
10.367	1.8817	3.16	.Q	V	.	.	.	.
10.383	1.8861	3.17	.Q	V	.	.	.	.
10.400	1.8904	3.17	.Q	V	.	.	.	.
10.417	1.8948	3.18	.Q	V	.	.	.	.

10.433	1.8992	3.19	.Q	V .	.	.	.
10.450	1.9036	3.20	.Q	V .	.	.	.
10.467	1.9080	3.20	.Q	V .	.	.	.
10.483	1.9124	3.21	.Q	V .	.	.	.
10.500	1.9169	3.21	.Q	V .	.	.	.
10.517	1.9213	3.22	.Q	V .	.	.	.
10.533	1.9257	3.22	.Q	V .	.	.	.
10.550	1.9302	3.22	.Q	V .	.	.	.
10.567	1.9346	3.23	.Q	V .	.	.	.
10.583	1.9391	3.24	.Q	V .	.	.	.
10.600	1.9436	3.24	.Q	V .	.	.	.
10.617	1.9480	3.25	.Q	V .	.	.	.
10.633	1.9525	3.26	.Q	V .	.	.	.
10.650	1.9570	3.27	.Q	V .	.	.	.
10.667	1.9615	3.28	.Q	V .	.	.	.
10.683	1.9661	3.28	.Q	V .	.	.	.
10.700	1.9706	3.29	.Q	V .	.	.	.
10.717	1.9751	3.29	.Q	V .	.	.	.
10.733	1.9797	3.30	.Q	V .	.	.	.
10.750	1.9842	3.30	.Q	V .	.	.	.
10.767	1.9888	3.30	.Q	V .	.	.	.
10.783	1.9933	3.31	.Q	V .	.	.	.
10.800	1.9979	3.32	.Q	V .	.	.	.
10.817	2.0025	3.33	.Q	V .	.	.	.
10.833	2.0071	3.34	.Q	V .	.	.	.
10.850	2.0117	3.35	.Q	V .	.	.	.
10.867	2.0163	3.36	.Q	V .	.	.	.
10.883	2.0209	3.36	.Q	V .	.	.	.
10.900	2.0256	3.37	.Q	V .	.	.	.
10.917	2.0302	3.37	.Q	V .	.	.	.
10.933	2.0349	3.38	.Q	V .	.	.	.
10.950	2.0395	3.38	.Q	V .	.	.	.
10.967	2.0442	3.39	.Q	V .	.	.	.
10.983	2.0489	3.39	.Q	V .	.	.	.
11.000	2.0536	3.40	.Q	V .	.	.	.
11.017	2.0583	3.41	.Q	V .	.	.	.
11.033	2.0630	3.42	.Q	V .	.	.	.
11.050	2.0677	3.43	.Q	V .	.	.	.
11.067	2.0724	3.44	.Q	V .	.	.	.
11.083	2.0772	3.45	.Q	V .	.	.	.
11.100	2.0819	3.45	.Q	V .	.	.	.
11.117	2.0867	3.46	.Q	V .	.	.	.
11.133	2.0915	3.46	.Q	V .	.	.	.
11.150	2.0962	3.47	.Q	V .	.	.	.
11.167	2.1010	3.47	.Q	V .	.	.	.
11.183	2.1058	3.48	.Q	V .	.	.	.
11.200	2.1106	3.48	.Q	V .	.	.	.
11.217	2.1154	3.49	.Q	V .	.	.	.
11.233	2.1202	3.50	.Q	V .	.	.	.
11.250	2.1251	3.51	.Q	V .	.	.	.

11.267	2.1299	3.52	.Q	V .	.	.	.
11.283	2.1348	3.54	.Q	V .	.	.	.
11.300	2.1397	3.54	.Q	V .	.	.	.
11.317	2.1446	3.55	.Q	V .	.	.	.
11.333	2.1495	3.56	.Q	V .	.	.	.
11.350	2.1544	3.56	.Q	V .	.	.	.
11.367	2.1593	3.57	.Q	V .	.	.	.
11.383	2.1642	3.57	.Q	V .	.	.	.
11.400	2.1691	3.58	.Q	V .	.	.	.
11.417	2.1741	3.59	.Q	V .	.	.	.
11.433	2.1790	3.60	.Q	V .	.	.	.
11.450	2.1840	3.61	.Q	V .	.	.	.
11.467	2.1890	3.62	.Q	V .	.	.	.
11.483	2.1940	3.63	.Q	V .	.	.	.
11.500	2.1990	3.64	.Q	V .	.	.	.
11.517	2.2040	3.65	.Q	V .	.	.	.
11.533	2.2091	3.65	.Q	V .	.	.	.
11.550	2.2141	3.66	.Q	V .	.	.	.
11.567	2.2192	3.67	.Q	V .	.	.	.
11.583	2.2242	3.67	.Q	V .	.	.	.
11.600	2.2293	3.68	.Q	V	.	.	.
11.617	2.2343	3.68	.Q	V	.	.	.
11.633	2.2394	3.70	.Q	V	.	.	.
11.650	2.2445	3.71	.Q	V	.	.	.
11.667	2.2497	3.72	.Q	V	.	.	.
11.683	2.2548	3.73	.Q	V	.	.	.
11.700	2.2600	3.74	.Q	V	.	.	.
11.717	2.2651	3.75	.Q	V	.	.	.
11.733	2.2703	3.76	.Q	V	.	.	.
11.750	2.2755	3.77	.Q	V	.	.	.
11.767	2.2807	3.77	.Q	V	.	.	.
11.783	2.2859	3.78	.Q	V	.	.	.
11.800	2.2911	3.78	.Q	V	.	.	.
11.817	2.2963	3.79	.Q	V	.	.	.
11.833	2.3016	3.80	.Q	V	.	.	.
11.850	2.3068	3.81	.Q	V	.	.	.
11.867	2.3121	3.83	.Q	V	.	.	.
11.883	2.3174	3.84	.Q	V	.	.	.
11.900	2.3227	3.85	.Q	V	.	.	.
11.917	2.3280	3.86	.Q	V	.	.	.
11.933	2.3333	3.87	.Q	V	.	.	.
11.950	2.3387	3.88	.Q	V	.	.	.
11.967	2.3440	3.89	.Q	V	.	.	.
11.983	2.3494	3.89	.Q	V	.	.	.
12.000	2.3548	3.90	.Q	V	.	.	.
12.017	2.3602	3.91	.Q	V	.	.	.
12.033	2.3656	3.95	.Q	V	.	.	.
12.050	2.3713	4.11	.Q	V	.	.	.
12.067	2.3772	4.29	.Q	V	.	.	.
12.083	2.3833	4.46	.Q	V	.	.	.

12.100	2.3897	4.64	.Q	V	.	.	.
12.117	2.3963	4.81	.Q	V	.	.	.
12.133	2.4032	4.98	.Q	V	.	.	.
12.150	2.4101	5.02	.Q	V	.	.	.
12.167	2.4170	5.03	.Q	V	.	.	.
12.183	2.4240	5.04	.Q	V	.	.	.
12.200	2.4309	5.04	.Q	V	.	.	.
12.217	2.4379	5.05	.Q	V	.	.	.
12.233	2.4449	5.06	.Q	V	.	.	.
12.250	2.4518	5.07	.Q	.V	.	.	.
12.267	2.4589	5.09	.Q	.V	.	.	.
12.283	2.4659	5.10	.Q	.V	.	.	.
12.300	2.4729	5.12	.Q	.V	.	.	.
12.317	2.4800	5.14	.Q	.V	.	.	.
12.333	2.4871	5.15	.Q	.V	.	.	.
12.350	2.4942	5.17	.Q	.V	.	.	.
12.367	2.5013	5.17	.Q	.V	.	.	.
12.383	2.5085	5.18	.Q	.V	.	.	.
12.400	2.5156	5.19	.Q	.V	.	.	.
12.417	2.5228	5.20	.Q	.V	.	.	.
12.433	2.5300	5.21	.Q	.V	.	.	.
12.450	2.5372	5.22	.Q	.V	.	.	.
12.467	2.5444	5.23	.Q	.V	.	.	.
12.483	2.5516	5.25	.Q	.V	.	.	.
12.500	2.5588	5.27	.Q	.V	.	.	.
12.517	2.5661	5.28	.Q	.V	.	.	.
12.533	2.5734	5.30	.Q	.V	.	.	.
12.550	2.5808	5.32	.Q	.V	.	.	.
12.567	2.5881	5.33	.Q	.V	.	.	.
12.583	2.5955	5.34	.Q	.V	.	.	.
12.600	2.6028	5.35	.Q	.V	.	.	.
12.617	2.6102	5.36	.Q	.V	.	.	.
12.633	2.6176	5.37	.Q	.V	.	.	.
12.650	2.6250	5.38	.Q	.V	.	.	.
12.667	2.6324	5.39	.Q	.V	.	.	.
12.683	2.6399	5.41	.Q	.V	.	.	.
12.700	2.6473	5.43	.Q	.V	.	.	.
12.717	2.6548	5.45	.Q	.V	.	.	.
12.733	2.6624	5.47	.Q	.V	.	.	.
12.750	2.6699	5.48	.Q	.V	.	.	.
12.767	2.6775	5.50	.Q	.V	.	.	.
12.783	2.6851	5.51	.Q	.V	.	.	.
12.800	2.6927	5.52	.Q	.V	.	.	.
12.817	2.7003	5.53	.Q	.V	.	.	.
12.833	2.7080	5.54	.Q	.V	.	.	.
12.850	2.7156	5.55	.Q	.V	.	.	.
12.867	2.7233	5.56	.Q	.V	.	.	.
12.883	2.7310	5.58	.Q	.V	.	.	.
12.900	2.7387	5.60	.Q	.V	.	.	.
12.917	2.7464	5.62	.Q	.V	.	.	.

12.933	2.7542	5.64	.Q	.V	.	.	.
12.950	2.7620	5.67	.Q	.V	.	.	.
12.967	2.7698	5.69	.Q	.V	.	.	.
12.983	2.7777	5.70	.Q	.V	.	.	.
13.000	2.7856	5.71	.Q	.V	.	.	.
13.017	2.7934	5.72	.Q	.V	.	.	.
13.033	2.8013	5.73	.Q	.V	.	.	.
13.050	2.8093	5.75	.Q	.V	.	.	.
13.067	2.8172	5.76	.Q	.V	.	.	.
13.083	2.8251	5.77	.Q	.V	.	.	.
13.100	2.8331	5.80	.Q	.V	.	.	.
13.117	2.8411	5.82	.Q	.V	.	.	.
13.133	2.8492	5.84	.Q	.V	.	.	.
13.150	2.8573	5.87	.Q	.V	.	.	.
13.167	2.8654	5.89	.Q	.V	.	.	.
13.183	2.8735	5.91	.Q	.V	.	.	.
13.200	2.8817	5.92	.Q	.V	.	.	.
13.217	2.8898	5.94	.Q	.V	.	.	.
13.233	2.8980	5.95	.Q	.V	.	.	.
13.250	2.9063	5.96	.Q	.V	.	.	.
13.267	2.9145	5.97	.Q	.V	.	.	.
13.283	2.9227	5.99	.Q	.V	.	.	.
13.300	2.9310	6.01	.Q	.V	.	.	.
13.317	2.9393	6.03	.Q	.V	.	.	.
13.333	2.9477	6.06	.Q	.V	.	.	.
13.350	2.9560	6.09	.Q	.V	.	.	.
13.367	2.9645	6.11	.Q	.V	.	.	.
13.383	2.9729	6.14	.Q	.V	.	.	.
13.400	2.9814	6.16	.Q	.V	.	.	.
13.417	2.9899	6.17	.Q	.V	.	.	.
13.433	2.9984	6.19	.Q	.V	.	.	.
13.450	3.0070	6.20	.Q	.V	.	.	.
13.467	3.0155	6.21	.Q	.V	.	.	.
13.483	3.0241	6.23	.Q	.V	.	.	.
13.500	3.0327	6.25	.Q	.V	.	.	.
13.517	3.0413	6.27	.Q	.V	.	.	.
13.533	3.0500	6.30	.Q	.V	.	.	.
13.550	3.0587	6.33	.Q	.V	.	.	.
13.567	3.0675	6.36	.Q	.V	.	.	.
13.583	3.0763	6.39	.Q	.V	.	.	.
13.600	3.0852	6.42	.Q	.V	.	.	.
13.617	3.0940	6.44	.Q	.V	.	.	.
13.633	3.1029	6.45	.Q	.V	.	.	.
13.650	3.1118	6.47	.Q	.V	.	.	.
13.667	3.1208	6.48	.Q	.V	.	.	.
13.683	3.1297	6.50	.Q	.V	.	.	.
13.700	3.1387	6.52	.Q	.V	.	.	.
13.717	3.1477	6.54	.Q	.V	.	.	.
13.733	3.1568	6.58	.Q	.V	.	.	.
13.750	3.1659	6.61	.Q	.V	.	.	.

13.767	3.1750	6.64	. Q	.	V	.	.	.
13.783	3.1842	6.68	. Q	.	V	.	.	.
13.800	3.1935	6.71	. Q	.	V	.	.	.
13.817	3.2027	6.74	. Q	.	V	.	.	.
13.833	3.2120	6.76	. Q	.	V	.	.	.
13.850	3.2214	6.78	. Q	.	V	.	.	.
13.867	3.2307	6.79	. Q	.	V	.	.	.
13.883	3.2401	6.81	. Q	.	V	.	.	.
13.900	3.2495	6.83	. Q	.	V	.	.	.
13.917	3.2590	6.85	. Q	.	V	.	.	.
13.933	3.2684	6.89	. Q	.	V	.	.	.
13.950	3.2780	6.93	. Q	.	V	.	.	.
13.967	3.2876	6.97	. Q	.	V	.	.	.
13.983	3.2972	7.00	. Q	.	V	.	.	.
14.000	3.3069	7.04	. Q	.	V	.	.	.
14.017	3.3167	7.08	. Q	.	V	.	.	.
14.033	3.3265	7.11	. Q	.	V	.	.	.
14.050	3.3363	7.13	. Q	.	V	.	.	.
14.067	3.3462	7.16	. Q	.	V	.	.	.
14.083	3.3561	7.18	. Q	.	V	.	.	.
14.100	3.3660	7.21	. Q	.	V	.	.	.
14.117	3.3760	7.23	. Q	.	V	.	.	.
14.133	3.3860	7.27	. Q	.	V	.	.	.
14.150	3.3961	7.32	. Q	.	V	.	.	.
14.167	3.4062	7.37	. Q	.	V	.	.	.
14.183	3.4164	7.41	. Q	.	V	.	.	.
14.200	3.4267	7.46	. Q	.	V	.	.	.
14.217	3.4370	7.51	. Q	.	V	.	.	.
14.233	3.4474	7.55	. Q	.	V	.	.	.
14.250	3.4579	7.57	. Q	.	V	.	.	.
14.267	3.4683	7.60	. Q	.	V	.	.	.
14.283	3.4788	7.62	. Q	.	V	.	.	.
14.300	3.4894	7.65	. Q	.	V	.	.	.
14.317	3.4999	7.67	. Q	.	V	.	.	.
14.333	3.5105	7.70	. Q	.	V	.	.	.
14.350	3.5212	7.75	. Q	.	V	.	.	.
14.367	3.5320	7.81	. Q	.	V	.	.	.
14.383	3.5428	7.86	. Q	.	V	.	.	.
14.400	3.5537	7.91	. Q	.	V	.	.	.
14.417	3.5647	7.97	. Q	.	V	.	.	.
14.433	3.5757	8.02	. Q	.	V	.	.	.
14.450	3.5868	8.06	. Q	.	V	.	.	.
14.467	3.5980	8.09	. Q	.	V	.	.	.
14.483	3.6092	8.12	. Q	.	V	.	.	.
14.500	3.6204	8.15	. Q	.	V	.	.	.
14.517	3.6317	8.18	. Q	.	V	.	.	.
14.533	3.6430	8.21	. Q	.	V	.	.	.
14.550	3.6543	8.26	. Q	.	V	.	.	.
14.567	3.6658	8.32	. Q	.	V	.	.	.
14.583	3.6774	8.39	. Q	.	V	.	.	.

14.600	3.6890	8.45	. Q	.	V	.	.	.
14.617	3.7007	8.52	. Q	.	V	.	.	.
14.633	3.7126	8.59	. Q	.	V	.	.	.
14.650	3.7245	8.65	. Q	.	V	.	.	.
14.667	3.7364	8.69	. Q	.	V	.	.	.
14.683	3.7484	8.72	. Q	.	V	.	.	.
14.700	3.7605	8.76	. Q	.	V	.	.	.
14.717	3.7726	8.80	. Q	.	V	.	.	.
14.733	3.7848	8.83	. Q	.	V	.	.	.
14.750	3.7970	8.87	. Q	.	V	.	.	.
14.767	3.8093	8.95	. Q	.	V	.	.	.
14.783	3.8218	9.03	. Q	.	V	.	.	.
14.800	3.8343	9.11	. Q	.	V	.	.	.
14.817	3.8470	9.20	. Q	.	V	.	.	.
14.833	3.8598	9.28	. Q	.	V	.	.	.
14.850	3.8727	9.36	. Q	.	V	.	.	.
14.867	3.8857	9.43	. Q	.	V	.	.	.
14.883	3.8987	9.47	. Q	.	V	.	.	.
14.900	3.9118	9.52	. Q	.	V	.	.	.
14.917	3.9250	9.57	. Q	.	V	.	.	.
14.933	3.9383	9.62	. Q	.	V	.	.	.
14.950	3.9516	9.66	. Q	.	V	.	.	.
14.967	3.9650	9.73	. Q	.	V	.	.	.
14.983	3.9785	9.84	. Q	.	V	.	.	.
15.000	3.9922	9.95	. Q	.	V	.	.	.
15.017	4.0061	10.06	. Q	.	V	.	.	.
15.033	4.0201	10.17	. Q	.	V	.	.	.
15.050	4.0343	10.28	. Q	.	V	.	.	.
15.067	4.0486	10.38	. Q	.	V	.	.	.
15.083	4.0630	10.45	. Q	.	V	.	.	.
15.100	4.0774	10.51	. Q	.	V	.	.	.
15.117	4.0920	10.58	. Q	.	V	.	.	.
15.133	4.1067	10.64	. Q	.	V	.	.	.
15.150	4.1214	10.71	. Q	.	V	.	.	.
15.167	4.1363	10.77	. Q	.	V	.	.	.
15.183	4.1513	10.90	. Q	.	V	.	.	.
15.200	4.1665	11.05	. Q	.	V	.	.	.
15.217	4.1819	11.20	. Q	.	V	.	.	.
15.233	4.1976	11.36	. Q	.	V	.	.	.
15.250	4.2134	11.51	. Q	.	V	.	.	.
15.267	4.2295	11.66	. Q	.	V	.	.	.
15.283	4.2457	11.79	. Q	.	V	.	.	.
15.300	4.2621	11.88	. Q	.	V	.	.	.
15.317	4.2786	11.97	. Q	.	V	.	.	.
15.333	4.2952	12.06	. Q	.	V	.	.	.
15.350	4.3119	12.16	. Q	.	V	.	.	.
15.367	4.3288	12.25	. Q	.	V	.	.	.
15.383	4.3458	12.31	. Q	.	V	.	.	.
15.400	4.3627	12.29	. Q	.	V	.	.	.
15.417	4.3796	12.27	. Q	.	V	.	.	.

15.433	4.3965	12.24	.	Q	.	V.	.	.
15.450	4.4133	12.22	.	Q	.	V.	.	.
15.467	4.4301	12.19	.	Q	.	V.	.	.
15.483	4.4469	12.18	.	Q	.	V.	.	.
15.500	4.4638	12.30	.	Q	.	V	.	.
15.517	4.4809	12.44	.	Q	.	V	.	.
15.533	4.4983	12.59	.	Q	.	V	.	.
15.550	4.5158	12.74	.	Q	.	V	.	.
15.567	4.5336	12.89	.	Q	.	V	.	.
15.583	4.5515	13.04	.	Q	.	V	.	.
15.600	4.5699	13.35	.	Q	.	V	.	.
15.617	4.5889	13.77	.	Q	.	V	.	.
15.633	4.6085	14.19	.	Q	.	V	.	.
15.650	4.6286	14.61	.	Q	.	V	.	.
15.667	4.6493	15.03	.	Q	.	V	.	.
15.683	4.6706	15.45	.	Q	.	V	.	.
15.700	4.6924	15.83	.	Q	.	.V	.	.
15.717	4.7146	16.16	.	Q	.	.V	.	.
15.733	4.7373	16.48	.	Q	.	.V	.	.
15.750	4.7605	16.80	.	Q	.	.V	.	.
15.767	4.7840	17.12	.	Q	.	.V	.	.
15.783	4.8081	17.45	.	Q	.	.V	.	.
15.800	4.8327	17.91	.	Q	.	.V	.	.
15.817	4.8590	19.05	.	Q	.	.V	.	.
15.833	4.8869	20.27	.	Q	.	.V	.	.
15.850	4.9165	21.50	.	Q	.	.V	.	.
15.867	4.9478	22.73	.	Q	.	.V	.	.
15.883	4.9808	23.95	.	Q	.	.V	.	.
15.900	5.0155	25.19	.	Q	.	.V	.	.
15.917	5.0522	26.64	.	Q	.	.V	.	.
15.933	5.0910	28.16	.	Q	.	.V	.	.
15.950	5.1319	29.69	.	.Q	.	.V	.	.
15.967	5.1749	31.22	.	.Q	.	.V	.	.
15.983	5.2200	32.75	.	.Q	.	.V	.	.
16.000	5.2672	34.27	.	.Q	.	.V	.	.
16.017	5.3234	40.79	.	.	Q	.V	.	.
16.033	5.3954	52.29	.	.	Q.	.V	.	.
16.050	5.4833	63.80	.	.	.	QV	.	.
16.067	5.5870	75.30	.	.	.	.V	Q	.
16.083	5.7066	86.81	.	.	.	.V	.Q	.
16.100	5.8420	98.31	.	.	.	.V	.Q	.
16.117	5.9898	107.29	.	.	.	.V	.Q	.
16.133	6.1144	90.46	.	.	.	.V	.Q	.
16.150	6.2200	76.67	.	.	.	VQ	.	.
16.167	6.3066	62.88	.	.	Q	.V	.	.
16.183	6.3742	49.09	.	.	Q	.V	.	.
16.200	6.4229	35.30	.	Q	.	.V	.	.
16.217	6.4542	22.74	.	Q	.	.V	.	.
16.233	6.4813	19.71	.	Q	.	.V	.	.
16.250	6.5071	18.69	.	Q	.	.V	.	.

16.267	6.5314	17.67	.	Q	.	.	V.	.
16.283	6.5543	16.64	.	Q	.	.	V.	.
16.300	6.5759	15.62	.	Q	.	.	V.	.
16.317	6.5960	14.60	.	Q	.	.	V.	.
16.333	6.6153	14.02	.	Q	.	.	V.	.
16.350	6.6341	13.68	.	Q	.	.	V.	.
16.367	6.6525	13.34	.	Q	.	.	V.	.
16.383	6.6704	13.00	.	Q	.	.	V.	.
16.400	6.6878	12.66	.	Q	.	.	V	.
16.417	6.7048	12.32	.	Q	.	.	V	.
16.433	6.7214	12.05	.	Q	.	.	V	.
16.450	6.7378	11.91	.	Q	.	.	V	.
16.467	6.7540	11.78	.	Q	.	.	V	.
16.483	6.7701	11.64	.	Q	.	.	V	.
16.500	6.7859	11.50	.	Q	.	.	V	.
16.517	6.8015	11.36	.	Q	.	.	V	.
16.533	6.8170	11.21	.	Q	.	.	V	.
16.550	6.8322	11.02	.	Q	.	.	V	.
16.567	6.8471	10.83	.	Q	.	.	V	.
16.583	6.8618	10.64	.	Q	.	.	V	.
16.600	6.8761	10.45	.	Q	.	.	V	.
16.617	6.8903	10.25	.	Q	.	.	V	.
16.633	6.9041	10.06	.	Q	.	.	.V	.
16.650	6.9178	9.91	.	Q	.	.	.V	.
16.667	6.9312	9.76	.	Q	.	.	.V	.
16.683	6.9445	9.62	.	Q	.	.	.V	.
16.700	6.9575	9.48	.	Q	.	.	.V	.
16.717	6.9704	9.34	.	Q	.	.	.V	.
16.733	6.9830	9.19	.	Q	.	.	.V	.
16.750	6.9955	9.07	.	Q	.	.	.V	.
16.767	7.0079	8.96	.	Q	.	.	.V	.
16.783	7.0201	8.84	.	Q	.	.	.V	.
16.800	7.0321	8.73	.	Q	.	.	.V	.
16.817	7.0440	8.62	.	Q	.	.	.V	.
16.833	7.0557	8.51	.	Q	.	.	.V	.
16.850	7.0673	8.41	.	Q	.	.	.V	.
16.867	7.0787	8.31	.	Q	.	.	.V	.
16.883	7.0900	8.23	.	Q	.	.	.V	.
16.900	7.1012	8.14	.	Q	.	.	.V	.
16.917	7.1123	8.05	.	Q	.	.	.V	.
16.933	7.1233	7.96	.	Q	.	.	.V	.
16.950	7.1341	7.87	.	Q	.	.	.V	.
16.967	7.1449	7.79	.	Q	.	.	.V	.
16.983	7.1555	7.72	.	Q	.	.	.V	.
17.000	7.1660	7.64	.	Q	.	.	.V	.
17.017	7.1764	7.57	.	Q	.	.	.V	.
17.033	7.1868	7.49	.	Q	.	.	.V	.
17.050	7.1970	7.42	.	Q	.	.	.V	.
17.067	7.2071	7.35	.	Q	.	.	.V	.
17.083	7.2171	7.28	.	Q	.	.	.V	.

17.100	7.2271	7.21	. Q	.	.	. V	.
17.117	7.2369	7.14	. Q	.	.	. V	.
17.133	7.2466	7.07	. Q	.	.	. V	.
17.150	7.2563	7.00	. Q	.	.	. V	.
17.167	7.2658	6.94	. Q	.	.	. V	.
17.183	7.2753	6.89	. Q	.	.	. V	.
17.200	7.2847	6.83	. Q	.	.	. V	.
17.217	7.2941	6.78	. Q	.	.	. V	.
17.233	7.3033	6.72	. Q	.	.	. V	.
17.250	7.3125	6.67	. Q	.	.	. V	.
17.267	7.3216	6.62	. Q	.	.	. V	.
17.283	7.3307	6.57	. Q	.	.	. V	.
17.300	7.3397	6.52	. Q	.	.	. V	.
17.317	7.3486	6.48	. Q	.	.	. V	.
17.333	7.3575	6.43	. Q	.	.	. V	.
17.350	7.3662	6.38	. Q	.	.	. V	.
17.367	7.3750	6.34	. Q	.	.	. V	.
17.383	7.3836	6.29	. Q	.	.	. V	.
17.400	7.3923	6.25	. Q	.	.	. V	.
17.417	7.4008	6.21	. Q	.	.	. V	.
17.433	7.4093	6.17	. Q	.	.	. V	.
17.450	7.4177	6.13	. Q	.	.	. V	.
17.467	7.4261	6.09	. Q	.	.	. V	.
17.483	7.4345	6.05	. Q	.	.	. V	.
17.500	7.4427	6.01	. Q	.	.	. V	.
17.517	7.4510	5.97	. Q	.	.	. V	.
17.533	7.4591	5.94	. Q	.	.	. V	.
17.550	7.4673	5.90	. Q	.	.	. V	.
17.567	7.4753	5.86	. Q	.	.	. V	.
17.583	7.4834	5.83	. Q	.	.	. V	.
17.600	7.4913	5.79	. Q	.	.	. V	.
17.617	7.4993	5.76	. Q	.	.	. V	.
17.633	7.5072	5.73	. Q	.	.	. V	.
17.650	7.5150	5.69	. Q	.	.	. V	.
17.667	7.5228	5.66	. Q	.	.	. V	.
17.683	7.5306	5.63	. Q	.	.	. V	.
17.700	7.5383	5.60	. Q	.	.	. V	.
17.717	7.5459	5.57	. Q	.	.	. V	.
17.733	7.5536	5.54	. Q	.	.	. V	.
17.750	7.5611	5.51	. Q	.	.	. V	.
17.767	7.5687	5.48	. Q	.	.	. V	.
17.783	7.5762	5.45	. Q	.	.	. V	.
17.800	7.5837	5.42	. Q	.	.	. V	.
17.817	7.5911	5.39	. Q	.	.	. V	.
17.833	7.5985	5.37	. Q	.	.	. V	.
17.850	7.6058	5.34	. Q	.	.	. V	.
17.867	7.6131	5.31	. Q	.	.	. V	.
17.883	7.6204	5.28	. Q	.	.	. V	.
17.900	7.6277	5.26	. Q	.	.	. V	.
17.917	7.6349	5.23	. Q	.	.	. V	.

17.933	7.6420	5.21	.Q	.	.	. V	.
17.950	7.6492	5.18	.Q	.	.	. V	.
17.967	7.6563	5.16	.Q	.	.	. V	.
17.983	7.6634	5.13	.Q	.	.	. V	.
18.000	7.6704	5.08	.Q	.	.	. V	.
18.017	7.6772	4.96	.Q	.	.	. V	.
18.033	7.6838	4.83	.Q	.	.	. V	.
18.050	7.6903	4.69	.Q	.	.	. V	.
18.067	7.6966	4.56	.Q	.	.	. V	.
18.083	7.7027	4.43	.Q	.	.	. V	.
18.100	7.7086	4.30	.Q	.	.	. V	.
18.117	7.7144	4.22	.Q	.	.	. V	.
18.133	7.7201	4.15	.Q	.	.	. V	.
18.150	7.7257	4.08	.Q	.	.	. V	.
18.167	7.7313	4.00	.Q	.	.	. V	.
18.183	7.7367	3.93	.Q	.	.	. V	.
18.200	7.7420	3.86	.Q	.	.	. V	.
18.217	7.7473	3.82	.Q	.	.	. V	.
18.233	7.7525	3.80	.Q	.	.	. V	.
18.250	7.7577	3.78	.Q	.	.	. V	.
18.267	7.7629	3.77	.Q	.	.	. V	.
18.283	7.7680	3.75	.Q	.	.	. V	.
18.300	7.7732	3.73	.Q	.	.	. V	.
18.317	7.7783	3.71	.Q	.	.	. V	.
18.333	7.7834	3.69	.Q	.	.	. V	.
18.350	7.7884	3.68	.Q	.	.	. V	.
18.367	7.7935	3.66	.Q	.	.	. V	.
18.383	7.7985	3.64	.Q	.	.	. V	.
18.400	7.8035	3.63	.Q	.	.	. V	.
18.417	7.8085	3.61	.Q	.	.	. V	.
18.433	7.8134	3.59	.Q	.	.	. V	.
18.450	7.8184	3.58	.Q	.	.	. V	.
18.467	7.8233	3.56	.Q	.	.	. V	.
18.483	7.8281	3.55	.Q	.	.	. V	.
18.500	7.8330	3.53	.Q	.	.	. V	.
18.517	7.8379	3.52	.Q	.	.	. V	.
18.533	7.8427	3.50	.Q	.	.	. V	.
18.550	7.8475	3.49	.Q	.	.	. V	.
18.567	7.8523	3.47	.Q	.	.	. V	.
18.583	7.8570	3.46	.Q	.	.	. V	.
18.600	7.8618	3.44	.Q	.	.	. V	.
18.617	7.8665	3.43	.Q	.	.	. V	.
18.633	7.8712	3.41	.Q	.	.	. V	.
18.650	7.8759	3.40	.Q	.	.	. V	.
18.667	7.8805	3.39	.Q	.	.	. V	.
18.683	7.8852	3.37	.Q	.	.	. V	.
18.700	7.8898	3.36	.Q	.	.	. V	.
18.717	7.8944	3.34	.Q	.	.	. V	.
18.733	7.8990	3.33	.Q	.	.	. V	.
18.750	7.9036	3.32	.Q	.	.	. V	.

18.767	7.9081	3.31	.Q	.	.	.	V	.
18.783	7.9127	3.29	.Q	.	.	.	V	.
18.800	7.9172	3.28	.Q	.	.	.	V	.
18.817	7.9217	3.27	.Q	.	.	.	V	.
18.833	7.9262	3.25	.Q	.	.	.	V	.
18.850	7.9306	3.24	.Q	.	.	.	V	.
18.867	7.9351	3.23	.Q	.	.	.	V	.
18.883	7.9395	3.22	.Q	.	.	.	V	.
18.900	7.9439	3.21	.Q	.	.	.	V	.
18.917	7.9483	3.19	.Q	.	.	.	V	.
18.933	7.9527	3.18	.Q	.	.	.	V	.
18.950	7.9571	3.17	.Q	.	.	.	V	.
18.967	7.9614	3.16	.Q	.	.	.	V	.
18.983	7.9658	3.15	.Q	.	.	.	V	.
19.000	7.9701	3.14	.Q	.	.	.	V	.
19.017	7.9744	3.12	.Q	.	.	.	V	.
19.033	7.9787	3.11	.Q	.	.	.	V	.
19.050	7.9829	3.10	.Q	.	.	.	V	.
19.067	7.9872	3.09	.Q	.	.	.	V	.
19.083	7.9915	3.08	.Q	.	.	.	V	.
19.100	7.9957	3.07	.Q	.	.	.	V	.
19.117	7.9999	3.06	.Q	.	.	.	V	.
19.133	8.0041	3.05	.Q	.	.	.	V	.
19.150	8.0083	3.04	.Q	.	.	.	V	.
19.167	8.0124	3.03	.Q	.	.	.	V	.
19.183	8.0166	3.02	.Q	.	.	.	V	.
19.200	8.0207	3.01	.Q	.	.	.	V	.
19.217	8.0249	3.00	.Q	.	.	.	V	.
19.233	8.0290	2.99	.Q	.	.	.	V	.
19.250	8.0331	2.98	.Q	.	.	.	V	.
19.267	8.0372	2.97	.Q	.	.	.	V	.
19.283	8.0413	2.96	.Q	.	.	.	V	.
19.300	8.0453	2.95	.Q	.	.	.	V	.
19.317	8.0494	2.94	.Q	.	.	.	V	.
19.333	8.0534	2.93	.Q	.	.	.	V	.
19.350	8.0574	2.92	.Q	.	.	.	V	.
19.367	8.0614	2.91	.Q	.	.	.	V	.
19.383	8.0654	2.90	.Q	.	.	.	V	.
19.400	8.0694	2.89	.Q	.	.	.	V	.
19.417	8.0734	2.88	.Q	.	.	.	V	.
19.433	8.0773	2.87	.Q	.	.	.	V	.
19.450	8.0813	2.87	.Q	.	.	.	V	.
19.467	8.0852	2.86	.Q	.	.	.	V	.
19.483	8.0891	2.85	.Q	.	.	.	V	.
19.500	8.0931	2.84	.Q	.	.	.	V	.
19.517	8.0970	2.83	.Q	.	.	.	V	.
19.533	8.1008	2.82	.Q	.	.	.	V	.
19.550	8.1047	2.81	.Q	.	.	.	V	.
19.567	8.1086	2.80	.Q	.	.	.	V	.
19.583	8.1124	2.80	.Q	.	.	.	V	.

19.600	8.1163	2.79	.Q	.	.	.	V	.
19.617	8.1201	2.78	.Q	.	.	.	V	.
19.633	8.1239	2.77	.Q	.	.	.	V	.
19.650	8.1277	2.76	.Q	.	.	.	V	.
19.667	8.1315	2.75	.Q	.	.	.	V	.
19.683	8.1353	2.75	.Q	.	.	.	V	.
19.700	8.1391	2.74	.Q	.	.	.	V	.
19.717	8.1428	2.73	.Q	.	.	.	V	.
19.733	8.1466	2.72	.Q	.	.	.	V	.
19.750	8.1503	2.72	.Q	.	.	.	V	.
19.767	8.1540	2.71	.Q	.	.	.	V	.
19.783	8.1578	2.70	.Q	.	.	.	V	.
19.800	8.1615	2.69	.Q	.	.	.	V	.
19.817	8.1652	2.68	.Q	.	.	.	V	.
19.833	8.1689	2.68	Q	.	.	.	V	.
19.850	8.1725	2.67	Q	.	.	.	V	.
19.867	8.1762	2.66	Q	.	.	.	V	.
19.883	8.1799	2.65	Q	.	.	.	V	.
19.900	8.1835	2.65	Q	.	.	.	V	.
19.917	8.1871	2.64	Q	.	.	.	V	.
19.933	8.1908	2.63	Q	.	.	.	V	.
19.950	8.1944	2.63	Q	.	.	.	V	.
19.967	8.1980	2.62	Q	.	.	.	V	.
19.983	8.2016	2.61	Q	.	.	.	V	.
20.000	8.2052	2.60	Q	.	.	.	V	.
20.017	8.2088	2.60	Q	.	.	.	V	.
20.033	8.2123	2.59	Q	.	.	.	V	.
20.050	8.2159	2.58	Q	.	.	.	V	.
20.067	8.2194	2.58	Q	.	.	.	V	.
20.083	8.2230	2.57	Q	.	.	.	V	.
20.100	8.2265	2.56	Q	.	.	.	V	.
20.117	8.2300	2.56	Q	.	.	.	V	.
20.133	8.2335	2.55	Q	.	.	.	V	.
20.150	8.2370	2.54	Q	.	.	.	V	.
20.167	8.2405	2.54	Q	.	.	.	V	.
20.183	8.2440	2.53	Q	.	.	.	V	.
20.200	8.2475	2.52	Q	.	.	.	V	.
20.217	8.2510	2.52	Q	.	.	.	V	.
20.233	8.2544	2.51	Q	.	.	.	V	.
20.250	8.2579	2.51	Q	.	.	.	V	.
20.267	8.2613	2.50	Q	.	.	.	V	.
20.283	8.2648	2.49	Q	.	.	.	V	.
20.300	8.2682	2.49	Q	.	.	.	V	.
20.317	8.2716	2.48	Q	.	.	.	V	.
20.333	8.2750	2.47	Q	.	.	.	V	.
20.350	8.2784	2.47	Q	.	.	.	V	.
20.367	8.2818	2.46	Q	.	.	.	V	.
20.383	8.2852	2.46	Q	.	.	.	V	.
20.400	8.2885	2.45	Q	.	.	.	V	.
20.417	8.2919	2.44	Q	.	.	.	V	.

20.433	8.2953	2.44	Q	.	.	.	V	.
20.450	8.2986	2.43	Q	.	.	.	V	.
20.467	8.3020	2.43	Q	.	.	.	V	.
20.483	8.3053	2.42	Q	.	.	.	V	.
20.500	8.3086	2.41	Q	.	.	.	V	.
20.517	8.3119	2.41	Q	.	.	.	V	.
20.533	8.3153	2.40	Q	.	.	.	V	.
20.550	8.3186	2.40	Q	.	.	.	V	.
20.567	8.3218	2.39	Q	.	.	.	V	.
20.583	8.3251	2.39	Q	.	.	.	V	.
20.600	8.3284	2.38	Q	.	.	.	V	.
20.617	8.3317	2.38	Q	.	.	.	V	.
20.633	8.3350	2.37	Q	.	.	.	V	.
20.650	8.3382	2.36	Q	.	.	.	V	.
20.667	8.3415	2.36	Q	.	.	.	V	.
20.683	8.3447	2.35	Q	.	.	.	V	.
20.700	8.3479	2.35	Q	.	.	.	V	.
20.717	8.3512	2.34	Q	.	.	.	V	.
20.733	8.3544	2.34	Q	.	.	.	V	.
20.750	8.3576	2.33	Q	.	.	.	V	.
20.767	8.3608	2.33	Q	.	.	.	V	.
20.783	8.3640	2.32	Q	.	.	.	V	.
20.800	8.3672	2.32	Q	.	.	.	V	.
20.817	8.3704	2.31	Q	.	.	.	V	.
20.833	8.3736	2.31	Q	.	.	.	V	.
20.850	8.3767	2.30	Q	.	.	.	V	.
20.867	8.3799	2.30	Q	.	.	.	V	.
20.883	8.3830	2.29	Q	.	.	.	V	.
20.900	8.3862	2.29	Q	.	.	.	V	.
20.917	8.3893	2.28	Q	.	.	.	V	.
20.933	8.3925	2.28	Q	.	.	.	V	.
20.950	8.3956	2.27	Q	.	.	.	V	.
20.967	8.3987	2.27	Q	.	.	.	V	.
20.983	8.4018	2.26	Q	.	.	.	V	.
21.000	8.4049	2.26	Q	.	.	.	V	.
21.017	8.4080	2.25	Q	.	.	.	V	.
21.033	8.4111	2.25	Q	.	.	.	V	.
21.050	8.4142	2.24	Q	.	.	.	V	.
21.067	8.4173	2.24	Q	.	.	.	V	.
21.083	8.4204	2.23	Q	.	.	.	V	.
21.100	8.4235	2.23	Q	.	.	.	V	.
21.117	8.4265	2.22	Q	.	.	.	V	.
21.133	8.4296	2.22	Q	.	.	.	V	.
21.150	8.4326	2.21	Q	.	.	.	V	.
21.167	8.4357	2.21	Q	.	.	.	V	.
21.183	8.4387	2.21	Q	.	.	.	V	.
21.200	8.4417	2.20	Q	.	.	.	V	.
21.217	8.4448	2.20	Q	.	.	.	V	.
21.233	8.4478	2.19	Q	.	.	.	V	.
21.250	8.4508	2.19	Q	.	.	.	V	.

21.267	8.4538	2.18	Q	.	.	.	V	.
21.283	8.4568	2.18	Q	.	.	.	V	.
21.300	8.4598	2.17	Q	.	.	.	V	.
21.317	8.4628	2.17	Q	.	.	.	V	.
21.333	8.4658	2.17	Q	.	.	.	V	.
21.350	8.4688	2.16	Q	.	.	.	V	.
21.367	8.4717	2.16	Q	.	.	.	V	.
21.383	8.4747	2.15	Q	.	.	.	V	.
21.400	8.4777	2.15	Q	.	.	.	V	.
21.417	8.4806	2.14	Q	.	.	.	V	.
21.433	8.4836	2.14	Q	.	.	.	V	.
21.450	8.4865	2.14	Q	.	.	.	V	.
21.467	8.4894	2.13	Q	.	.	.	V	.
21.483	8.4924	2.13	Q	.	.	.	V	.
21.500	8.4953	2.12	Q	.	.	.	V	.
21.517	8.4982	2.12	Q	.	.	.	V	.
21.533	8.5011	2.12	Q	.	.	.	V	.
21.550	8.5040	2.11	Q	.	.	.	V	.
21.567	8.5069	2.11	Q	.	.	.	V	.
21.583	8.5098	2.10	Q	.	.	.	V	.
21.600	8.5127	2.10	Q	.	.	.	V	.
21.617	8.5156	2.10	Q	.	.	.	V	.
21.633	8.5185	2.09	Q	.	.	.	V	.
21.650	8.5214	2.09	Q	.	.	.	V	.
21.667	8.5242	2.08	Q	.	.	.	V	.
21.683	8.5271	2.08	Q	.	.	.	V	.
21.700	8.5300	2.08	Q	.	.	.	V	.
21.717	8.5328	2.07	Q	.	.	.	V	.
21.733	8.5357	2.07	Q	.	.	.	V	.
21.750	8.5385	2.06	Q	.	.	.	V	.
21.767	8.5414	2.06	Q	.	.	.	V	.
21.783	8.5442	2.06	Q	.	.	.	V	.
21.800	8.5470	2.05	Q	.	.	.	V	.
21.817	8.5498	2.05	Q	.	.	.	V	.
21.833	8.5527	2.05	Q	.	.	.	V	.
21.850	8.5555	2.04	Q	.	.	.	V	.
21.867	8.5583	2.04	Q	.	.	.	V	.
21.883	8.5611	2.03	Q	.	.	.	V	.
21.900	8.5639	2.03	Q	.	.	.	V	.
21.917	8.5667	2.03	Q	.	.	.	V	.
21.933	8.5694	2.02	Q	.	.	.	V	.
21.950	8.5722	2.02	Q	.	.	.	V	.
21.967	8.5750	2.02	Q	.	.	.	V	.
21.983	8.5778	2.01	Q	.	.	.	V	.
22.000	8.5805	2.01	Q	.	.	.	V	.
22.017	8.5833	2.01	Q	.	.	.	V	.
22.033	8.5861	2.00	Q	.	.	.	V	.
22.050	8.5888	2.00	Q	.	.	.	V	.
22.067	8.5916	1.99	Q	.	.	.	V	.
22.083	8.5943	1.99	Q	.	.	.	V	.

22.100	8.5970	1.99	Q	.	.	.	V .
22.117	8.5998	1.98	Q	.	.	.	V .
22.133	8.6025	1.98	Q	.	.	.	V .
22.150	8.6052	1.98	Q	.	.	.	V .
22.167	8.6080	1.97	Q	.	.	.	V .
22.183	8.6107	1.97	Q	.	.	.	V .
22.200	8.6134	1.97	Q	.	.	.	V .
22.217	8.6161	1.96	Q	.	.	.	V .
22.233	8.6188	1.96	Q	.	.	.	V .
22.250	8.6215	1.96	Q	.	.	.	V .
22.267	8.6242	1.95	Q	.	.	.	V .
22.283	8.6269	1.95	Q	.	.	.	V .
22.300	8.6295	1.95	Q	.	.	.	V .
22.317	8.6322	1.94	Q	.	.	.	V .
22.333	8.6349	1.94	Q	.	.	.	V .
22.350	8.6376	1.94	Q	.	.	.	V .
22.367	8.6402	1.93	Q	.	.	.	V .
22.383	8.6429	1.93	Q	.	.	.	V .
22.400	8.6455	1.93	Q	.	.	.	V .
22.417	8.6482	1.92	Q	.	.	.	V .
22.433	8.6508	1.92	Q	.	.	.	V .
22.450	8.6535	1.92	Q	.	.	.	V .
22.467	8.6561	1.92	Q	.	.	.	V .
22.483	8.6588	1.91	Q	.	.	.	V .
22.500	8.6614	1.91	Q	.	.	.	V .
22.517	8.6640	1.91	Q	.	.	.	V .
22.533	8.6666	1.90	Q	.	.	.	V .
22.550	8.6692	1.90	Q	.	.	.	V .
22.567	8.6719	1.90	Q	.	.	.	V .
22.583	8.6745	1.89	Q	.	.	.	V .
22.600	8.6771	1.89	Q	.	.	.	V .
22.617	8.6797	1.89	Q	.	.	.	V .
22.633	8.6823	1.88	Q	.	.	.	V .
22.650	8.6849	1.88	Q	.	.	.	V .
22.667	8.6874	1.88	Q	.	.	.	V .
22.683	8.6900	1.88	Q	.	.	.	V .
22.700	8.6926	1.87	Q	.	.	.	V .
22.717	8.6952	1.87	Q	.	.	.	V .
22.733	8.6978	1.87	Q	.	.	.	V .
22.750	8.7003	1.86	Q	.	.	.	V .
22.767	8.7029	1.86	Q	.	.	.	V .
22.783	8.7054	1.86	Q	.	.	.	V .
22.800	8.7080	1.85	Q	.	.	.	V .
22.817	8.7105	1.85	Q	.	.	.	V .
22.833	8.7131	1.85	Q	.	.	.	V .
22.850	8.7156	1.85	Q	.	.	.	V .
22.867	8.7182	1.84	Q	.	.	.	V .
22.883	8.7207	1.84	Q	.	.	.	V .
22.900	8.7232	1.84	Q	.	.	.	V .
22.917	8.7258	1.83	Q	.	.	.	V .

22.933	8.7283	1.83	Q	.	.	.	V .
22.950	8.7308	1.83	Q	.	.	.	V .
22.967	8.7333	1.83	Q	.	.	.	V .
22.983	8.7358	1.82	Q	.	.	.	V .
23.000	8.7384	1.82	Q	.	.	.	V .
23.017	8.7409	1.82	Q	.	.	.	V .
23.033	8.7434	1.82	Q	.	.	.	V .
23.050	8.7459	1.81	Q	.	.	.	V .
23.067	8.7483	1.81	Q	.	.	.	V .
23.083	8.7508	1.81	Q	.	.	.	V .
23.100	8.7533	1.80	Q	.	.	.	V .
23.117	8.7558	1.80	Q	.	.	.	V .
23.133	8.7583	1.80	Q	.	.	.	V .
23.150	8.7608	1.80	Q	.	.	.	V .
23.167	8.7632	1.79	Q	.	.	.	V .
23.183	8.7657	1.79	Q	.	.	.	V .
23.200	8.7682	1.79	Q	.	.	.	V .
23.217	8.7706	1.79	Q	.	.	.	V .
23.233	8.7731	1.78	Q	.	.	.	V .
23.250	8.7755	1.78	Q	.	.	.	V .
23.267	8.7780	1.78	Q	.	.	.	V .
23.283	8.7804	1.78	Q	.	.	.	V .
23.300	8.7829	1.77	Q	.	.	.	V .
23.317	8.7853	1.77	Q	.	.	.	V .
23.333	8.7877	1.77	Q	.	.	.	V .
23.350	8.7902	1.77	Q	.	.	.	V .
23.367	8.7926	1.76	Q	.	.	.	V .
23.383	8.7950	1.76	Q	.	.	.	V .
23.400	8.7974	1.76	Q	.	.	.	V .
23.417	8.7999	1.76	Q	.	.	.	V .
23.433	8.8023	1.75	Q	.	.	.	V .
23.450	8.8047	1.75	Q	.	.	.	V .
23.467	8.8071	1.75	Q	.	.	.	V .
23.483	8.8095	1.75	Q	.	.	.	V .
23.500	8.8119	1.74	Q	.	.	.	V .
23.517	8.8143	1.74	Q	.	.	.	V .
23.533	8.8167	1.74	Q	.	.	.	V .
23.550	8.8191	1.74	Q	.	.	.	V .
23.567	8.8215	1.73	Q	.	.	.	V .
23.583	8.8239	1.73	Q	.	.	.	V .
23.600	8.8262	1.73	Q	.	.	.	V .
23.617	8.8286	1.73	Q	.	.	.	V .
23.633	8.8310	1.72	Q	.	.	.	V .
23.650	8.8334	1.72	Q	.	.	.	V .
23.667	8.8357	1.72	Q	.	.	.	V .
23.683	8.8381	1.72	Q	.	.	.	V .
23.700	8.8405	1.71	Q	.	.	.	V .
23.717	8.8428	1.71	Q	.	.	.	V .
23.733	8.8452	1.71	Q	.	.	.	V .
23.750	8.8475	1.71	Q	.	.	.	V .

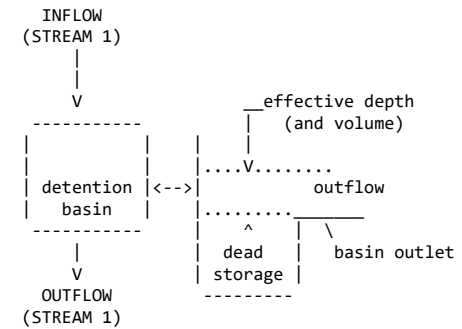
23.767	8.8499	1.70	Q	.	.	.	V.
23.783	8.8522	1.70	Q	.	.	.	V.
23.800	8.8545	1.70	Q	.	.	.	V.
23.817	8.8569	1.70	Q	.	.	.	V.
23.833	8.8592	1.70	Q	.	.	.	V.
23.850	8.8616	1.69	Q	.	.	.	V.
23.867	8.8639	1.69	Q	.	.	.	V.
23.883	8.8662	1.69	Q	.	.	.	V.
23.900	8.8685	1.69	Q	.	.	.	V.
23.917	8.8709	1.68	Q	.	.	.	V.
23.933	8.8732	1.68	Q	.	.	.	V.
23.950	8.8755	1.68	Q	.	.	.	V.
23.967	8.8778	1.68	Q	.	.	.	V.
23.983	8.8801	1.68	Q	.	.	.	V.
24.000	8.8824	1.67	Q	.	.	.	V.
24.017	8.8847	1.67	Q	.	.	.	V.
24.033	8.8870	1.67	Q	.	.	.	V.
24.050	8.8893	1.67	Q	.	.	.	V.
24.067	8.8916	1.64	Q	.	.	.	V.
24.083	8.8935	1.41	Q	.	.	.	V.
24.100	8.8951	1.15	Q	.	.	.	V.
24.117	8.8963	0.88	Q	.	.	.	V.
24.133	8.8972	0.62	Q	.	.	.	V.
24.150	8.8976	0.36	Q	.	.	.	V.

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1449.0
10%	425.0
20%	115.0
30%	70.0
40%	50.0
50%	40.0
60%	30.0
70%	30.0
80%	20.0
90%	10.0

FLOW PROCESS FROM NODE 580.00 TO NODE 580.00 IS CODE = 3.2

>>>>FLOW-THROUGH DETENTION BASIN ROUTING MODEL APPLIED TO STREAM #1<<<<



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

BASIN DEPTH VERSUS OUTFLOW AND STORAGE INFORMATION:

INTERVAL NUMBER	DEPTH (FT)	OUTFLOW (CFS)	STORAGE (AF)
1	0.00	0.00	0.000
2	0.25	0.01	0.080
3	0.50	0.02	0.159
4	0.75	0.03	0.267
5	1.00	4.25	0.397
6	1.25	6.02	0.538
7	1.50	7.37	0.687
8	1.75	8.51	0.840
9	2.00	9.51	0.996
10	2.25	10.42	1.150
11	2.50	11.26	1.310
12	2.75	12.03	1.450
13	3.00	12.76	1.590
14	3.25	17.70	1.720
15	3.50	26.12	1.830
16	3.75	36.79	1.910
17	4.00	49.30	1.992
18	4.25	63.37	2.070
19	4.50	78.86	2.150

=====

MODIFIED-PULS BASIN ROUTING MODEL RESULTS(1-MINUTE COMPUTATION INTERVALS):

(Note: Computed EFFECTIVE DEPTH and VOLUME are estimated at the clock time;

MEAN OUTFLOW is the average value during the unit interval.)

CLOCK TIME (HRS)	DEAD-STORAGE FILLED(AF)	INFLOW (CFS)	LOSS (CFS)	EFFECTIVE DEPTH(FT)	MEAN OUTFLOW (CFS)	EFFECTIVE VOLUME(AF)
10.000	0.000	3.04	0.00	0.92	2.9	0.356
10.017	0.000	3.05	0.00	0.92	2.9	0.357
10.033	0.000	3.06	0.00	0.92	2.9	0.357
10.050	0.000	3.06	0.00	0.92	3.0	0.357
10.067	0.000	3.07	0.00	0.92	3.0	0.357
10.083	0.000	3.07	0.00	0.92	3.0	0.357
10.100	0.000	3.07	0.00	0.92	3.0	0.357
10.117	0.000	3.08	0.00	0.92	3.0	0.358
10.133	0.000	3.08	0.00	0.92	3.0	0.358
10.150	0.000	3.09	0.00	0.92	3.0	0.358
10.167	0.000	3.09	0.00	0.92	3.0	0.358
10.183	0.000	3.10	0.00	0.93	3.0	0.358
10.200	0.000	3.11	0.00	0.93	3.0	0.358
10.217	0.000	3.11	0.00	0.93	3.0	0.358
10.233	0.000	3.12	0.00	0.93	3.0	0.359
10.250	0.000	3.13	0.00	0.93	3.0	0.359
10.267	0.000	3.13	0.00	0.93	3.0	0.359
10.283	0.000	3.14	0.00	0.93	3.0	0.359
10.300	0.000	3.14	0.00	0.93	3.0	0.359
10.317	0.000	3.14	0.00	0.93	3.0	0.359
10.333	0.000	3.15	0.00	0.93	3.0	0.360
10.350	0.000	3.15	0.00	0.93	3.0	0.360
10.367	0.000	3.16	0.00	0.93	3.0	0.360
10.383	0.000	3.17	0.00	0.93	3.1	0.360
10.400	0.000	3.17	0.00	0.93	3.1	0.360
10.417	0.000	3.18	0.00	0.93	3.1	0.360
10.433	0.000	3.19	0.00	0.93	3.1	0.361
10.450	0.000	3.20	0.00	0.93	3.1	0.361
10.467	0.000	3.20	0.00	0.93	3.1	0.361
10.483	0.000	3.21	0.00	0.93	3.1	0.361
10.500	0.000	3.21	0.00	0.93	3.1	0.361
10.517	0.000	3.22	0.00	0.93	3.1	0.361
10.533	0.000	3.22	0.00	0.93	3.1	0.362
10.550	0.000	3.22	0.00	0.93	3.1	0.362
10.567	0.000	3.23	0.00	0.93	3.1	0.362
10.583	0.000	3.24	0.00	0.93	3.1	0.362
10.600	0.000	3.24	0.00	0.93	3.1	0.362
10.617	0.000	3.25	0.00	0.93	3.1	0.362
10.633	0.000	3.26	0.00	0.93	3.1	0.363

10.650	0.000	3.27	0.00	0.93	3.1	0.363
10.667	0.000	3.28	0.00	0.93	3.1	0.363
10.683	0.000	3.28	0.00	0.93	3.2	0.363
10.700	0.000	3.29	0.00	0.94	3.2	0.363
10.717	0.000	3.29	0.00	0.94	3.2	0.363
10.733	0.000	3.30	0.00	0.94	3.2	0.364
10.750	0.000	3.30	0.00	0.94	3.2	0.364
10.767	0.000	3.30	0.00	0.94	3.2	0.364
10.783	0.000	3.31	0.00	0.94	3.2	0.364
10.800	0.000	3.32	0.00	0.94	3.2	0.364
10.817	0.000	3.33	0.00	0.94	3.2	0.365
10.833	0.000	3.34	0.00	0.94	3.2	0.365
10.850	0.000	3.35	0.00	0.94	3.2	0.365
10.867	0.000	3.36	0.00	0.94	3.2	0.365
10.883	0.000	3.36	0.00	0.94	3.2	0.365
10.900	0.000	3.37	0.00	0.94	3.2	0.365
10.917	0.000	3.37	0.00	0.94	3.2	0.366
10.933	0.000	3.38	0.00	0.94	3.2	0.366
10.950	0.000	3.38	0.00	0.94	3.2	0.366
10.967	0.000	3.39	0.00	0.94	3.3	0.366
10.983	0.000	3.39	0.00	0.94	3.3	0.366
11.000	0.000	3.40	0.00	0.94	3.3	0.367
11.017	0.000	3.41	0.00	0.94	3.3	0.367
11.033	0.000	3.42	0.00	0.94	3.3	0.367
11.050	0.000	3.43	0.00	0.94	3.3	0.367
11.067	0.000	3.44	0.00	0.94	3.3	0.367
11.083	0.000	3.45	0.00	0.94	3.3	0.368
11.100	0.000	3.45	0.00	0.94	3.3	0.368
11.117	0.000	3.46	0.00	0.94	3.3	0.368
11.133	0.000	3.46	0.00	0.94	3.3	0.368
11.150	0.000	3.47	0.00	0.95	3.3	0.368
11.167	0.000	3.47	0.00	0.95	3.3	0.369
11.183	0.000	3.48	0.00	0.95	3.3	0.369
11.200	0.000	3.48	0.00	0.95	3.3	0.369
11.217	0.000	3.49	0.00	0.95	3.3	0.369
11.233	0.000	3.50	0.00	0.95	3.4	0.369
11.250	0.000	3.51	0.00	0.95	3.4	0.370
11.267	0.000	3.52	0.00	0.95	3.4	0.370
11.283	0.000	3.54	0.00	0.95	3.4	0.370
11.300	0.000	3.54	0.00	0.95	3.4	0.370
11.317	0.000	3.55	0.00	0.95	3.4	0.371
11.333	0.000	3.56	0.00	0.95	3.4	0.371
11.350	0.000	3.56	0.00	0.95	3.4	0.371
11.367	0.000	3.57	0.00	0.95	3.4	0.371
11.383	0.000	3.57	0.00	0.95	3.4	0.371
11.400	0.000	3.58	0.00	0.95	3.4	0.372
11.417	0.000	3.59	0.00	0.95	3.4	0.372
11.433	0.000	3.60	0.00	0.95	3.4	0.372
11.450	0.000	3.61	0.00	0.95	3.4	0.372
11.467	0.000	3.62	0.00	0.95	3.5	0.372

11.483	0.000	3.63	0.00	0.95	3.5	0.373
11.500	0.000	3.64	0.00	0.95	3.5	0.373
11.517	0.000	3.65	0.00	0.95	3.5	0.373
11.533	0.000	3.65	0.00	0.95	3.5	0.373
11.550	0.000	3.66	0.00	0.96	3.5	0.374
11.567	0.000	3.67	0.00	0.96	3.5	0.374
11.583	0.000	3.67	0.00	0.96	3.5	0.374
11.600	0.000	3.68	0.00	0.96	3.5	0.374
11.617	0.000	3.68	0.00	0.96	3.5	0.375
11.633	0.000	3.70	0.00	0.96	3.5	0.375
11.650	0.000	3.71	0.00	0.96	3.5	0.375
11.667	0.000	3.72	0.00	0.96	3.5	0.375
11.683	0.000	3.73	0.00	0.96	3.6	0.375
11.700	0.000	3.74	0.00	0.96	3.6	0.376
11.717	0.000	3.75	0.00	0.96	3.6	0.376
11.733	0.000	3.76	0.00	0.96	3.6	0.376
11.750	0.000	3.77	0.00	0.96	3.6	0.376
11.767	0.000	3.77	0.00	0.96	3.6	0.377
11.783	0.000	3.78	0.00	0.96	3.6	0.377
11.800	0.000	3.78	0.00	0.96	3.6	0.377
11.817	0.000	3.79	0.00	0.96	3.6	0.377
11.833	0.000	3.80	0.00	0.96	3.6	0.378
11.850	0.000	3.81	0.00	0.96	3.6	0.378
11.867	0.000	3.83	0.00	0.96	3.6	0.378
11.883	0.000	3.84	0.00	0.96	3.6	0.378
11.900	0.000	3.85	0.00	0.96	3.7	0.379
11.917	0.000	3.86	0.00	0.97	3.7	0.379
11.933	0.000	3.87	0.00	0.97	3.7	0.379
11.950	0.000	3.88	0.00	0.97	3.7	0.380
11.967	0.000	3.89	0.00	0.97	3.7	0.380
11.983	0.000	3.89	0.00	0.97	3.7	0.380
12.000	0.000	3.90	0.00	0.97	3.7	0.380
12.017	0.000	3.91	0.00	0.97	3.7	0.381
12.033	0.000	3.95	0.00	0.97	3.7	0.381
12.050	0.000	4.11	0.00	0.97	3.7	0.381
12.067	0.000	4.29	0.00	0.97	3.8	0.382
12.083	0.000	4.46	0.00	0.97	3.8	0.383
12.100	0.000	4.64	0.00	0.98	3.8	0.384
12.117	0.000	4.81	0.00	0.98	3.9	0.386
12.133	0.000	4.98	0.00	0.98	3.9	0.387
12.150	0.000	5.02	0.00	0.98	4.0	0.388
12.167	0.000	5.03	0.00	0.99	4.0	0.390
12.183	0.000	5.04	0.00	0.99	4.0	0.391
12.200	0.000	5.04	0.00	0.99	4.1	0.393
12.217	0.000	5.05	0.00	0.99	4.1	0.394
12.233	0.000	5.06	0.00	1.00	4.2	0.395
12.250	0.000	5.07	0.00	1.00	4.2	0.396
12.267	0.000	5.09	0.00	1.00	4.2	0.397
12.283	0.000	5.10	0.00	1.00	4.3	0.399
12.300	0.000	5.12	0.00	1.00	4.3	0.400

12.317	0.000	5.14	0.00	1.01	4.3	0.401
12.333	0.000	5.15	0.00	1.01	4.3	0.402
12.350	0.000	5.17	0.00	1.01	4.3	0.403
12.367	0.000	5.17	0.00	1.01	4.3	0.404
12.383	0.000	5.18	0.00	1.02	4.4	0.406
12.400	0.000	5.19	0.00	1.02	4.4	0.407
12.417	0.000	5.20	0.00	1.02	4.4	0.408
12.433	0.000	5.21	0.00	1.02	4.4	0.409
12.450	0.000	5.22	0.00	1.02	4.4	0.410
12.467	0.000	5.23	0.00	1.03	4.4	0.411
12.483	0.000	5.25	0.00	1.03	4.4	0.412
12.500	0.000	5.27	0.00	1.03	4.5	0.413
12.517	0.000	5.28	0.00	1.03	4.5	0.414
12.533	0.000	5.30	0.00	1.03	4.5	0.416
12.550	0.000	5.32	0.00	1.04	4.5	0.417
12.567	0.000	5.33	0.00	1.04	4.5	0.418
12.583	0.000	5.34	0.00	1.04	4.5	0.419
12.600	0.000	5.35	0.00	1.04	4.5	0.420
12.617	0.000	5.36	0.00	1.04	4.6	0.421
12.633	0.000	5.37	0.00	1.04	4.6	0.422
12.650	0.000	5.38	0.00	1.05	4.6	0.423
12.667	0.000	5.39	0.00	1.05	4.6	0.425
12.683	0.000	5.41	0.00	1.05	4.6	0.426
12.700	0.000	5.43	0.00	1.05	4.6	0.427
12.717	0.000	5.45	0.00	1.05	4.6	0.428
12.733	0.000	5.47	0.00	1.06	4.6	0.429
12.750	0.000	5.48	0.00	1.06	4.7	0.430
12.767	0.000	5.50	0.00	1.06	4.7	0.431
12.783	0.000	5.51	0.00	1.06	4.7	0.432
12.800	0.000	5.52	0.00	1.06	4.7	0.434
12.817	0.000	5.53	0.00	1.07	4.7	0.435
12.833	0.000	5.54	0.00	1.07	4.7	0.436
12.850	0.000	5.55	0.00	1.07	4.7	0.437
12.867	0.000	5.56	0.00	1.07	4.8	0.438
12.883	0.000	5.58	0.00	1.07	4.8	0.439
12.900	0.000	5.60	0.00	1.08	4.8	0.440
12.917	0.000	5.62	0.00	1.08	4.8	0.441
12.933	0.000	5.64	0.00	1.08	4.8	0.443
12.950	0.000	5.67	0.00	1.08	4.8	0.444
12.967	0.000	5.69	0.00	1.08	4.8	0.445
12.983	0.000	5.70	0.00	1.09	4.9	0.446
13.000	0.000	5.71	0.00	1.09	4.9	0.447
13.017	0.000	5.72	0.00	1.09	4.9	0.448
13.033	0.000	5.73	0.00	1.09	4.9	0.449
13.050	0.000	5.75	0.00	1.09	4.9	0.451
13.067	0.000	5.76	0.00	1.10	4.9	0.452
13.083	0.000	5.77	0.00	1.10	4.9	0.453
13.100	0.000	5.80	0.00	1.10	5.0	0.454
13.117	0.000	5.82	0.00	1.10	5.0	0.455
13.133	0.000	5.84	0.00	1.11	5.0	0.456

13.150	0.000	5.87	0.00	1.11	5.0	0.458
13.167	0.000	5.89	0.00	1.11	5.0	0.459
13.183	0.000	5.91	0.00	1.11	5.0	0.460
13.200	0.000	5.92	0.00	1.11	5.0	0.461
13.217	0.000	5.94	0.00	1.12	5.1	0.462
13.233	0.000	5.95	0.00	1.12	5.1	0.464
13.250	0.000	5.96	0.00	1.12	5.1	0.465
13.267	0.000	5.97	0.00	1.12	5.1	0.466
13.283	0.000	5.99	0.00	1.12	5.1	0.467
13.300	0.000	6.01	0.00	1.13	5.1	0.468
13.317	0.000	6.03	0.00	1.13	5.2	0.470
13.333	0.000	6.06	0.00	1.13	5.2	0.471
13.350	0.000	6.09	0.00	1.13	5.2	0.472
13.367	0.000	6.11	0.00	1.14	5.2	0.473
13.383	0.000	6.14	0.00	1.14	5.2	0.475
13.400	0.000	6.16	0.00	1.14	5.2	0.476
13.417	0.000	6.17	0.00	1.14	5.2	0.477
13.433	0.000	6.19	0.00	1.14	5.3	0.478
13.450	0.000	6.20	0.00	1.15	5.3	0.480
13.467	0.000	6.21	0.00	1.15	5.3	0.481
13.483	0.000	6.23	0.00	1.15	5.3	0.482
13.500	0.000	6.25	0.00	1.15	5.3	0.483
13.517	0.000	6.27	0.00	1.16	5.3	0.485
13.533	0.000	6.30	0.00	1.16	5.4	0.486
13.550	0.000	6.33	0.00	1.16	5.4	0.487
13.567	0.000	6.36	0.00	1.16	5.4	0.489
13.583	0.000	6.39	0.00	1.16	5.4	0.490
13.600	0.000	6.42	0.00	1.17	5.4	0.491
13.617	0.000	6.44	0.00	1.17	5.4	0.493
13.633	0.000	6.45	0.00	1.17	5.5	0.494
13.650	0.000	6.47	0.00	1.17	5.5	0.495
13.667	0.000	6.48	0.00	1.18	5.5	0.497
13.683	0.000	6.50	0.00	1.18	5.5	0.498
13.700	0.000	6.52	0.00	1.18	5.5	0.500
13.717	0.000	6.54	0.00	1.18	5.5	0.501
13.733	0.000	6.58	0.00	1.19	5.6	0.502
13.750	0.000	6.61	0.00	1.19	5.6	0.504
13.767	0.000	6.64	0.00	1.19	5.6	0.505
13.783	0.000	6.68	0.00	1.19	5.6	0.507
13.800	0.000	6.71	0.00	1.20	5.6	0.508
13.817	0.000	6.74	0.00	1.20	5.7	0.510
13.833	0.000	6.76	0.00	1.20	5.7	0.511
13.850	0.000	6.78	0.00	1.21	5.7	0.513
13.867	0.000	6.79	0.00	1.21	5.7	0.514
13.883	0.000	6.81	0.00	1.21	5.7	0.516
13.900	0.000	6.83	0.00	1.21	5.7	0.517
13.917	0.000	6.85	0.00	1.22	5.8	0.519
13.933	0.000	6.89	0.00	1.22	5.8	0.520
13.950	0.000	6.93	0.00	1.22	5.8	0.522
13.967	0.000	6.97	0.00	1.22	5.8	0.523

13.983	0.000	7.00	0.00	1.23	5.8	0.525
14.000	0.000	7.04	0.00	1.23	5.9	0.526
14.017	0.000	7.08	0.00	1.23	5.9	0.528
14.033	0.000	7.11	0.00	1.24	5.9	0.530
14.050	0.000	7.13	0.00	1.24	5.9	0.531
14.067	0.000	7.16	0.00	1.24	5.9	0.533
14.083	0.000	7.18	0.00	1.24	6.0	0.535
14.100	0.000	7.21	0.00	1.25	6.0	0.536
14.117	0.000	7.23	0.00	1.25	6.0	0.538
14.133	0.000	7.27	0.00	1.25	6.0	0.540
14.150	0.000	7.32	0.00	1.26	6.0	0.542
14.167	0.000	7.37	0.00	1.26	6.1	0.543
14.183	0.000	7.41	0.00	1.26	6.1	0.545
14.200	0.000	7.46	0.00	1.27	6.1	0.547
14.217	0.000	7.51	0.00	1.27	6.1	0.549
14.233	0.000	7.55	0.00	1.27	6.1	0.551
14.250	0.000	7.57	0.00	1.28	6.1	0.553
14.267	0.000	7.60	0.00	1.28	6.2	0.555
14.283	0.000	7.62	0.00	1.28	6.2	0.557
14.300	0.000	7.65	0.00	1.29	6.2	0.559
14.317	0.000	7.67	0.00	1.29	6.2	0.561
14.333	0.000	7.70	0.00	1.29	6.2	0.563
14.350	0.000	7.75	0.00	1.30	6.3	0.565
14.367	0.000	7.81	0.00	1.30	6.3	0.567
14.383	0.000	7.86	0.00	1.30	6.3	0.569
14.400	0.000	7.91	0.00	1.31	6.3	0.572
14.417	0.000	7.97	0.00	1.31	6.3	0.574
14.433	0.000	8.02	0.00	1.31	6.4	0.576
14.450	0.000	8.06	0.00	1.32	6.4	0.578
14.467	0.000	8.09	0.00	1.32	6.4	0.581
14.483	0.000	8.12	0.00	1.33	6.4	0.583
14.500	0.000	8.15	0.00	1.33	6.4	0.585
14.517	0.000	8.18	0.00	1.33	6.5	0.588
14.533	0.000	8.21	0.00	1.34	6.5	0.590
14.550	0.000	8.26	0.00	1.34	6.5	0.593
14.567	0.000	8.32	0.00	1.35	6.5	0.595
14.583	0.000	8.39	0.00	1.35	6.5	0.598
14.600	0.000	8.45	0.00	1.35	6.6	0.600
14.617	0.000	8.52	0.00	1.36	6.6	0.603
14.633	0.000	8.59	0.00	1.36	6.6	0.606
14.650	0.000	8.65	0.00	1.37	6.6	0.608
14.667	0.000	8.69	0.00	1.37	6.7	0.611
14.683	0.000	8.72	0.00	1.38	6.7	0.614
14.700	0.000	8.76	0.00	1.38	6.7	0.617
14.717	0.000	8.80	0.00	1.39	6.7	0.620
14.733	0.000	8.83	0.00	1.39	6.8	0.622
14.750	0.000	8.87	0.00	1.40	6.8	0.625
14.767	0.000	8.95	0.00	1.40	6.8	0.628
14.783	0.000	9.03	0.00	1.41	6.8	0.631
14.800	0.000	9.11	0.00	1.41	6.9	0.634

14.817	0.000	9.20	0.00	1.42	6.9	0.637
14.833	0.000	9.28	0.00	1.42	6.9	0.641
14.850	0.000	9.36	0.00	1.43	7.0	0.644
14.867	0.000	9.43	0.00	1.43	7.0	0.647
14.883	0.000	9.47	0.00	1.44	7.0	0.651
14.900	0.000	9.52	0.00	1.44	7.1	0.654
14.917	0.000	9.57	0.00	1.45	7.1	0.658
14.933	0.000	9.62	0.00	1.46	7.1	0.661
14.950	0.000	9.66	0.00	1.46	7.1	0.664
14.967	0.000	9.73	0.00	1.47	7.2	0.668
14.983	0.000	9.84	0.00	1.47	7.2	0.672
15.000	0.000	9.95	0.00	1.48	7.2	0.675
15.017	0.000	10.06	0.00	1.49	7.3	0.679
15.033	0.000	10.17	0.00	1.49	7.3	0.683
15.050	0.000	10.28	0.00	1.50	7.4	0.687
15.067	0.000	10.38	0.00	1.51	7.4	0.691
15.083	0.000	10.45	0.00	1.51	7.4	0.695
15.100	0.000	10.51	0.00	1.52	7.4	0.700
15.117	0.000	10.58	0.00	1.53	7.5	0.704
15.133	0.000	10.64	0.00	1.53	7.5	0.708
15.150	0.000	10.71	0.00	1.54	7.5	0.713
15.167	0.000	10.77	0.00	1.55	7.6	0.717
15.183	0.000	10.90	0.00	1.56	7.6	0.722
15.200	0.000	11.05	0.00	1.56	7.6	0.726
15.217	0.000	11.20	0.00	1.57	7.7	0.731
15.233	0.000	11.36	0.00	1.58	7.7	0.736
15.250	0.000	11.51	0.00	1.59	7.8	0.741
15.267	0.000	11.66	0.00	1.60	7.8	0.747
15.283	0.000	11.79	0.00	1.61	7.8	0.752
15.300	0.000	11.88	0.00	1.62	7.9	0.758
15.317	0.000	11.97	0.00	1.62	7.9	0.763
15.333	0.000	12.06	0.00	1.63	8.0	0.769
15.350	0.000	12.16	0.00	1.64	8.0	0.775
15.367	0.000	12.25	0.00	1.65	8.0	0.780
15.383	0.000	12.31	0.00	1.66	8.1	0.786
15.400	0.000	12.29	0.00	1.67	8.1	0.792
15.417	0.000	12.27	0.00	1.68	8.2	0.798
15.433	0.000	12.24	0.00	1.69	8.2	0.803
15.450	0.000	12.22	0.00	1.70	8.3	0.809
15.467	0.000	12.19	0.00	1.71	8.3	0.814
15.483	0.000	12.18	0.00	1.72	8.3	0.819
15.500	0.000	12.30	0.00	1.72	8.4	0.825
15.517	0.000	12.44	0.00	1.73	8.4	0.830
15.533	0.000	12.59	0.00	1.74	8.5	0.836
15.550	0.000	12.74	0.00	1.75	8.5	0.842
15.567	0.000	12.89	0.00	1.76	8.5	0.848
15.583	0.000	13.04	0.00	1.77	8.6	0.854
15.600	0.000	13.35	0.00	1.78	8.6	0.860
15.617	0.000	13.77	0.00	1.79	8.7	0.867
15.633	0.000	14.19	0.00	1.81	8.7	0.875

15.650	0.000	14.61	0.00	1.82	8.8	0.883
15.667	0.000	15.03	0.00	1.83	8.8	0.892
15.683	0.000	15.45	0.00	1.85	8.9	0.901
15.700	0.000	15.83	0.00	1.86	8.9	0.910
15.717	0.000	16.16	0.00	1.88	9.0	0.920
15.733	0.000	16.48	0.00	1.89	9.1	0.930
15.750	0.000	16.80	0.00	1.91	9.1	0.941
15.767	0.000	17.12	0.00	1.93	9.2	0.952
15.783	0.000	17.45	0.00	1.95	9.3	0.963
15.800	0.000	17.91	0.00	1.97	9.3	0.975
15.817	0.000	19.05	0.00	1.99	9.4	0.988
15.833	0.000	20.27	0.00	2.01	9.5	1.003
15.850	0.000	21.50	0.00	2.04	9.6	1.019
15.867	0.000	22.73	0.00	2.07	9.7	1.037
15.883	0.000	23.95	0.00	2.10	9.8	1.057
15.900	0.000	25.19	0.00	2.13	9.9	1.078
15.917	0.000	26.64	0.00	2.17	10.1	1.101
15.933	0.000	28.16	0.00	2.21	10.2	1.125
15.950	0.000	29.69	0.00	2.25	10.4	1.152
15.967	0.000	31.22	0.00	2.30	10.5	1.180
15.983	0.000	32.75	0.00	2.35	10.7	1.211
16.000	0.000	34.27	0.00	2.40	10.8	1.243
16.017	0.000	40.79	0.00	2.46	11.0	1.284
16.033	0.000	52.29	0.00	2.55	11.3	1.341
16.050	0.000	63.80	0.00	2.68	11.6	1.413
16.067	0.000	75.30	0.00	2.84	12.1	1.500
16.083	0.000	86.81	0.00	3.02	12.7	1.602
16.100	0.000	98.31	0.00	3.24	15.4	1.716
16.117	0.000	107.29	0.00	3.51	22.1	1.833
16.133	0.000	90.46	0.00	3.76	32.0	1.914
16.150	0.000	76.67	0.00	3.91	41.1	1.963
16.167	0.000	62.88	0.00	3.98	46.6	1.985
16.183	0.000	49.09	0.00	3.98	48.4	1.986
16.200	0.000	35.30	0.00	3.93	47.2	1.970
16.217	0.000	22.74	0.00	3.84	43.7	1.941
16.233	0.000	19.71	0.00	3.76	39.5	1.914
16.250	0.000	18.69	0.00	3.69	35.8	1.890
16.267	0.000	17.67	0.00	3.62	32.8	1.870
16.283	0.000	16.64	0.00	3.57	30.1	1.851
16.300	0.000	15.62	0.00	3.51	27.8	1.834
16.317	0.000	14.60	0.00	3.47	26.0	1.819
16.333	0.000	14.02	0.00	3.44	24.7	1.804
16.350	0.000	13.68	0.00	3.41	23.6	1.790
16.367	0.000	13.34	0.00	3.38	22.6	1.777
16.383	0.000	13.00	0.00	3.35	21.6	1.766
16.400	0.000	12.66	0.00	3.33	20.8	1.754
16.417	0.000	12.32	0.00	3.30	19.9	1.744
16.433	0.000	12.05	0.00	3.28	19.2	1.734
16.450	0.000	11.91	0.00	3.26	18.4	1.725
16.467	0.000	11.78	0.00	3.24	17.8	1.717

16.483	0.000	11.64	0.00	3.23	17.4	1.709
16.500	0.000	11.50	0.00	3.21	17.1	1.701
16.517	0.000	11.36	0.00	3.20	16.8	1.694
16.533	0.000	11.21	0.00	3.18	16.6	1.686
16.550	0.000	11.02	0.00	3.17	16.3	1.679
16.567	0.000	10.83	0.00	3.16	16.0	1.672
16.583	0.000	10.64	0.00	3.14	15.7	1.665
16.600	0.000	10.45	0.00	3.13	15.5	1.658
16.617	0.000	10.25	0.00	3.12	15.2	1.651
16.633	0.000	10.06	0.00	3.10	15.0	1.644
16.650	0.000	9.91	0.00	3.09	14.7	1.638
16.667	0.000	9.76	0.00	3.08	14.5	1.631
16.683	0.000	9.62	0.00	3.07	14.2	1.625
16.700	0.000	9.48	0.00	3.06	14.0	1.619
16.717	0.000	9.34	0.00	3.04	13.7	1.613
16.733	0.000	9.19	0.00	3.03	13.5	1.607
16.750	0.000	9.07	0.00	3.02	13.3	1.601
16.767	0.000	8.96	0.00	3.01	13.1	1.595
16.783	0.000	8.84	0.00	3.00	12.9	1.590
16.800	0.000	8.73	0.00	2.99	12.7	1.584
16.817	0.000	8.62	0.00	2.98	12.7	1.579
16.833	0.000	8.51	0.00	2.97	12.7	1.573
16.850	0.000	8.41	0.00	2.96	12.7	1.567
16.867	0.000	8.31	0.00	2.95	12.6	1.561
16.883	0.000	8.23	0.00	2.94	12.6	1.555
16.900	0.000	8.14	0.00	2.93	12.6	1.549
16.917	0.000	8.05	0.00	2.92	12.5	1.543
16.933	0.000	7.96	0.00	2.90	12.5	1.536
16.950	0.000	7.87	0.00	2.89	12.5	1.530
16.967	0.000	7.79	0.00	2.88	12.4	1.524
16.983	0.000	7.72	0.00	2.87	12.4	1.517
17.000	0.000	7.64	0.00	2.86	12.4	1.511
17.017	0.000	7.57	0.00	2.85	12.3	1.504
17.033	0.000	7.49	0.00	2.83	12.3	1.498
17.050	0.000	7.42	0.00	2.82	12.3	1.491
17.067	0.000	7.35	0.00	2.81	12.2	1.484
17.083	0.000	7.28	0.00	2.80	12.2	1.477
17.100	0.000	7.21	0.00	2.79	12.2	1.471
17.117	0.000	7.14	0.00	2.77	12.1	1.464
17.133	0.000	7.07	0.00	2.76	12.1	1.457
17.150	0.000	7.00	0.00	2.75	12.1	1.450
17.167	0.000	6.94	0.00	2.74	12.0	1.443
17.183	0.000	6.89	0.00	2.72	12.0	1.436
17.200	0.000	6.83	0.00	2.71	11.9	1.429
17.217	0.000	6.78	0.00	2.70	11.9	1.422
17.233	0.000	6.72	0.00	2.69	11.9	1.415
17.250	0.000	6.67	0.00	2.67	11.8	1.408
17.267	0.000	6.62	0.00	2.66	11.8	1.401
17.283	0.000	6.57	0.00	2.65	11.7	1.393
17.300	0.000	6.52	0.00	2.64	11.7	1.386

17.317	0.000	6.48	0.00	2.62	11.7	1.379
17.333	0.000	6.43	0.00	2.61	11.6	1.372
17.350	0.000	6.38	0.00	2.60	11.6	1.365
17.367	0.000	6.34	0.00	2.59	11.5	1.358
17.383	0.000	6.29	0.00	2.57	11.5	1.350
17.400	0.000	6.25	0.00	2.56	11.5	1.343
17.417	0.000	6.21	0.00	2.55	11.4	1.336
17.433	0.000	6.17	0.00	2.53	11.4	1.329
17.450	0.000	6.13	0.00	2.52	11.3	1.322
17.467	0.000	6.09	0.00	2.51	11.3	1.315
17.483	0.000	6.05	0.00	2.50	11.3	1.307
17.500	0.000	6.01	0.00	2.48	11.2	1.300
17.517	0.000	5.97	0.00	2.47	11.2	1.293
17.533	0.000	5.94	0.00	2.46	11.1	1.286
17.550	0.000	5.90	0.00	2.45	11.1	1.279
17.567	0.000	5.86	0.00	2.44	11.1	1.271
17.583	0.000	5.83	0.00	2.43	11.0	1.264
17.600	0.000	5.79	0.00	2.42	11.0	1.257
17.617	0.000	5.76	0.00	2.41	11.0	1.250
17.633	0.000	5.73	0.00	2.40	10.9	1.243
17.650	0.000	5.69	0.00	2.38	10.9	1.236
17.667	0.000	5.66	0.00	2.37	10.8	1.229
17.683	0.000	5.63	0.00	2.36	10.8	1.221
17.700	0.000	5.60	0.00	2.35	10.8	1.214
17.717	0.000	5.57	0.00	2.34	10.7	1.207
17.733	0.000	5.54	0.00	2.33	10.7	1.200
17.750	0.000	5.51	0.00	2.32	10.7	1.193
17.767	0.000	5.48	0.00	2.31	10.6	1.186
17.783	0.000	5.45	0.00	2.29	10.6	1.179
17.800	0.000	5.42	0.00	2.28	10.6	1.172
17.817	0.000	5.39	0.00	2.27	10.5	1.165
17.833	0.000	5.37	0.00	2.26	10.5	1.158
17.850	0.000	5.34	0.00	2.25	10.4	1.151
17.867	0.000	5.31	0.00	2.24	10.4	1.144
17.883	0.000	5.28	0.00	2.23	10.4	1.137
17.900	0.000	5.26	0.00	2.22	10.3	1.130
17.917	0.000	5.23	0.00	2.21	10.3	1.123
17.933	0.000	5.21	0.00	2.19	10.2	1.116
17.950	0.000	5.18	0.00	2.18	10.2	1.109
17.967	0.000	5.16	0.00	2.17	10.2	1.102
17.983	0.000	5.13	0.00	2.16	10.1	1.095
18.000	0.000	5.08	0.00	2.15	10.1	1.088
18.017	0.000	4.96	0.00	2.14	10.0	1.081
18.033	0.000	4.83	0.00	2.13	10.0	1.074
18.050	0.000	4.69	0.00	2.11	10.0	1.067
18.067	0.000	4.56	0.00	2.10	9.9	1.059
18.083	0.000	4.43	0.00	2.09	9.9	1.052
18.100	0.000	4.30	0.00	2.08	9.8	1.044
18.117	0.000	4.22	0.00	2.07	9.8	1.037
18.133	0.000	4.15	0.00	2.05	9.7	1.029

18.150	0.000	4.08	0.00	2.04	9.7	1.021
18.167	0.000	4.00	0.00	2.03	9.6	1.013
18.183	0.000	3.93	0.00	2.02	9.6	1.006
18.200	0.000	3.86	0.00	2.00	9.5	0.998
18.217	0.000	3.82	0.00	1.99	9.5	0.990
18.233	0.000	3.80	0.00	1.98	9.4	0.982
18.250	0.000	3.78	0.00	1.97	9.4	0.975
18.267	0.000	3.77	0.00	1.95	9.4	0.967
18.283	0.000	3.75	0.00	1.94	9.3	0.959
18.300	0.000	3.73	0.00	1.93	9.3	0.952
18.317	0.000	3.71	0.00	1.92	9.2	0.944
18.333	0.000	3.69	0.00	1.90	9.2	0.936
18.350	0.000	3.68	0.00	1.89	9.1	0.929
18.367	0.000	3.66	0.00	1.88	9.1	0.922
18.383	0.000	3.64	0.00	1.87	9.0	0.914
18.400	0.000	3.63	0.00	1.86	9.0	0.907
18.417	0.000	3.61	0.00	1.85	8.9	0.900
18.433	0.000	3.59	0.00	1.83	8.9	0.892
18.450	0.000	3.58	0.00	1.82	8.8	0.885
18.467	0.000	3.56	0.00	1.81	8.8	0.878
18.483	0.000	3.55	0.00	1.80	8.7	0.871
18.500	0.000	3.53	0.00	1.79	8.7	0.864
18.517	0.000	3.52	0.00	1.78	8.6	0.857
18.533	0.000	3.50	0.00	1.77	8.6	0.850
18.550	0.000	3.49	0.00	1.75	8.5	0.843
18.567	0.000	3.47	0.00	1.74	8.5	0.836
18.583	0.000	3.46	0.00	1.73	8.5	0.829
18.600	0.000	3.44	0.00	1.72	8.4	0.822
18.617	0.000	3.43	0.00	1.71	8.3	0.815
18.633	0.000	3.41	0.00	1.70	8.3	0.808
18.650	0.000	3.40	0.00	1.69	8.2	0.802
18.667	0.000	3.39	0.00	1.68	8.2	0.795
18.683	0.000	3.37	0.00	1.67	8.2	0.789
18.700	0.000	3.36	0.00	1.66	8.1	0.782
18.717	0.000	3.34	0.00	1.64	8.1	0.776
18.733	0.000	3.33	0.00	1.63	8.0	0.769
18.750	0.000	3.32	0.00	1.62	8.0	0.763
18.767	0.000	3.31	0.00	1.61	7.9	0.756
18.783	0.000	3.29	0.00	1.60	7.9	0.750
18.800	0.000	3.28	0.00	1.59	7.8	0.744
18.817	0.000	3.27	0.00	1.58	7.8	0.738
18.833	0.000	3.25	0.00	1.57	7.7	0.731
18.850	0.000	3.24	0.00	1.56	7.7	0.725
18.867	0.000	3.23	0.00	1.55	7.6	0.719
18.883	0.000	3.22	0.00	1.54	7.6	0.713
18.900	0.000	3.21	0.00	1.53	7.5	0.707
18.917	0.000	3.19	0.00	1.52	7.5	0.701
18.933	0.000	3.18	0.00	1.51	7.5	0.695
18.950	0.000	3.17	0.00	1.50	7.4	0.690
18.967	0.000	3.16	0.00	1.49	7.4	0.684

18.983	0.000	3.15	0.00	1.49	7.3	0.678
19.000	0.000	3.14	0.00	1.48	7.3	0.672
19.017	0.000	3.12	0.00	1.47	7.2	0.667
19.033	0.000	3.11	0.00	1.46	7.2	0.661
19.050	0.000	3.10	0.00	1.45	7.1	0.656
19.067	0.000	3.09	0.00	1.44	7.1	0.650
19.083	0.000	3.08	0.00	1.43	7.0	0.645
19.100	0.000	3.07	0.00	1.42	7.0	0.639
19.117	0.000	3.06	0.00	1.41	6.9	0.634
19.133	0.000	3.05	0.00	1.40	6.9	0.629
19.150	0.000	3.04	0.00	1.39	6.8	0.624
19.167	0.000	3.03	0.00	1.39	6.8	0.619
19.183	0.000	3.02	0.00	1.38	6.7	0.613
19.200	0.000	3.01	0.00	1.37	6.7	0.608
19.217	0.000	3.00	0.00	1.36	6.6	0.603
19.233	0.000	2.99	0.00	1.35	6.6	0.598
19.250	0.000	2.98	0.00	1.34	6.5	0.593
19.267	0.000	2.97	0.00	1.33	6.5	0.589
19.283	0.000	2.96	0.00	1.33	6.5	0.584
19.300	0.000	2.95	0.00	1.32	6.4	0.579
19.317	0.000	2.94	0.00	1.31	6.4	0.574
19.333	0.000	2.93	0.00	1.30	6.3	0.570
19.350	0.000	2.92	0.00	1.30	6.3	0.565
19.367	0.000	2.91	0.00	1.29	6.2	0.560
19.383	0.000	2.90	0.00	1.28	6.2	0.556
19.400	0.000	2.89	0.00	1.27	6.2	0.551
19.417	0.000	2.88	0.00	1.26	6.1	0.547
19.433	0.000	2.87	0.00	1.26	6.1	0.543
19.450	0.000	2.87	0.00	1.25	6.0	0.538
19.467	0.000	2.86	0.00	1.24	6.0	0.534
19.483	0.000	2.85	0.00	1.24	5.9	0.530
19.500	0.000	2.84	0.00	1.23	5.9	0.525
19.517	0.000	2.83	0.00	1.22	5.8	0.521
19.533	0.000	2.82	0.00	1.21	5.8	0.517
19.550	0.000	2.81	0.00	1.21	5.7	0.513
19.567	0.000	2.80	0.00	1.20	5.7	0.509
19.583	0.000	2.80	0.00	1.19	5.6	0.505
19.600	0.000	2.79	0.00	1.19	5.6	0.501
19.617	0.000	2.78	0.00	1.18	5.5	0.498
19.633	0.000	2.77	0.00	1.17	5.5	0.494
19.650	0.000	2.76	0.00	1.17	5.4	0.490
19.667	0.000	2.75	0.00	1.16	5.4	0.487
19.683	0.000	2.75	0.00	1.15	5.4	0.483
19.700	0.000	2.74	0.00	1.15	5.3	0.479
19.717	0.000	2.73	0.00	1.14	5.3	0.476
19.733	0.000	2.72	0.00	1.13	5.2	0.472
19.750	0.000	2.72	0.00	1.13	5.2	0.469
19.767	0.000	2.71	0.00	1.12	5.1	0.466
19.783	0.000	2.70	0.00	1.12	5.1	0.462
19.800	0.000	2.69	0.00	1.11	5.1	0.459

19.817	0.000	2.68	0.00	1.10	5.0	0.456
19.833	0.000	2.68	0.00	1.10	5.0	0.453
19.850	0.000	2.67	0.00	1.09	4.9	0.450
19.867	0.000	2.66	0.00	1.09	4.9	0.447
19.883	0.000	2.65	0.00	1.08	4.9	0.444
19.900	0.000	2.65	0.00	1.08	4.8	0.441
19.917	0.000	2.64	0.00	1.07	4.8	0.438
19.933	0.000	2.63	0.00	1.07	4.7	0.435
19.950	0.000	2.63	0.00	1.06	4.7	0.432
19.967	0.000	2.62	0.00	1.06	4.7	0.429
19.983	0.000	2.61	0.00	1.05	4.6	0.426
20.000	0.000	2.60	0.00	1.05	4.6	0.424

PROCESS SUMMARY OF STORAGE:

INFLOW VOLUME = 8.898 AF
 BASIN STORAGE = 0.054 AF (WITH 0.000 AF INITIALLY FILLED)
 OUTFLOW VOLUME = 8.843 AF
 LOSS VOLUME = 0.000 AF

FLOW PROCESS FROM NODE 330.00 TO NODE 700.00 IS CODE = 1.2

>>>>SUBAREA RUNOFF (SMALL AREA UNIT-HYDROGRAPH ANALYSIS) <<<<<

(SMALL AREA UNIT-HYDROGRAPH ADDED TO STREAM #2)

RATIONAL METHOD CALIBRATION COEFFICIENT = 0.90
 TOTAL CATCHMENT AREA(ACRES) = 21.50
 SOIL-LOSS RATE, Fm,(INCH/HR) = 0.030
 LOW LOSS FRACTION = 0.040
 TIME OF CONCENTRATION(MIN.) = 6.92
 SMALL AREA PEAK Q COMPUTED USING PEAK FLOW RATE FORMULA
 ORANGE COUNTY "VALLEY" RAINFALL VALUES ARE USED:
 RETURN FREQUENCY(YEARS) = 100
 5-MINUTE POINT RAINFALL VALUE(INCHES) = 0.52
 30-MINUTE POINT RAINFALL VALUE(INCHES) = 1.09
 1-HOUR POINT RAINFALL VALUE(INCHES) = 1.45
 3-HOUR POINT RAINFALL VALUE(INCHES) = 2.43
 6-HOUR POINT RAINFALL VALUE(INCHES) = 3.36
 24-HOUR POINT RAINFALL VALUE(INCHES) = 5.63

TOTAL CATCHMENT RUNOFF VOLUME(ACRE-FEET) = 8.69
 TOTAL CATCHMENT SOIL-LOSS VOLUME(ACRE-FEET) = 1.39

▲

24 - HOUR STORM
 RUNOFF HYDROGRAPH

=====

HYDROGRAPH IN ONE-MINUTE UNIT INTERVALS(CFS)

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

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	24.8	49.6	74.4	99.2
10.000	1.7331	2.97	.Q	V	.	.	.
10.017	1.7372	2.97	.Q	V	.	.	.
10.033	1.7413	2.98	.Q	V	.	.	.
10.050	1.7454	2.98	.Q	V	.	.	.
10.067	1.7495	2.99	.Q	V	.	.	.
10.083	1.7536	3.00	.Q	V	.	.	.
10.100	1.7578	3.00	.Q	V	.	.	.
10.117	1.7619	3.01	.Q	V	.	.	.
10.133	1.7661	3.02	.Q	V	.	.	.
10.150	1.7702	3.02	.Q	V	.	.	.
10.167	1.7744	3.02	.Q	V	.	.	.
10.183	1.7786	3.03	.Q	V	.	.	.
10.200	1.7828	3.03	.Q	V	.	.	.
10.217	1.7869	3.04	.Q	V	.	.	.
10.233	1.7911	3.04	.Q	V	.	.	.
10.250	1.7953	3.04	.Q	V	.	.	.
10.267	1.7995	3.05	.Q	V	.	.	.
10.283	1.8037	3.06	.Q	V	.	.	.
10.300	1.8080	3.07	.Q	V	.	.	.
10.317	1.8122	3.07	.Q	V	.	.	.
10.333	1.8164	3.08	.Q	V	.	.	.
10.350	1.8207	3.09	.Q	V	.	.	.
10.367	1.8249	3.09	.Q	V	.	.	.
10.383	1.8292	3.10	.Q	V	.	.	.
10.400	1.8335	3.10	.Q	V	.	.	.
10.417	1.8378	3.11	.Q	V	.	.	.
10.433	1.8420	3.11	.Q	V	.	.	.
10.450	1.8463	3.11	.Q	V	.	.	.
10.467	1.8506	3.12	.Q	V	.	.	.
10.483	1.8549	3.12	.Q	V	.	.	.
10.500	1.8592	3.13	.Q	V	.	.	.
10.517	1.8636	3.14	.Q	V	.	.	.
10.533	1.8679	3.15	.Q	V	.	.	.
10.550	1.8722	3.15	.Q	V	.	.	.
10.567	1.8766	3.16	.Q	V	.	.	.
10.583	1.8810	3.17	.Q	V	.	.	.
10.600	1.8853	3.18	.Q	V	.	.	.
10.617	1.8897	3.18	.Q	V	.	.	.

10.633	1.8941	3.18	.Q	V .	.	.	.
10.650	1.8985	3.19	.Q	V .	.	.	.
10.667	1.9029	3.19	.Q	V .	.	.	.
10.683	1.9073	3.20	.Q	V .	.	.	.
10.700	1.9117	3.20	.Q	V .	.	.	.
10.717	1.9161	3.21	.Q	V .	.	.	.
10.733	1.9206	3.22	.Q	V .	.	.	.
10.750	1.9250	3.22	.Q	V .	.	.	.
10.767	1.9294	3.23	.Q	V .	.	.	.
10.783	1.9339	3.24	.Q	V .	.	.	.
10.800	1.9384	3.25	.Q	V .	.	.	.
10.817	1.9429	3.26	.Q	V .	.	.	.
10.833	1.9474	3.26	.Q	V .	.	.	.
10.850	1.9519	3.27	.Q	V .	.	.	.
10.867	1.9564	3.27	.Q	V .	.	.	.
10.883	1.9609	3.28	.Q	V .	.	.	.
10.900	1.9654	3.28	.Q	V .	.	.	.
10.917	1.9699	3.28	.Q	V .	.	.	.
10.933	1.9745	3.29	.Q	V .	.	.	.
10.950	1.9790	3.30	.Q	V .	.	.	.
10.967	1.9836	3.31	.Q	V .	.	.	.
10.983	1.9881	3.32	.Q	V .	.	.	.
11.000	1.9927	3.33	.Q	V .	.	.	.
11.017	1.9973	3.33	.Q	V .	.	.	.
11.033	2.0019	3.34	.Q	V .	.	.	.
11.050	2.0065	3.35	.Q	V .	.	.	.
11.067	2.0111	3.36	.Q	V .	.	.	.
11.083	2.0158	3.36	.Q	V .	.	.	.
11.100	2.0204	3.37	.Q	V .	.	.	.
11.117	2.0251	3.37	.Q	V .	.	.	.
11.133	2.0297	3.38	.Q	V .	.	.	.
11.150	2.0344	3.38	.Q	V .	.	.	.
11.167	2.0390	3.39	.Q	V .	.	.	.
11.183	2.0437	3.40	.Q	V .	.	.	.
11.200	2.0484	3.41	.Q	V .	.	.	.
11.217	2.0531	3.42	.Q	V .	.	.	.
11.233	2.0578	3.42	.Q	V .	.	.	.
11.250	2.0625	3.43	.Q	V .	.	.	.
11.267	2.0673	3.44	.Q	V .	.	.	.
11.283	2.0720	3.45	.Q	V .	.	.	.
11.300	2.0768	3.46	.Q	V .	.	.	.
11.317	2.0816	3.46	.Q	V .	.	.	.
11.333	2.0864	3.47	.Q	V .	.	.	.
11.350	2.0911	3.47	.Q	V .	.	.	.
11.367	2.0959	3.48	.Q	V .	.	.	.
11.383	2.1007	3.48	.Q	V .	.	.	.
11.400	2.1055	3.49	.Q	V .	.	.	.
11.417	2.1104	3.50	.Q	V .	.	.	.
11.433	2.1152	3.51	.Q	V .	.	.	.
11.450	2.1200	3.52	.Q	V .	.	.	.

11.467	2.1249	3.53	.Q	V .	.	.	.
11.483	2.1298	3.54	.Q	V .	.	.	.
11.500	2.1347	3.55	.Q	V .	.	.	.
11.517	2.1396	3.56	.Q	V .	.	.	.
11.533	2.1445	3.57	.Q	V .	.	.	.
11.550	2.1494	3.57	.Q	V .	.	.	.
11.567	2.1544	3.58	.Q	V .	.	.	.
11.583	2.1593	3.58	.Q	V .	.	.	.
11.600	2.1642	3.59	.Q	V .	.	.	.
11.617	2.1692	3.60	.Q	V .	.	.	.
11.633	2.1742	3.60	.Q	V	.	.	.
11.650	2.1791	3.62	.Q	V	.	.	.
11.667	2.1841	3.63	.Q	V	.	.	.
11.683	2.1891	3.64	.Q	V	.	.	.
11.700	2.1942	3.65	.Q	V	.	.	.
11.717	2.1992	3.66	.Q	V	.	.	.
11.733	2.2043	3.67	.Q	V	.	.	.
11.750	2.2093	3.68	.Q	V	.	.	.
11.767	2.2144	3.69	.Q	V	.	.	.
11.783	2.2195	3.69	.Q	V	.	.	.
11.800	2.2246	3.70	.Q	V	.	.	.
11.817	2.2297	3.70	.Q	V	.	.	.
11.833	2.2348	3.71	.Q	V	.	.	.
11.850	2.2399	3.72	.Q	V	.	.	.
11.867	2.2451	3.73	.Q	V	.	.	.
11.883	2.2502	3.74	.Q	V	.	.	.
11.900	2.2554	3.75	.Q	V	.	.	.
11.917	2.2606	3.76	.Q	V	.	.	.
11.933	2.2658	3.78	.Q	V	.	.	.
11.950	2.2710	3.79	.Q	V	.	.	.
11.967	2.2762	3.80	.Q	V	.	.	.
11.983	2.2815	3.81	.Q	V	.	.	.
12.000	2.2868	3.82	.Q	V	.	.	.
12.017	2.2920	3.83	.Q	V	.	.	.
12.033	2.2973	3.84	.Q	V	.	.	.
12.050	2.3026	3.85	.Q	V	.	.	.
12.067	2.3079	3.86	.Q	V	.	.	.
12.083	2.3133	3.88	.Q	V	.	.	.
12.100	2.3188	3.99	.Q	V	.	.	.
12.117	2.3245	4.15	.Q	V	.	.	.
12.133	2.3304	4.30	.Q	V	.	.	.
12.150	2.3366	4.46	.Q	V	.	.	.
12.167	2.3429	4.61	.Q	V	.	.	.
12.183	2.3495	4.77	.Q	V	.	.	.
12.200	2.3562	4.91	.Q	V	.	.	.
12.217	2.3631	4.95	.Q	V	.	.	.
12.233	2.3699	4.96	.Q	V	.	.	.
12.250	2.3767	4.96	. Q	V	.	.	.
12.267	2.3836	4.97	. Q	V	.	.	.
12.283	2.3904	4.98	. Q	V	.	.	.

12.300	2.3973	4.99	. Q	.V	.	.	.
12.317	2.4042	4.99	. Q	.V	.	.	.
12.333	2.4111	5.01	. Q	.V	.	.	.
12.350	2.4180	5.02	. Q	.V	.	.	.
12.367	2.4249	5.04	. Q	.V	.	.	.
12.383	2.4319	5.06	. Q	.V	.	.	.
12.400	2.4389	5.07	. Q	.V	.	.	.
12.417	2.4459	5.09	. Q	.V	.	.	.
12.433	2.4529	5.10	. Q	.V	.	.	.
12.450	2.4600	5.11	. Q	.V	.	.	.
12.467	2.4670	5.12	. Q	.V	.	.	.
12.483	2.4741	5.13	. Q	.V	.	.	.
12.500	2.4812	5.14	. Q	.V	.	.	.
12.517	2.4883	5.15	. Q	.V	.	.	.
12.533	2.4954	5.16	. Q	.V	.	.	.
12.550	2.5025	5.17	. Q	.V	.	.	.
12.567	2.5096	5.18	. Q	.V	.	.	.
12.583	2.5168	5.20	. Q	.V	.	.	.
12.600	2.5240	5.22	. Q	.V	.	.	.
12.617	2.5312	5.24	. Q	.V	.	.	.
12.633	2.5384	5.25	. Q	.V	.	.	.
12.650	2.5457	5.27	. Q	.V	.	.	.
12.667	2.5530	5.29	. Q	.V	.	.	.
12.683	2.5602	5.30	. Q	.V	.	.	.
12.700	2.5676	5.31	. Q	.V	.	.	.
12.717	2.5749	5.31	. Q	.V	.	.	.
12.733	2.5822	5.32	. Q	.V	.	.	.
12.750	2.5896	5.33	. Q	.V	.	.	.
12.767	2.5969	5.34	. Q	.V	.	.	.
12.783	2.6043	5.35	. Q	.V	.	.	.
12.800	2.6117	5.37	. Q	.V	.	.	.
12.817	2.6191	5.39	. Q	.V	.	.	.
12.833	2.6266	5.41	. Q	.V	.	.	.
12.850	2.6341	5.43	. Q	.V	.	.	.
12.867	2.6416	5.45	. Q	.V	.	.	.
12.883	2.6491	5.47	. Q	.V	.	.	.
12.900	2.6567	5.49	. Q	.V	.	.	.
12.917	2.6642	5.50	. Q	.V	.	.	.
12.933	2.6718	5.51	. Q	.V	.	.	.
12.950	2.6794	5.52	. Q	.V	.	.	.
12.967	2.6871	5.53	. Q	.V	.	.	.
12.983	2.6947	5.54	. Q	.V	.	.	.
13.000	2.7023	5.55	. Q	.V	.	.	.
13.017	2.7100	5.57	. Q	.V	.	.	.
13.033	2.7177	5.59	. Q	.V	.	.	.
13.050	2.7254	5.61	. Q	.V	.	.	.
13.067	2.7332	5.63	. Q	.V	.	.	.
13.083	2.7410	5.65	. Q	.V	.	.	.
13.100	2.7488	5.68	. Q	.V	.	.	.
13.117	2.7566	5.70	. Q	.V	.	.	.

13.133	2.7645	5.71	. Q	. V	.	.	.
13.150	2.7724	5.73	. Q	. V	.	.	.
13.167	2.7803	5.74	. Q	. V	.	.	.
13.183	2.7882	5.75	. Q	. V	.	.	.
13.200	2.7962	5.76	. Q	. V	.	.	.
13.217	2.8041	5.77	. Q	. V	.	.	.
13.233	2.8121	5.78	. Q	. V	.	.	.
13.250	2.8201	5.80	. Q	. V	.	.	.
13.267	2.8281	5.83	. Q	. V	.	.	.
13.283	2.8362	5.85	. Q	. V	.	.	.
13.300	2.8443	5.88	. Q	. V	.	.	.
13.317	2.8524	5.90	. Q	. V	.	.	.
13.333	2.8606	5.93	. Q	. V	.	.	.
13.350	2.8688	5.95	. Q	. V	.	.	.
13.367	2.8770	5.97	. Q	. V	.	.	.
13.383	2.8852	5.98	. Q	. V	.	.	.
13.400	2.8935	6.00	. Q	. V	.	.	.
13.417	2.9018	6.01	. Q	. V	.	.	.
13.433	2.9100	6.02	. Q	. V	.	.	.
13.450	2.9184	6.04	. Q	. V	.	.	.
13.467	2.9267	6.05	. Q	. V	.	.	.
13.483	2.9351	6.07	. Q	. V	.	.	.
13.500	2.9435	6.10	. Q	. V	.	.	.
13.517	2.9519	6.13	. Q	. V	.	.	.
13.533	2.9604	6.16	. Q	. V	.	.	.
13.550	2.9689	6.19	. Q	. V	.	.	.
13.567	2.9775	6.21	. Q	. V	.	.	.
13.583	2.9861	6.24	. Q	. V	.	.	.
13.600	2.9947	6.26	. Q	. V	.	.	.
13.617	3.0033	6.28	. Q	. V	.	.	.
13.633	3.0120	6.29	. Q	. V	.	.	.
13.650	3.0207	6.31	. Q	. V	.	.	.
13.667	3.0294	6.32	. Q	. V	.	.	.
13.683	3.0381	6.34	. Q	. V	.	.	.
13.700	3.0469	6.35	. Q	. V	.	.	.
13.717	3.0557	6.38	. Q	. V	.	.	.
13.733	3.0645	6.41	. Q	. V	.	.	.
13.750	3.0734	6.45	. Q	. V	.	.	.
13.767	3.0823	6.48	. Q	. V	.	.	.
13.783	3.0913	6.51	. Q	. V	.	.	.
13.800	3.1003	6.55	. Q	. V	.	.	.
13.817	3.1093	6.58	. Q	. V	.	.	.
13.833	3.1184	6.60	. Q	. V	.	.	.
13.850	3.1275	6.61	. Q	. V	.	.	.
13.867	3.1367	6.63	. Q	. V	.	.	.
13.883	3.1458	6.65	. Q	. V	.	.	.
13.900	3.1550	6.67	. Q	. V	.	.	.
13.917	3.1642	6.68	. Q	. V	.	.	.
13.933	3.1735	6.70	. Q	. V	.	.	.
13.950	3.1827	6.74	. Q	. V	.	.	.

13.967	3.1921	6.78	. Q	.	V	.	.	.
13.983	3.2015	6.82	. Q	.	V	.	.	.
14.000	3.2109	6.86	. Q	.	V	.	.	.
14.017	3.2204	6.89	. Q	.	V	.	.	.
14.033	3.2300	6.93	. Q	.	V	.	.	.
14.050	3.2396	6.97	. Q	.	V	.	.	.
14.067	3.2492	7.00	. Q	.	V	.	.	.
14.083	3.2589	7.02	. Q	.	V	.	.	.
14.100	3.2686	7.05	. Q	.	V	.	.	.
14.117	3.2783	7.07	. Q	.	V	.	.	.
14.133	3.2881	7.10	. Q	.	V	.	.	.
14.150	3.2979	7.13	. Q	.	V	.	.	.
14.167	3.3078	7.16	. Q	.	V	.	.	.
14.183	3.3177	7.20	. Q	.	V	.	.	.
14.200	3.3277	7.25	. Q	.	V	.	.	.
14.217	3.3377	7.29	. Q	.	V	.	.	.
14.233	3.3478	7.34	. Q	.	V	.	.	.
14.250	3.3580	7.39	. Q	.	V	.	.	.
14.267	3.3682	7.43	. Q	.	V	.	.	.
14.283	3.3785	7.47	. Q	.	V	.	.	.
14.300	3.3889	7.50	. Q	.	V	.	.	.
14.317	3.3992	7.52	. Q	.	V	.	.	.
14.333	3.4096	7.55	. Q	.	V	.	.	.
14.350	3.4200	7.57	. Q	.	V	.	.	.
14.367	3.4305	7.60	. Q	.	V	.	.	.
14.383	3.4410	7.62	. Q	.	V	.	.	.
14.400	3.4516	7.66	. Q	.	V	.	.	.
14.417	3.4622	7.71	. Q	.	V	.	.	.
14.433	3.4729	7.77	. Q	.	V	.	.	.
14.450	3.4837	7.83	. Q	.	V	.	.	.
14.467	3.4945	7.88	. Q	.	V	.	.	.
14.483	3.5054	7.94	. Q	.	V	.	.	.
14.500	3.5165	7.99	. Q	.	V	.	.	.
14.517	3.5275	8.04	. Q	.	V	.	.	.
14.533	3.5386	8.07	. Q	.	V	.	.	.
14.550	3.5498	8.10	. Q	.	V	.	.	.
14.567	3.5610	8.13	. Q	.	V	.	.	.
14.583	3.5722	8.16	. Q	.	V	.	.	.
14.600	3.5835	8.19	. Q	.	V	.	.	.
14.617	3.5949	8.22	. Q	.	V	.	.	.
14.633	3.6063	8.28	. Q	.	V	.	.	.
14.650	3.6178	8.35	. Q	.	V	.	.	.
14.667	3.6294	8.42	. Q	.	V	.	.	.
14.683	3.6410	8.49	. Q	.	V	.	.	.
14.700	3.6528	8.56	. Q	.	V	.	.	.
14.717	3.6647	8.63	. Q	.	V	.	.	.
14.733	3.6767	8.70	. Q	.	V	.	.	.
14.750	3.6888	8.75	. Q	.	V	.	.	.
14.767	3.7009	8.79	. Q	.	V	.	.	.
14.783	3.7130	8.83	. Q	.	V	.	.	.

14.800	3.7252	8.87	. Q	.	V	.	.	.
14.817	3.7375	8.91	. Q	.	V	.	.	.
14.833	3.7498	8.95	. Q	.	V	.	.	.
14.850	3.7622	8.99	. Q	.	V	.	.	.
14.867	3.7747	9.07	. Q	.	V	.	.	.
14.883	3.7873	9.16	. Q	.	V	.	.	.
14.900	3.8001	9.25	. Q	.	V	.	.	.
14.917	3.8129	9.34	. Q	.	V	.	.	.
14.933	3.8259	9.44	. Q	.	V	.	.	.
14.950	3.8391	9.53	. Q	.	V	.	.	.
14.967	3.8523	9.62	. Q	.	V	.	.	.
14.983	3.8657	9.68	. Q	.	V	.	.	.
15.000	3.8791	9.74	. Q	.	V	.	.	.
15.017	3.8925	9.79	. Q	.	V	.	.	.
15.033	3.9061	9.84	. Q	.	V	.	.	.
15.050	3.9197	9.90	. Q	.	V	.	.	.
15.067	3.9334	9.95	. Q	.	V	.	.	.
15.083	3.9472	10.01	. Q	.	V	.	.	.
15.100	3.9612	10.12	. Q	.	V	.	.	.
15.117	3.9753	10.25	. Q	.	V	.	.	.
15.133	3.9896	10.38	. Q	.	V	.	.	.
15.150	4.0041	10.51	. Q	.	V	.	.	.
15.167	4.0187	10.64	. Q	.	V	.	.	.
15.183	4.0336	10.77	. Q	.	V	.	.	.
15.200	4.0486	10.89	. Q	.	V	.	.	.
15.217	4.0637	10.98	. Q	.	V	.	.	.
15.233	4.0789	11.05	. Q	.	V	.	.	.
15.250	4.0942	11.13	. Q	.	V	.	.	.
15.267	4.1097	11.21	. Q	.	V	.	.	.
15.283	4.1252	11.29	. Q	.	V	.	.	.
15.300	4.1409	11.36	. Q	.	V	.	.	.
15.317	4.1566	11.44	. Q	.	V	.	.	.
15.333	4.1724	11.49	. Q	.	V	.	.	.
15.350	4.1883	11.53	. Q	.	V	.	.	.
15.367	4.2043	11.57	. Q	.	V	.	.	.
15.383	4.2203	11.62	. Q	.	V	.	.	.
15.400	4.2363	11.66	. Q	.	V	.	.	.
15.417	4.2524	11.70	. Q	.	V	.	.	.
15.433	4.2686	11.75	. Q	.	V	.	.	.
15.450	4.2849	11.80	. Q	.	V	.	.	.
15.467	4.3012	11.85	. Q	.	V	.	.	.
15.483	4.3176	11.90	. Q	.	V	.	.	.
15.500	4.3340	11.95	. Q	.	V	.	.	.
15.517	4.3506	12.00	. Q	.	V	.	.	.
15.533	4.3671	12.05	. Q	.	V	.	.	.
15.550	4.3839	12.17	. Q	.	V	.	.	.
15.567	4.4011	12.50	. Q	.	V	.	.	.
15.583	4.4188	12.86	. Q	.	V	.	.	.
15.600	4.4370	13.21	. Q	.	V	.	.	.
15.617	4.4557	13.57	. Q	.	V	.	.	.

15.633	4.4749	13.92	.	Q	.	V	.	.
15.650	4.4946	14.28	.	Q	.	V	.	.
15.667	4.5147	14.61	.	Q	.	V	.	.
15.683	4.5352	14.89	.	Q	.	V	.	.
15.700	4.5561	15.17	.	Q	.	V	.	.
15.717	4.5774	15.44	.	Q	.	.V	.	.
15.733	4.5990	15.72	.	Q	.	.V	.	.
15.750	4.6210	16.00	.	Q	.	.V	.	.
15.767	4.6435	16.28	.	Q	.	.V	.	.
15.783	4.6666	16.82	.	Q	.	.V	.	.
15.800	4.6912	17.85	.	Q	.	.V	.	.
15.817	4.7173	18.89	.	Q	.	.V	.	.
15.833	4.7447	19.93	.	Q	.	.V	.	.
15.850	4.7736	20.96	.	Q	.	.V	.	.
15.867	4.8039	22.00	.	Q	.	.V	.	.
15.883	4.8356	23.04	.	Q	.	.V	.	.
15.900	4.8689	24.18	.	Q	.	.V	.	.
15.917	4.9040	25.46	.	Q	.	.V	.	.
15.933	4.9408	26.74	.	Q	.	.V	.	.
15.950	4.9794	28.02	.	.Q	.	.V	.	.
15.967	5.0198	29.30	.	.Q	.	.V	.	.
15.983	5.0619	30.58	.	.Q	.	.V	.	.
16.000	5.1058	31.86	.	.Q	.	.V	.	.
16.017	5.1572	37.32	.	.	Q	.V	.	.
16.033	5.2218	46.95	.	.	Q	.V	.	.
16.050	5.2998	56.59	.	.	Q	V	.	.
16.067	5.3910	66.23	.	.	.	V	Q	.
16.083	5.4955	75.87	.	.	.	V	Q	.
16.100	5.6133	85.51	.	.	.	V	.	Q
16.117	5.7499	99.20	.	.	.	V	.	Q
16.133	5.8773	92.49	.	.	.	V	.	Q
16.150	5.9888	80.94	.	.	.	V	.	Q
16.167	6.0844	69.39	.	.	.	Q	.	.
16.183	6.1641	57.83	.	.	Q	V	.	.
16.200	6.2278	46.28	.	.	Q	V	.	.
16.217	6.2756	34.72	.	.	Q	V	.	.
16.233	6.3077	23.30	.	.	Q	V	.	.
16.250	6.3334	18.66	.	.	Q	V	.	.
16.267	6.3579	17.78	.	.	Q	V	.	.
16.283	6.3812	16.90	.	.	Q	V	.	.
16.300	6.4033	16.02	.	.	Q	V	.	.
16.317	6.4241	15.14	.	.	Q	V	.	.
16.333	6.4437	14.26	.	.	Q	V	.	.
16.350	6.4622	13.40	.	.	Q	V	.	.
16.367	6.4802	13.03	.	.	Q	V	.	.
16.383	6.4979	12.88	.	.	Q	V	.	.
16.400	6.5154	12.72	.	.	Q	V	.	.
16.417	6.5327	12.56	.	.	Q	V	.	.
16.433	6.5498	12.41	.	.	Q	V	.	.
16.450	6.5667	12.25	.	Q	.	.	V	.

16.467	6.5833	12.09	.	Q	.	.	V	.
16.483	6.5997	11.87	.	Q	.	.	V	.
16.500	6.6157	11.64	.	Q	.	.	V	.
16.517	6.6314	11.40	.	Q	.	.	V	.
16.533	6.6468	11.16	.	Q	.	.	V	.
16.550	6.6618	10.93	.	Q	.	.	V	.
16.567	6.6766	10.69	.	Q	.	.	V	.
16.583	6.6910	10.46	.	Q	.	.	V	.
16.600	6.7051	10.28	.	Q	.	.	V	.
16.617	6.7191	10.12	.	Q	.	.	V	.
16.633	6.7328	9.96	.	Q	.	.	V	.
16.650	6.7463	9.80	.	Q	.	.	.V	.
16.667	6.7596	9.63	.	Q	.	.	.V	.
16.683	6.7726	9.47	.	Q	.	.	.V	.
16.700	6.7854	9.31	.	Q	.	.	.V	.
16.717	6.7981	9.19	.	Q	.	.	.V	.
16.733	6.8106	9.07	.	Q	.	.	.V	.
16.750	6.8229	8.95	.	Q	.	.	.V	.
16.767	6.8351	8.83	.	Q	.	.	.V	.
16.783	6.8471	8.71	.	Q	.	.	.V	.
16.800	6.8589	8.59	.	Q	.	.	.V	.
16.817	6.8705	8.47	.	Q	.	.	.V	.
16.833	6.8821	8.37	.	Q	.	.	.V	.
16.850	6.8935	8.28	.	Q	.	.	.V	.
16.867	6.9048	8.19	.	Q	.	.	.V	.
16.883	6.9159	8.09	.	Q	.	.	.V	.
16.900	6.9269	8.00	.	Q	.	.	.V	.
16.917	6.9378	7.90	.	Q	.	.	.V	.
16.933	6.9486	7.81	.	Q	.	.	.V	.
16.950	6.9592	7.74	.	Q	.	.	.V	.
16.967	6.9698	7.66	.	Q	.	.	.V	.
16.983	6.9802	7.59	.	Q	.	.	.V	.
17.000	6.9906	7.51	.	Q	.	.	.V	.
17.017	7.0008	7.43	.	Q	.	.	.V	.
17.033	7.0110	7.36	.	Q	.	.	.V	.
17.050	7.0210	7.29	.	Q	.	.	.V	.
17.067	7.0309	7.22	.	Q	.	.	.V	.
17.083	7.0408	7.15	.	Q	.	.	.V	.
17.100	7.0505	7.08	.	Q	.	.	.V	.
17.117	7.0602	7.01	.	Q	.	.	.V	.
17.133	7.0698	6.94	.	Q	.	.	.V	.
17.150	7.0792	6.88	.	Q	.	.	.V	.
17.167	7.0886	6.81	.	Q	.	.	.V	.
17.183	7.0979	6.76	.	Q	.	.	.V	.
17.200	7.1072	6.71	.	Q	.	.	.V	.
17.217	7.1163	6.65	.	Q	.	.	.V	.
17.233	7.1254	6.60	.	Q	.	.	.V	.
17.250	7.1344	6.55	.	Q	.	.	.V	.
17.267	7.1434	6.50	.	Q	.	.	.V	.
17.283	7.1523	6.45	.	Q	.	.	.V	.

17.300	7.1611	6.40	. Q	.	.	. V	.
17.317	7.1698	6.35	. Q	.	.	. V	.
17.333	7.1785	6.31	. Q	.	.	. V	.
17.350	7.1872	6.26	. Q	.	.	. V	.
17.367	7.1957	6.22	. Q	.	.	. V	.
17.383	7.2042	6.17	. Q	.	.	. V	.
17.400	7.2127	6.13	. Q	.	.	. V	.
17.417	7.2211	6.09	. Q	.	.	. V	.
17.433	7.2294	6.05	. Q	.	.	. V	.
17.450	7.2377	6.01	. Q	.	.	. V	.
17.467	7.2459	5.97	. Q	.	.	. V	.
17.483	7.2541	5.93	. Q	.	.	. V	.
17.500	7.2622	5.89	. Q	.	.	. V	.
17.517	7.2702	5.85	. Q	.	.	. V	.
17.533	7.2783	5.82	. Q	.	.	. V	.
17.550	7.2862	5.78	. Q	.	.	. V	.
17.567	7.2941	5.75	. Q	.	.	. V	.
17.583	7.3020	5.71	. Q	.	.	. V	.
17.600	7.3098	5.68	. Q	.	.	. V	.
17.617	7.3176	5.64	. Q	.	.	. V	.
17.633	7.3253	5.61	. Q	.	.	. V	.
17.650	7.3330	5.58	. Q	.	.	. V	.
17.667	7.3407	5.55	. Q	.	.	. V	.
17.683	7.3483	5.52	. Q	.	.	. V	.
17.700	7.3558	5.49	. Q	.	.	. V	.
17.717	7.3634	5.46	. Q	.	.	. V	.
17.733	7.3708	5.43	. Q	.	.	. V	.
17.750	7.3783	5.40	. Q	.	.	. V	.
17.767	7.3857	5.37	. Q	.	.	. V	.
17.783	7.3930	5.34	. Q	.	.	. V	.
17.800	7.4003	5.31	. Q	.	.	. V	.
17.817	7.4076	5.28	. Q	.	.	. V	.
17.833	7.4149	5.26	. Q	.	.	. V	.
17.850	7.4221	5.23	. Q	.	.	. V	.
17.867	7.4292	5.20	. Q	.	.	. V	.
17.883	7.4364	5.18	. Q	.	.	. V	.
17.900	7.4434	5.15	. Q	.	.	. V	.
17.917	7.4505	5.13	. Q	.	.	. V	.
17.933	7.4575	5.10	. Q	.	.	. V	.
17.950	7.4645	5.08	. Q	.	.	. V	.
17.967	7.4715	5.05	. Q	.	.	. V	.
17.983	7.4784	5.03	. Q	.	.	. V	.
18.000	7.4853	5.01	. Q	.	.	. V	.
18.017	7.4922	4.98	. Q	.	.	. V	.
18.033	7.4990	4.96	. Q	.	.	. V	.
18.050	7.5058	4.94	. Q	.	.	. V	.
18.067	7.5126	4.91	. Q	.	.	. V	.
18.083	7.5193	4.88	. Q	.	.	. V	.
18.100	7.5258	4.74	. Q	.	.	. V	.
18.117	7.5321	4.57	. Q	.	.	. V	.

18.133	7.5382	4.41	. Q	.	.	. V	.
18.150	7.5440	4.25	. Q	.	.	. V	.
18.167	7.5497	4.08	. Q	.	.	. V	.
18.183	7.5551	3.92	. Q	.	.	. V	.
18.200	7.5603	3.78	. Q	.	.	. V	.
18.217	7.5654	3.74	. Q	.	.	. V	.
18.233	7.5706	3.73	. Q	.	.	. V	.
18.250	7.5757	3.71	. Q	.	.	. V	.
18.267	7.5808	3.69	. Q	.	.	. V	.
18.283	7.5858	3.67	. Q	.	.	. V	.
18.300	7.5908	3.65	. Q	.	.	. V	.
18.317	7.5959	3.64	. Q	.	.	. V	.
18.333	7.6008	3.62	. Q	.	.	. V	.
18.350	7.6058	3.60	. Q	.	.	. V	.
18.367	7.6107	3.59	. Q	.	.	. V	.
18.383	7.6157	3.57	. Q	.	.	. V	.
18.400	7.6205	3.55	. Q	.	.	. V	.
18.417	7.6254	3.54	. Q	.	.	. V	.
18.433	7.6303	3.52	. Q	.	.	. V	.
18.450	7.6351	3.51	. Q	.	.	. V	.
18.467	7.6399	3.49	. Q	.	.	. V	.
18.483	7.6447	3.47	. Q	.	.	. V	.
18.500	7.6495	3.46	. Q	.	.	. V	.
18.517	7.6542	3.44	. Q	.	.	. V	.
18.533	7.6589	3.43	. Q	.	.	. V	.
18.550	7.6636	3.41	. Q	.	.	. V	.
18.567	7.6683	3.40	. Q	.	.	. V	.
18.583	7.6730	3.39	. Q	.	.	. V	.
18.600	7.6776	3.37	. Q	.	.	. V	.
18.617	7.6822	3.36	. Q	.	.	. V	.
18.633	7.6868	3.34	. Q	.	.	. V	.
18.650	7.6914	3.33	. Q	.	.	. V	.
18.667	7.6960	3.32	. Q	.	.	. V	.
18.683	7.7005	3.30	. Q	.	.	. V	.
18.700	7.7051	3.29	. Q	.	.	. V	.
18.717	7.7096	3.28	. Q	.	.	. V	.
18.733	7.7141	3.26	. Q	.	.	. V	.
18.750	7.7186	3.25	. Q	.	.	. V	.
18.767	7.7230	3.24	. Q	.	.	. V	.
18.783	7.7275	3.22	. Q	.	.	. V	.
18.800	7.7319	3.21	. Q	.	.	. V	.
18.817	7.7363	3.20	. Q	.	.	. V	.
18.833	7.7407	3.19	. Q	.	.	. V	.
18.850	7.7451	3.18	. Q	.	.	. V	.
18.867	7.7494	3.16	. Q	.	.	. V	.
18.883	7.7538	3.15	. Q	.	.	. V	.
18.900	7.7581	3.14	. Q	.	.	. V	.
18.917	7.7624	3.13	. Q	.	.	. V	.
18.933	7.7667	3.12	. Q	.	.	. V	.
18.950	7.7710	3.10	. Q	.	.	. V	.

18.967	7.7752	3.09	.Q	.	.	.	V	.
18.983	7.7795	3.08	.Q	.	.	.	V	.
19.000	7.7837	3.07	.Q	.	.	.	V	.
19.017	7.7879	3.06	.Q	.	.	.	V	.
19.033	7.7921	3.05	.Q	.	.	.	V	.
19.050	7.7963	3.04	.Q	.	.	.	V	.
19.067	7.8005	3.03	.Q	.	.	.	V	.
19.083	7.8046	3.02	.Q	.	.	.	V	.
19.100	7.8088	3.01	.Q	.	.	.	V	.
19.117	7.8129	3.00	.Q	.	.	.	V	.
19.133	7.8170	2.99	.Q	.	.	.	V	.
19.150	7.8211	2.98	.Q	.	.	.	V	.
19.167	7.8252	2.97	.Q	.	.	.	V	.
19.183	7.8293	2.95	.Q	.	.	.	V	.
19.200	7.8333	2.94	.Q	.	.	.	V	.
19.217	7.8374	2.93	.Q	.	.	.	V	.
19.233	7.8414	2.92	.Q	.	.	.	V	.
19.250	7.8454	2.92	.Q	.	.	.	V	.
19.267	7.8494	2.91	.Q	.	.	.	V	.
19.283	7.8534	2.90	.Q	.	.	.	V	.
19.300	7.8574	2.89	.Q	.	.	.	V	.
19.317	7.8613	2.88	.Q	.	.	.	V	.
19.333	7.8653	2.87	.Q	.	.	.	V	.
19.350	7.8692	2.86	.Q	.	.	.	V	.
19.367	7.8731	2.85	.Q	.	.	.	V	.
19.383	7.8771	2.84	.Q	.	.	.	V	.
19.400	7.8810	2.83	.Q	.	.	.	V	.
19.417	7.8848	2.82	.Q	.	.	.	V	.
19.433	7.8887	2.81	.Q	.	.	.	V	.
19.450	7.8926	2.80	.Q	.	.	.	V	.
19.467	7.8964	2.80	.Q	.	.	.	V	.
19.483	7.9003	2.79	.Q	.	.	.	V	.
19.500	7.9041	2.78	.Q	.	.	.	V	.
19.517	7.9079	2.77	.Q	.	.	.	V	.
19.533	7.9117	2.76	.Q	.	.	.	V	.
19.550	7.9155	2.75	.Q	.	.	.	V	.
19.567	7.9193	2.74	.Q	.	.	.	V	.
19.583	7.9231	2.74	.Q	.	.	.	V	.
19.600	7.9268	2.73	.Q	.	.	.	V	.
19.617	7.9306	2.72	.Q	.	.	.	V	.
19.633	7.9343	2.71	.Q	.	.	.	V	.
19.650	7.9380	2.70	.Q	.	.	.	V	.
19.667	7.9417	2.70	.Q	.	.	.	V	.
19.683	7.9454	2.69	.Q	.	.	.	V	.
19.700	7.9491	2.68	.Q	.	.	.	V	.
19.717	7.9528	2.67	.Q	.	.	.	V	.
19.733	7.9565	2.67	.Q	.	.	.	V	.
19.750	7.9601	2.66	.Q	.	.	.	V	.
19.767	7.9638	2.65	.Q	.	.	.	V	.
19.783	7.9674	2.64	.Q	.	.	.	V	.

19.800	7.9711	2.63	.Q	.	.	.	V	.
19.817	7.9747	2.63	.Q	.	.	.	V	.
19.833	7.9783	2.62	.Q	.	.	.	V	.
19.850	7.9819	2.61	.Q	.	.	.	V	.
19.867	7.9855	2.61	.Q	.	.	.	V	.
19.883	7.9891	2.60	.Q	.	.	.	V	.
19.900	7.9926	2.59	.Q	.	.	.	V	.
19.917	7.9962	2.58	.Q	.	.	.	V	.
19.933	7.9997	2.58	.Q	.	.	.	V	.
19.950	8.0033	2.57	.Q	.	.	.	V	.
19.967	8.0068	2.56	.Q	.	.	.	V	.
19.983	8.0103	2.56	.Q	.	.	.	V	.
20.000	8.0138	2.55	.Q	.	.	.	V	.

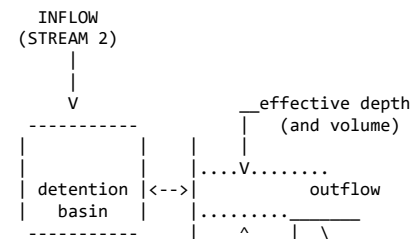
TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
=====	=====
0%	1201.0
10%	475.0
20%	125.0
30%	75.0
40%	55.0
50%	45.0
60%	35.0
70%	25.0
80%	20.0
90%	10.0

FLOW PROCESS FROM NODE 700.00 TO NODE 700.00 IS CODE = 3.2

>>>>FLOW-THROUGH DETENTION BASIN ROUTING MODEL APPLIED TO STREAM #2<<<<

=====



	dead		basin outlet
V	storage		
OUTFLOW	-----		
(STREAM 2)			

ROUTE RUNOFF HYDROGRAPH FROM STREAM NUMBER 2
THROUGH A FLOW-THROUGH DETENTION BASIN

SPECIFIED BASIN CONDITIONS ARE AS FOLLOWS:

DEAD STORAGE(AF) = 0.000
 SPECIFIED DEAD STORAGE(AF) FILLED = 0.000
 SPECIFIED EFFECTIVE VOLUME(AF) FILLED ABOVE OUTLET = 0.000
 DETENTION BASIN CONSTANT LOSS RATE(CFS) = 0.00

BASIN DEPTH VERSUS OUTFLOW AND STORAGE INFORMATION:

INTERVAL NUMBER	DEPTH (FT)	OUTFLOW (CFS)	STORAGE (AF)
1	0.00	0.00	0.000
2	0.25	0.01	0.074
3	0.50	0.02	0.149
4	0.75	0.03	0.250
5	1.00	4.25	0.372
6	1.25	6.02	0.504
7	1.50	7.37	0.644
8	1.75	8.51	0.787
9	2.00	9.51	0.933
10	2.25	10.42	1.078
11	2.50	11.26	1.222
12	2.75	12.03	1.361
13	3.00	12.76	1.586
14	3.25	17.70	1.615
15	3.50	26.12	1.716
16	3.75	36.79	1.791
17	4.00	49.30	1.865
18	4.25	63.37	1.940
19	4.50	78.86	2.014

=====

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

CLOCK TIME (HRS)	DEAD-STORAGE FILLED(AF)	INFLOW (CFS)	LOSS (CFS)	EFFECTIVE DEPTH(FT)	MEAN OUTFLOW (CFS)	EFFECTIVE VOLUME(AF)
------------------------	----------------------------	-----------------	---------------	------------------------	--------------------------	-------------------------

10.000	0.000	2.97	0.00	0.92	2.9	0.332
10.017	0.000	2.97	0.00	0.92	2.9	0.332
10.033	0.000	2.98	0.00	0.92	2.9	0.332
10.050	0.000	2.98	0.00	0.92	2.9	0.333
10.067	0.000	2.99	0.00	0.92	2.9	0.333
10.083	0.000	3.00	0.00	0.92	2.9	0.333
10.100	0.000	3.00	0.00	0.92	2.9	0.333
10.117	0.000	3.01	0.00	0.92	2.9	0.333
10.133	0.000	3.02	0.00	0.92	2.9	0.333
10.150	0.000	3.02	0.00	0.92	2.9	0.333
10.167	0.000	3.02	0.00	0.92	2.9	0.334
10.183	0.000	3.03	0.00	0.92	2.9	0.334
10.200	0.000	3.03	0.00	0.92	2.9	0.334
10.217	0.000	3.04	0.00	0.92	2.9	0.334
10.233	0.000	3.04	0.00	0.92	2.9	0.334
10.250	0.000	3.04	0.00	0.92	2.9	0.334
10.267	0.000	3.05	0.00	0.92	2.9	0.334
10.283	0.000	3.06	0.00	0.92	3.0	0.335
10.300	0.000	3.07	0.00	0.92	3.0	0.335
10.317	0.000	3.07	0.00	0.92	3.0	0.335
10.333	0.000	3.08	0.00	0.92	3.0	0.335
10.350	0.000	3.09	0.00	0.92	3.0	0.335
10.367	0.000	3.09	0.00	0.92	3.0	0.335
10.383	0.000	3.10	0.00	0.93	3.0	0.336
10.400	0.000	3.10	0.00	0.93	3.0	0.336
10.417	0.000	3.11	0.00	0.93	3.0	0.336
10.433	0.000	3.11	0.00	0.93	3.0	0.336
10.450	0.000	3.11	0.00	0.93	3.0	0.336
10.467	0.000	3.12	0.00	0.93	3.0	0.336
10.483	0.000	3.12	0.00	0.93	3.0	0.336
10.500	0.000	3.13	0.00	0.93	3.0	0.337
10.517	0.000	3.14	0.00	0.93	3.0	0.337
10.533	0.000	3.15	0.00	0.93	3.0	0.337
10.550	0.000	3.15	0.00	0.93	3.0	0.337
10.567	0.000	3.16	0.00	0.93	3.0	0.337
10.583	0.000	3.17	0.00	0.93	3.0	0.337
10.600	0.000	3.18	0.00	0.93	3.1	0.338
10.617	0.000	3.18	0.00	0.93	3.1	0.338
10.633	0.000	3.18	0.00	0.93	3.1	0.338
10.650	0.000	3.19	0.00	0.93	3.1	0.338
10.667	0.000	3.19	0.00	0.93	3.1	0.338
10.683	0.000	3.20	0.00	0.93	3.1	0.338
10.700	0.000	3.20	0.00	0.93	3.1	0.338
10.717	0.000	3.21	0.00	0.93	3.1	0.339
10.733	0.000	3.22	0.00	0.93	3.1	0.339
10.750	0.000	3.22	0.00	0.93	3.1	0.339
10.767	0.000	3.23	0.00	0.93	3.1	0.339
10.783	0.000	3.24	0.00	0.93	3.1	0.339
10.800	0.000	3.25	0.00	0.93	3.1	0.339
10.817	0.000	3.26	0.00	0.93	3.1	0.340

10.833	0.000	3.26	0.00	0.93	3.1	0.340
10.850	0.000	3.27	0.00	0.93	3.1	0.340
10.867	0.000	3.27	0.00	0.93	3.1	0.340
10.883	0.000	3.28	0.00	0.94	3.2	0.340
10.900	0.000	3.28	0.00	0.94	3.2	0.341
10.917	0.000	3.28	0.00	0.94	3.2	0.341
10.933	0.000	3.29	0.00	0.94	3.2	0.341
10.950	0.000	3.30	0.00	0.94	3.2	0.341
10.967	0.000	3.31	0.00	0.94	3.2	0.341
10.983	0.000	3.32	0.00	0.94	3.2	0.341
11.000	0.000	3.33	0.00	0.94	3.2	0.342
11.017	0.000	3.33	0.00	0.94	3.2	0.342
11.033	0.000	3.34	0.00	0.94	3.2	0.342
11.050	0.000	3.35	0.00	0.94	3.2	0.342
11.067	0.000	3.36	0.00	0.94	3.2	0.342
11.083	0.000	3.36	0.00	0.94	3.2	0.342
11.100	0.000	3.37	0.00	0.94	3.2	0.343
11.117	0.000	3.37	0.00	0.94	3.2	0.343
11.133	0.000	3.38	0.00	0.94	3.2	0.343
11.150	0.000	3.38	0.00	0.94	3.3	0.343
11.167	0.000	3.39	0.00	0.94	3.3	0.343
11.183	0.000	3.40	0.00	0.94	3.3	0.344
11.200	0.000	3.41	0.00	0.94	3.3	0.344
11.217	0.000	3.42	0.00	0.94	3.3	0.344
11.233	0.000	3.42	0.00	0.94	3.3	0.344
11.250	0.000	3.43	0.00	0.94	3.3	0.344
11.267	0.000	3.44	0.00	0.94	3.3	0.345
11.283	0.000	3.45	0.00	0.94	3.3	0.345
11.300	0.000	3.46	0.00	0.94	3.3	0.345
11.317	0.000	3.46	0.00	0.94	3.3	0.345
11.333	0.000	3.47	0.00	0.95	3.3	0.345
11.350	0.000	3.47	0.00	0.95	3.3	0.346
11.367	0.000	3.48	0.00	0.95	3.3	0.346
11.383	0.000	3.48	0.00	0.95	3.3	0.346
11.400	0.000	3.49	0.00	0.95	3.4	0.346
11.417	0.000	3.50	0.00	0.95	3.4	0.346
11.433	0.000	3.51	0.00	0.95	3.4	0.347
11.450	0.000	3.52	0.00	0.95	3.4	0.347
11.467	0.000	3.53	0.00	0.95	3.4	0.347
11.483	0.000	3.54	0.00	0.95	3.4	0.347
11.500	0.000	3.55	0.00	0.95	3.4	0.347
11.517	0.000	3.56	0.00	0.95	3.4	0.348
11.533	0.000	3.57	0.00	0.95	3.4	0.348
11.550	0.000	3.57	0.00	0.95	3.4	0.348
11.567	0.000	3.58	0.00	0.95	3.4	0.348
11.583	0.000	3.58	0.00	0.95	3.4	0.348
11.600	0.000	3.59	0.00	0.95	3.4	0.349
11.617	0.000	3.60	0.00	0.95	3.4	0.349
11.633	0.000	3.60	0.00	0.95	3.5	0.349
11.650	0.000	3.62	0.00	0.95	3.5	0.349

11.667	0.000	3.63	0.00	0.95	3.5	0.349
11.683	0.000	3.64	0.00	0.95	3.5	0.350
11.700	0.000	3.65	0.00	0.95	3.5	0.350
11.717	0.000	3.66	0.00	0.96	3.5	0.350
11.733	0.000	3.67	0.00	0.96	3.5	0.350
11.750	0.000	3.68	0.00	0.96	3.5	0.351
11.767	0.000	3.69	0.00	0.96	3.5	0.351
11.783	0.000	3.69	0.00	0.96	3.5	0.351
11.800	0.000	3.70	0.00	0.96	3.5	0.351
11.817	0.000	3.70	0.00	0.96	3.5	0.352
11.833	0.000	3.71	0.00	0.96	3.5	0.352
11.850	0.000	3.72	0.00	0.96	3.6	0.352
11.867	0.000	3.73	0.00	0.96	3.6	0.352
11.883	0.000	3.74	0.00	0.96	3.6	0.352
11.900	0.000	3.75	0.00	0.96	3.6	0.353
11.917	0.000	3.76	0.00	0.96	3.6	0.353
11.933	0.000	3.78	0.00	0.96	3.6	0.353
11.950	0.000	3.79	0.00	0.96	3.6	0.353
11.967	0.000	3.80	0.00	0.96	3.6	0.354
11.983	0.000	3.81	0.00	0.96	3.6	0.354
12.000	0.000	3.82	0.00	0.96	3.6	0.354
12.017	0.000	3.83	0.00	0.96	3.6	0.355
12.033	0.000	3.84	0.00	0.96	3.7	0.355
12.050	0.000	3.85	0.00	0.97	3.7	0.355
12.067	0.000	3.86	0.00	0.97	3.7	0.355
12.083	0.000	3.88	0.00	0.97	3.7	0.356
12.100	0.000	3.99	0.00	0.97	3.7	0.356
12.117	0.000	4.15	0.00	0.97	3.7	0.357
12.133	0.000	4.30	0.00	0.97	3.7	0.357
12.150	0.000	4.46	0.00	0.97	3.8	0.358
12.167	0.000	4.61	0.00	0.97	3.8	0.359
12.183	0.000	4.77	0.00	0.98	3.8	0.361
12.200	0.000	4.91	0.00	0.98	3.9	0.362
12.217	0.000	4.95	0.00	0.98	3.9	0.364
12.233	0.000	4.96	0.00	0.99	4.0	0.365
12.250	0.000	4.96	0.00	0.99	4.0	0.366
12.267	0.000	4.97	0.00	0.99	4.1	0.367
12.283	0.000	4.98	0.00	0.99	4.1	0.369
12.300	0.000	4.99	0.00	1.00	4.2	0.370
12.317	0.000	4.99	0.00	1.00	4.2	0.371
12.333	0.000	5.01	0.00	1.00	4.2	0.372
12.350	0.000	5.02	0.00	1.00	4.3	0.373
12.367	0.000	5.04	0.00	1.00	4.3	0.374
12.383	0.000	5.06	0.00	1.01	4.3	0.375
12.400	0.000	5.07	0.00	1.01	4.3	0.376
12.417	0.000	5.09	0.00	1.01	4.3	0.377
12.433	0.000	5.10	0.00	1.01	4.3	0.378
12.450	0.000	5.11	0.00	1.01	4.3	0.379
12.467	0.000	5.12	0.00	1.02	4.4	0.380
12.483	0.000	5.13	0.00	1.02	4.4	0.381

12.500	0.000	5.14	0.00	1.02	4.4	0.383
12.517	0.000	5.15	0.00	1.02	4.4	0.384
12.533	0.000	5.16	0.00	1.02	4.4	0.385
12.550	0.000	5.17	0.00	1.03	4.4	0.386
12.567	0.000	5.18	0.00	1.03	4.4	0.387
12.583	0.000	5.20	0.00	1.03	4.5	0.388
12.600	0.000	5.22	0.00	1.03	4.5	0.389
12.617	0.000	5.24	0.00	1.03	4.5	0.390
12.633	0.000	5.25	0.00	1.04	4.5	0.391
12.650	0.000	5.27	0.00	1.04	4.5	0.392
12.667	0.000	5.29	0.00	1.04	4.5	0.393
12.683	0.000	5.30	0.00	1.04	4.5	0.394
12.700	0.000	5.31	0.00	1.04	4.6	0.395
12.717	0.000	5.31	0.00	1.05	4.6	0.396
12.733	0.000	5.32	0.00	1.05	4.6	0.397
12.750	0.000	5.33	0.00	1.05	4.6	0.398
12.767	0.000	5.34	0.00	1.05	4.6	0.399
12.783	0.000	5.35	0.00	1.05	4.6	0.400
12.800	0.000	5.37	0.00	1.06	4.6	0.401
12.817	0.000	5.39	0.00	1.06	4.6	0.402
12.833	0.000	5.41	0.00	1.06	4.7	0.403
12.850	0.000	5.43	0.00	1.06	4.7	0.404
12.867	0.000	5.45	0.00	1.06	4.7	0.405
12.883	0.000	5.47	0.00	1.07	4.7	0.406
12.900	0.000	5.49	0.00	1.07	4.7	0.407
12.917	0.000	5.50	0.00	1.07	4.7	0.408
12.933	0.000	5.51	0.00	1.07	4.7	0.410
12.950	0.000	5.52	0.00	1.07	4.8	0.411
12.967	0.000	5.53	0.00	1.07	4.8	0.412
12.983	0.000	5.54	0.00	1.08	4.8	0.413
13.000	0.000	5.55	0.00	1.08	4.8	0.414
13.017	0.000	5.57	0.00	1.08	4.8	0.415
13.033	0.000	5.59	0.00	1.08	4.8	0.416
13.050	0.000	5.61	0.00	1.08	4.8	0.417
13.067	0.000	5.63	0.00	1.09	4.9	0.418
13.083	0.000	5.65	0.00	1.09	4.9	0.419
13.100	0.000	5.68	0.00	1.09	4.9	0.420
13.117	0.000	5.70	0.00	1.09	4.9	0.421
13.133	0.000	5.71	0.00	1.10	4.9	0.422
13.150	0.000	5.73	0.00	1.10	4.9	0.423
13.167	0.000	5.74	0.00	1.10	4.9	0.424
13.183	0.000	5.75	0.00	1.10	5.0	0.426
13.200	0.000	5.76	0.00	1.10	5.0	0.427
13.217	0.000	5.77	0.00	1.11	5.0	0.428
13.233	0.000	5.78	0.00	1.11	5.0	0.429
13.250	0.000	5.80	0.00	1.11	5.0	0.430
13.267	0.000	5.83	0.00	1.11	5.0	0.431
13.283	0.000	5.85	0.00	1.11	5.0	0.432
13.300	0.000	5.88	0.00	1.12	5.1	0.433
13.317	0.000	5.90	0.00	1.12	5.1	0.434

13.333	0.000	5.93	0.00	1.12	5.1	0.435
13.350	0.000	5.95	0.00	1.12	5.1	0.437
13.367	0.000	5.97	0.00	1.12	5.1	0.438
13.383	0.000	5.98	0.00	1.13	5.1	0.439
13.400	0.000	6.00	0.00	1.13	5.2	0.440
13.417	0.000	6.01	0.00	1.13	5.2	0.441
13.433	0.000	6.02	0.00	1.13	5.2	0.442
13.450	0.000	6.04	0.00	1.14	5.2	0.444
13.467	0.000	6.05	0.00	1.14	5.2	0.445
13.483	0.000	6.07	0.00	1.14	5.2	0.446
13.500	0.000	6.10	0.00	1.14	5.2	0.447
13.517	0.000	6.13	0.00	1.14	5.3	0.448
13.533	0.000	6.16	0.00	1.15	5.3	0.449
13.550	0.000	6.19	0.00	1.15	5.3	0.451
13.567	0.000	6.21	0.00	1.15	5.3	0.452
13.583	0.000	6.24	0.00	1.15	5.3	0.453
13.600	0.000	6.26	0.00	1.16	5.3	0.454
13.617	0.000	6.28	0.00	1.16	5.4	0.456
13.633	0.000	6.29	0.00	1.16	5.4	0.457
13.650	0.000	6.31	0.00	1.16	5.4	0.458
13.667	0.000	6.32	0.00	1.17	5.4	0.459
13.683	0.000	6.34	0.00	1.17	5.4	0.461
13.700	0.000	6.35	0.00	1.17	5.4	0.462
13.717	0.000	6.38	0.00	1.17	5.5	0.463
13.733	0.000	6.41	0.00	1.18	5.5	0.465
13.750	0.000	6.45	0.00	1.18	5.5	0.466
13.767	0.000	6.48	0.00	1.18	5.5	0.467
13.783	0.000	6.51	0.00	1.18	5.5	0.469
13.800	0.000	6.55	0.00	1.19	5.6	0.470
13.817	0.000	6.58	0.00	1.19	5.6	0.471
13.833	0.000	6.60	0.00	1.19	5.6	0.473
13.850	0.000	6.61	0.00	1.19	5.6	0.474
13.867	0.000	6.63	0.00	1.20	5.6	0.475
13.883	0.000	6.65	0.00	1.20	5.6	0.477
13.900	0.000	6.67	0.00	1.20	5.7	0.478
13.917	0.000	6.68	0.00	1.20	5.7	0.480
13.933	0.000	6.70	0.00	1.21	5.7	0.481
13.950	0.000	6.74	0.00	1.21	5.7	0.482
13.967	0.000	6.78	0.00	1.21	5.7	0.484
13.983	0.000	6.82	0.00	1.21	5.8	0.485
14.000	0.000	6.86	0.00	1.22	5.8	0.487
14.017	0.000	6.89	0.00	1.22	5.8	0.488
14.033	0.000	6.93	0.00	1.22	5.8	0.490
14.050	0.000	6.97	0.00	1.23	5.8	0.491
14.067	0.000	7.00	0.00	1.23	5.9	0.493
14.083	0.000	7.02	0.00	1.23	5.9	0.495
14.100	0.000	7.05	0.00	1.24	5.9	0.496
14.117	0.000	7.07	0.00	1.24	5.9	0.498
14.133	0.000	7.10	0.00	1.24	5.9	0.499
14.150	0.000	7.13	0.00	1.24	6.0	0.501

14.167	0.000	7.16	0.00	1.25	6.0	0.502
14.183	0.000	7.20	0.00	1.25	6.0	0.504
14.200	0.000	7.25	0.00	1.25	6.0	0.506
14.217	0.000	7.29	0.00	1.26	6.0	0.508
14.233	0.000	7.34	0.00	1.26	6.1	0.509
14.250	0.000	7.39	0.00	1.26	6.1	0.511
14.267	0.000	7.43	0.00	1.27	6.1	0.513
14.283	0.000	7.47	0.00	1.27	6.1	0.515
14.300	0.000	7.50	0.00	1.27	6.1	0.517
14.317	0.000	7.52	0.00	1.28	6.1	0.519
14.333	0.000	7.55	0.00	1.28	6.2	0.520
14.350	0.000	7.57	0.00	1.28	6.2	0.522
14.367	0.000	7.60	0.00	1.29	6.2	0.524
14.383	0.000	7.62	0.00	1.29	6.2	0.526
14.400	0.000	7.66	0.00	1.29	6.2	0.528
14.417	0.000	7.71	0.00	1.30	6.3	0.530
14.433	0.000	7.77	0.00	1.30	6.3	0.532
14.450	0.000	7.83	0.00	1.30	6.3	0.534
14.467	0.000	7.88	0.00	1.31	6.3	0.536
14.483	0.000	7.94	0.00	1.31	6.3	0.539
14.500	0.000	7.99	0.00	1.32	6.4	0.541
14.517	0.000	8.04	0.00	1.32	6.4	0.543
14.533	0.000	8.07	0.00	1.32	6.4	0.546
14.550	0.000	8.10	0.00	1.33	6.4	0.548
14.567	0.000	8.13	0.00	1.33	6.5	0.550
14.583	0.000	8.16	0.00	1.34	6.5	0.552
14.600	0.000	8.19	0.00	1.34	6.5	0.555
14.617	0.000	8.22	0.00	1.34	6.5	0.557
14.633	0.000	8.28	0.00	1.35	6.5	0.560
14.650	0.000	8.35	0.00	1.35	6.6	0.562
14.667	0.000	8.42	0.00	1.36	6.6	0.565
14.683	0.000	8.49	0.00	1.36	6.6	0.567
14.700	0.000	8.56	0.00	1.37	6.6	0.570
14.717	0.000	8.63	0.00	1.37	6.7	0.572
14.733	0.000	8.70	0.00	1.38	6.7	0.575
14.750	0.000	8.75	0.00	1.38	6.7	0.578
14.767	0.000	8.79	0.00	1.39	6.7	0.581
14.783	0.000	8.83	0.00	1.39	6.8	0.584
14.800	0.000	8.87	0.00	1.40	6.8	0.586
14.817	0.000	8.91	0.00	1.40	6.8	0.589
14.833	0.000	8.95	0.00	1.41	6.9	0.592
14.850	0.000	8.99	0.00	1.41	6.9	0.595
14.867	0.000	9.07	0.00	1.42	6.9	0.598
14.883	0.000	9.16	0.00	1.42	6.9	0.601
14.900	0.000	9.25	0.00	1.43	7.0	0.604
14.917	0.000	9.34	0.00	1.43	7.0	0.608
14.933	0.000	9.44	0.00	1.44	7.0	0.611
14.950	0.000	9.53	0.00	1.45	7.1	0.614
14.967	0.000	9.62	0.00	1.45	7.1	0.618
14.983	0.000	9.68	0.00	1.46	7.1	0.621

15.000	0.000	9.74	0.00	1.47	7.2	0.625
15.017	0.000	9.79	0.00	1.47	7.2	0.628
15.033	0.000	9.84	0.00	1.48	7.2	0.632
15.050	0.000	9.90	0.00	1.48	7.3	0.636
15.067	0.000	9.95	0.00	1.49	7.3	0.639
15.083	0.000	10.01	0.00	1.50	7.3	0.643
15.100	0.000	10.12	0.00	1.50	7.4	0.647
15.117	0.000	10.25	0.00	1.51	7.4	0.651
15.133	0.000	10.38	0.00	1.52	7.4	0.655
15.150	0.000	10.51	0.00	1.53	7.5	0.659
15.167	0.000	10.64	0.00	1.53	7.5	0.663
15.183	0.000	10.77	0.00	1.54	7.5	0.668
15.200	0.000	10.89	0.00	1.55	7.6	0.672
15.217	0.000	10.98	0.00	1.56	7.6	0.677
15.233	0.000	11.05	0.00	1.57	7.6	0.681
15.250	0.000	11.13	0.00	1.57	7.7	0.686
15.267	0.000	11.21	0.00	1.58	7.7	0.691
15.283	0.000	11.29	0.00	1.59	7.8	0.696
15.300	0.000	11.36	0.00	1.60	7.8	0.701
15.317	0.000	11.44	0.00	1.61	7.8	0.706
15.333	0.000	11.49	0.00	1.62	7.9	0.711
15.350	0.000	11.53	0.00	1.63	7.9	0.716
15.367	0.000	11.57	0.00	1.63	8.0	0.721
15.383	0.000	11.62	0.00	1.64	8.0	0.726
15.400	0.000	11.66	0.00	1.65	8.0	0.731
15.417	0.000	11.70	0.00	1.66	8.1	0.736
15.433	0.000	11.75	0.00	1.67	8.1	0.741
15.450	0.000	11.80	0.00	1.68	8.2	0.746
15.467	0.000	11.85	0.00	1.69	8.2	0.751
15.483	0.000	11.90	0.00	1.70	8.2	0.756
15.500	0.000	11.95	0.00	1.70	8.3	0.761
15.517	0.000	12.00	0.00	1.71	8.3	0.766
15.533	0.000	12.05	0.00	1.72	8.4	0.771
15.550	0.000	12.17	0.00	1.73	8.4	0.776
15.567	0.000	12.50	0.00	1.74	8.4	0.782
15.583	0.000	12.86	0.00	1.75	8.5	0.788
15.600	0.000	13.21	0.00	1.76	8.5	0.794
15.617	0.000	13.57	0.00	1.77	8.6	0.801
15.633	0.000	13.92	0.00	1.79	8.6	0.808
15.650	0.000	14.28	0.00	1.80	8.7	0.816
15.667	0.000	14.61	0.00	1.81	8.7	0.824
15.683	0.000	14.89	0.00	1.83	8.8	0.832
15.700	0.000	15.17	0.00	1.84	8.9	0.841
15.717	0.000	15.44	0.00	1.86	8.9	0.850
15.733	0.000	15.72	0.00	1.87	9.0	0.859
15.750	0.000	16.00	0.00	1.89	9.0	0.869
15.767	0.000	16.28	0.00	1.91	9.1	0.879
15.783	0.000	16.82	0.00	1.93	9.2	0.889
15.800	0.000	17.85	0.00	1.95	9.3	0.901
15.817	0.000	18.89	0.00	1.97	9.3	0.914

15.833	0.000	19.93	0.00	1.99	9.4	0.929
15.850	0.000	20.96	0.00	2.02	9.5	0.945
15.867	0.000	22.00	0.00	2.05	9.6	0.962
15.883	0.000	23.04	0.00	2.08	9.7	0.980
15.900	0.000	24.18	0.00	2.11	9.9	1.000
15.917	0.000	25.46	0.00	2.15	10.0	1.021
15.933	0.000	26.74	0.00	2.19	10.1	1.044
15.950	0.000	28.02	0.00	2.23	10.3	1.068
15.967	0.000	29.30	0.00	2.28	10.4	1.094
15.983	0.000	30.58	0.00	2.33	10.6	1.122
16.000	0.000	31.86	0.00	2.38	10.8	1.151
16.017	0.000	37.32	0.00	2.44	10.9	1.187
16.033	0.000	46.95	0.00	2.53	11.2	1.236
16.050	0.000	56.59	0.00	2.64	11.5	1.298
16.067	0.000	66.23	0.00	2.76	11.9	1.373
16.083	0.000	75.87	0.00	2.86	12.2	1.461
16.100	0.000	85.51	0.00	2.97	12.5	1.562
16.117	0.000	99.20	0.00	3.40	17.6	1.674
16.133	0.000	92.49	0.00	3.66	27.7	1.763
16.150	0.000	80.94	0.00	3.86	37.5	1.823
16.167	0.000	69.39	0.00	3.97	45.0	1.857
16.183	0.000	57.83	0.00	4.01	48.9	1.869
16.200	0.000	46.28	0.00	4.00	49.6	1.864
16.217	0.000	34.72	0.00	3.94	47.7	1.846
16.233	0.000	23.30	0.00	3.84	43.8	1.818
16.250	0.000	18.66	0.00	3.75	39.0	1.790
16.267	0.000	17.78	0.00	3.67	35.0	1.766
16.283	0.000	16.90	0.00	3.60	31.8	1.746
16.300	0.000	16.02	0.00	3.54	29.1	1.728
16.317	0.000	15.14	0.00	3.49	26.8	1.712
16.333	0.000	14.26	0.00	3.45	25.1	1.697
16.350	0.000	13.40	0.00	3.42	23.9	1.682
16.367	0.000	13.03	0.00	3.38	22.8	1.669
16.383	0.000	12.88	0.00	3.35	21.7	1.657
16.400	0.000	12.72	0.00	3.33	20.7	1.646
16.417	0.000	12.56	0.00	3.30	19.8	1.636
16.433	0.000	12.41	0.00	3.28	19.0	1.627
16.450	0.000	12.25	0.00	3.26	18.3	1.618
16.467	0.000	12.09	0.00	3.21	17.5	1.611
16.483	0.000	11.87	0.00	3.16	16.5	1.605
16.500	0.000	11.64	0.00	3.11	15.5	1.599
16.517	0.000	11.40	0.00	3.08	14.6	1.595
16.533	0.000	11.16	0.00	3.04	13.9	1.591
16.550	0.000	10.93	0.00	3.01	13.3	1.588
16.567	0.000	10.69	0.00	3.00	12.9	1.585
16.583	0.000	10.46	0.00	2.99	12.8	1.581
16.600	0.000	10.28	0.00	2.99	12.7	1.578
16.617	0.000	10.12	0.00	2.99	12.7	1.574
16.633	0.000	9.96	0.00	2.98	12.7	1.571
16.650	0.000	9.80	0.00	2.98	12.7	1.567

16.667	0.000	9.63	0.00	2.97	12.7	1.562
16.683	0.000	9.47	0.00	2.97	12.7	1.558
16.700	0.000	9.31	0.00	2.96	12.7	1.553
16.717	0.000	9.19	0.00	2.96	12.6	1.549
16.733	0.000	9.07	0.00	2.95	12.6	1.544
16.750	0.000	8.95	0.00	2.95	12.6	1.539
16.767	0.000	8.83	0.00	2.94	12.6	1.533
16.783	0.000	8.71	0.00	2.94	12.6	1.528
16.800	0.000	8.59	0.00	2.93	12.6	1.523
16.817	0.000	8.47	0.00	2.92	12.5	1.517
16.833	0.000	8.37	0.00	2.92	12.5	1.511
16.850	0.000	8.28	0.00	2.91	12.5	1.505
16.867	0.000	8.19	0.00	2.90	12.5	1.500
16.883	0.000	8.09	0.00	2.90	12.5	1.494
16.900	0.000	8.00	0.00	2.89	12.5	1.487
16.917	0.000	7.90	0.00	2.88	12.4	1.481
16.933	0.000	7.81	0.00	2.88	12.4	1.475
16.950	0.000	7.74	0.00	2.87	12.4	1.468
16.967	0.000	7.66	0.00	2.86	12.4	1.462
16.983	0.000	7.59	0.00	2.85	12.3	1.455
17.000	0.000	7.51	0.00	2.85	12.3	1.449
17.017	0.000	7.43	0.00	2.84	12.3	1.442
17.033	0.000	7.36	0.00	2.83	12.3	1.435
17.050	0.000	7.29	0.00	2.82	12.3	1.428
17.067	0.000	7.22	0.00	2.82	12.2	1.421
17.083	0.000	7.15	0.00	2.81	12.2	1.414
17.100	0.000	7.08	0.00	2.80	12.2	1.407
17.117	0.000	7.01	0.00	2.79	12.2	1.400
17.133	0.000	6.94	0.00	2.79	12.1	1.393
17.150	0.000	6.88	0.00	2.78	12.1	1.386
17.167	0.000	6.81	0.00	2.77	12.1	1.379
17.183	0.000	6.76	0.00	2.76	12.1	1.371
17.200	0.000	6.71	0.00	2.75	12.1	1.364
17.217	0.000	6.65	0.00	2.74	12.0	1.357
17.233	0.000	6.60	0.00	2.73	12.0	1.349
17.250	0.000	6.55	0.00	2.72	11.9	1.342
17.267	0.000	6.50	0.00	2.70	11.9	1.334
17.283	0.000	6.45	0.00	2.69	11.9	1.327
17.300	0.000	6.40	0.00	2.68	11.8	1.319
17.317	0.000	6.35	0.00	2.66	11.8	1.312
17.333	0.000	6.31	0.00	2.65	11.7	1.304
17.350	0.000	6.26	0.00	2.63	11.7	1.297
17.367	0.000	6.22	0.00	2.62	11.7	1.289
17.383	0.000	6.17	0.00	2.61	11.6	1.282
17.400	0.000	6.13	0.00	2.59	11.6	1.274
17.417	0.000	6.09	0.00	2.58	11.5	1.267
17.433	0.000	6.05	0.00	2.57	11.5	1.260
17.450	0.000	6.01	0.00	2.55	11.4	1.252
17.467	0.000	5.97	0.00	2.54	11.4	1.245
17.483	0.000	5.93	0.00	2.53	11.4	1.237

17.500	0.000	5.89	0.00	2.51	11.3	1.230
17.517	0.000	5.85	0.00	2.50	11.3	1.222
17.533	0.000	5.82	0.00	2.49	11.2	1.215
17.550	0.000	5.78	0.00	2.47	11.2	1.207
17.567	0.000	5.75	0.00	2.46	11.1	1.200
17.583	0.000	5.71	0.00	2.45	11.1	1.192
17.600	0.000	5.68	0.00	2.44	11.1	1.185
17.617	0.000	5.64	0.00	2.42	11.0	1.178
17.633	0.000	5.61	0.00	2.41	11.0	1.170
17.650	0.000	5.58	0.00	2.40	10.9	1.163
17.667	0.000	5.55	0.00	2.38	10.9	1.155
17.683	0.000	5.52	0.00	2.37	10.8	1.148
17.700	0.000	5.49	0.00	2.36	10.8	1.141
17.717	0.000	5.46	0.00	2.35	10.8	1.133
17.733	0.000	5.43	0.00	2.33	10.7	1.126
17.750	0.000	5.40	0.00	2.32	10.7	1.119
17.767	0.000	5.37	0.00	2.31	10.6	1.112
17.783	0.000	5.34	0.00	2.30	10.6	1.104
17.800	0.000	5.31	0.00	2.28	10.6	1.097
17.817	0.000	5.28	0.00	2.27	10.5	1.090
17.833	0.000	5.26	0.00	2.26	10.5	1.083
17.850	0.000	5.23	0.00	2.25	10.4	1.076
17.867	0.000	5.20	0.00	2.23	10.4	1.069
17.883	0.000	5.18	0.00	2.22	10.3	1.061
17.900	0.000	5.15	0.00	2.21	10.3	1.054
17.917	0.000	5.13	0.00	2.20	10.2	1.047
17.933	0.000	5.10	0.00	2.18	10.2	1.040
17.950	0.000	5.08	0.00	2.17	10.2	1.033
17.967	0.000	5.05	0.00	2.16	10.1	1.026
17.983	0.000	5.03	0.00	2.15	10.1	1.019
18.000	0.000	5.01	0.00	2.14	10.0	1.012
18.017	0.000	4.98	0.00	2.12	10.0	1.005
18.033	0.000	4.96	0.00	2.11	9.9	0.999
18.050	0.000	4.94	0.00	2.10	9.9	0.992
18.067	0.000	4.91	0.00	2.09	9.9	0.985
18.083	0.000	4.88	0.00	2.08	9.8	0.978
18.100	0.000	4.74	0.00	2.07	9.8	0.971
18.117	0.000	4.57	0.00	2.05	9.7	0.964
18.133	0.000	4.41	0.00	2.04	9.7	0.957
18.150	0.000	4.25	0.00	2.03	9.6	0.949
18.167	0.000	4.08	0.00	2.02	9.6	0.942
18.183	0.000	3.92	0.00	2.00	9.5	0.934
18.200	0.000	3.78	0.00	1.99	9.5	0.926
18.217	0.000	3.74	0.00	1.97	9.4	0.918
18.233	0.000	3.73	0.00	1.96	9.4	0.911
18.250	0.000	3.71	0.00	1.95	9.3	0.903
18.267	0.000	3.69	0.00	1.94	9.3	0.895
18.283	0.000	3.67	0.00	1.92	9.2	0.887
18.300	0.000	3.65	0.00	1.91	9.2	0.880
18.317	0.000	3.64	0.00	1.90	9.1	0.872

18.333	0.000	3.62	0.00	1.88	9.1	0.865
18.350	0.000	3.60	0.00	1.87	9.0	0.857
18.367	0.000	3.59	0.00	1.86	9.0	0.850
18.383	0.000	3.57	0.00	1.85	8.9	0.843
18.400	0.000	3.55	0.00	1.83	8.9	0.835
18.417	0.000	3.54	0.00	1.82	8.8	0.828
18.433	0.000	3.52	0.00	1.81	8.8	0.821
18.450	0.000	3.51	0.00	1.80	8.7	0.814
18.467	0.000	3.49	0.00	1.78	8.7	0.806
18.483	0.000	3.47	0.00	1.77	8.6	0.799
18.500	0.000	3.46	0.00	1.76	8.6	0.792
18.517	0.000	3.44	0.00	1.75	8.5	0.785
18.533	0.000	3.43	0.00	1.73	8.5	0.778
18.550	0.000	3.41	0.00	1.72	8.4	0.772
18.567	0.000	3.40	0.00	1.71	8.4	0.765
18.583	0.000	3.39	0.00	1.70	8.3	0.758
18.600	0.000	3.37	0.00	1.69	8.3	0.751
18.617	0.000	3.36	0.00	1.68	8.2	0.745
18.633	0.000	3.34	0.00	1.66	8.1	0.738
18.650	0.000	3.33	0.00	1.65	8.1	0.731
18.667	0.000	3.32	0.00	1.64	8.0	0.725
18.683	0.000	3.30	0.00	1.63	8.0	0.718
18.700	0.000	3.29	0.00	1.62	7.9	0.712
18.717	0.000	3.28	0.00	1.61	7.9	0.706
18.733	0.000	3.26	0.00	1.60	7.8	0.699
18.750	0.000	3.25	0.00	1.59	7.8	0.693
18.767	0.000	3.24	0.00	1.58	7.7	0.687
18.783	0.000	3.22	0.00	1.56	7.7	0.681
18.800	0.000	3.21	0.00	1.55	7.6	0.675
18.817	0.000	3.20	0.00	1.54	7.6	0.669
18.833	0.000	3.19	0.00	1.53	7.5	0.663
18.850	0.000	3.18	0.00	1.52	7.5	0.657
18.867	0.000	3.16	0.00	1.51	7.4	0.651
18.883	0.000	3.15	0.00	1.50	7.4	0.645
18.900	0.000	3.14	0.00	1.49	7.3	0.639
18.917	0.000	3.13	0.00	1.48	7.3	0.633
18.933	0.000	3.12	0.00	1.47	7.2	0.628
18.950	0.000	3.10	0.00	1.46	7.2	0.622
18.967	0.000	3.09	0.00	1.45	7.1	0.617
18.983	0.000	3.08	0.00	1.44	7.1	0.611
19.000	0.000	3.07	0.00	1.43	7.0	0.606
19.017	0.000	3.06	0.00	1.42	7.0	0.600
19.033	0.000	3.05	0.00	1.41	6.9	0.595
19.050	0.000	3.04	0.00	1.40	6.9	0.590
19.067	0.000	3.03	0.00	1.39	6.8	0.584
19.083	0.000	3.02	0.00	1.38	6.8	0.579
19.100	0.000	3.01	0.00	1.38	6.7	0.574
19.117	0.000	3.00	0.00	1.37	6.7	0.569
19.133	0.000	2.99	0.00	1.36	6.6	0.564
19.150	0.000	2.98	0.00	1.35	6.6	0.559

19.167	0.000	2.97	0.00	1.34	6.5	0.554
19.183	0.000	2.95	0.00	1.33	6.5	0.549
19.200	0.000	2.94	0.00	1.32	6.4	0.544
19.217	0.000	2.93	0.00	1.31	6.4	0.540
19.233	0.000	2.92	0.00	1.31	6.3	0.535
19.250	0.000	2.92	0.00	1.30	6.3	0.530
19.267	0.000	2.91	0.00	1.29	6.2	0.526
19.283	0.000	2.90	0.00	1.28	6.2	0.521
19.300	0.000	2.89	0.00	1.27	6.2	0.517
19.317	0.000	2.88	0.00	1.26	6.1	0.512
19.333	0.000	2.87	0.00	1.26	6.1	0.508
19.350	0.000	2.86	0.00	1.25	6.0	0.503
19.367	0.000	2.85	0.00	1.24	6.0	0.499
19.383	0.000	2.84	0.00	1.23	5.9	0.495
19.400	0.000	2.83	0.00	1.22	5.9	0.491
19.417	0.000	2.82	0.00	1.22	5.8	0.487
19.433	0.000	2.81	0.00	1.21	5.8	0.483
19.450	0.000	2.80	0.00	1.20	5.7	0.479
19.467	0.000	2.80	0.00	1.19	5.6	0.475
19.483	0.000	2.79	0.00	1.19	5.6	0.471
19.500	0.000	2.78	0.00	1.18	5.5	0.467
19.517	0.000	2.77	0.00	1.17	5.5	0.463
19.533	0.000	2.76	0.00	1.17	5.4	0.459
19.550	0.000	2.75	0.00	1.16	5.4	0.456
19.567	0.000	2.74	0.00	1.15	5.3	0.452
19.583	0.000	2.74	0.00	1.15	5.3	0.449
19.600	0.000	2.73	0.00	1.14	5.3	0.445
19.617	0.000	2.72	0.00	1.13	5.2	0.442
19.633	0.000	2.71	0.00	1.13	5.2	0.438
19.650	0.000	2.70	0.00	1.12	5.1	0.435
19.667	0.000	2.70	0.00	1.11	5.1	0.432
19.683	0.000	2.69	0.00	1.11	5.0	0.429
19.700	0.000	2.68	0.00	1.10	5.0	0.425
19.717	0.000	2.67	0.00	1.10	4.9	0.422
19.733	0.000	2.67	0.00	1.09	4.9	0.419
19.750	0.000	2.66	0.00	1.08	4.9	0.416
19.767	0.000	2.65	0.00	1.08	4.8	0.413
19.783	0.000	2.64	0.00	1.07	4.8	0.410
19.800	0.000	2.63	0.00	1.07	4.7	0.407
19.817	0.000	2.63	0.00	1.06	4.7	0.404
19.833	0.000	2.62	0.00	1.06	4.7	0.402
19.850	0.000	2.61	0.00	1.05	4.6	0.399
19.867	0.000	2.61	0.00	1.05	4.6	0.396
19.883	0.000	2.60	0.00	1.04	4.6	0.393
19.900	0.000	2.59	0.00	1.04	4.5	0.391
19.917	0.000	2.58	0.00	1.03	4.5	0.388
19.933	0.000	2.58	0.00	1.03	4.4	0.386
19.950	0.000	2.57	0.00	1.02	4.4	0.383
19.967	0.000	2.56	0.00	1.02	4.4	0.381
19.983	0.000	2.56	0.00	1.01	4.3	0.378

20.000	0.000	2.55	0.00	1.01	4.3	0.376
--------	-------	------	------	------	-----	-------

PROCESS SUMMARY OF STORAGE:

INFLOW VOLUME = 8.694 AF

BASIN STORAGE = 0.045 AF (WITH 0.000 AF INITIALLY FILLED)

OUTFLOW VOLUME = 8.649 AF

LOSS VOLUME = 0.000 AF

FLOW PROCESS FROM NODE 290.00 TO NODE 540.00 IS CODE = 1.2

>>>>SUBAREA RUNOFF (SMALL AREA UNIT-HYDROGRAPH ANALYSIS) <<<<

=====

(SMALL AREA UNIT-HYDROGRAPH ADDED TO STREAM #3)

RATIONAL METHOD CALIBRATION COEFFICIENT = 0.90

TOTAL CATCHMENT AREA(ACRES) = 14.79

SOIL-LOSS RATE, Fm,(INCH/HR) = 0.030

LOW LOSS FRACTION = 0.040

TIME OF CONCENTRATION(MIN.) = 6.47

SMALL AREA PEAK Q COMPUTED USING PEAK FLOW RATE FORMULA

ORANGE COUNTY "VALLEY" RAINFALL VALUES ARE USED:

RETURN FREQUENCY(YEARS) = 100

5-MINUTE POINT RAINFALL VALUE(INCHES) = 0.52

30-MINUTE POINT RAINFALL VALUE(INCHES) = 1.09

1-HOUR POINT RAINFALL VALUE(INCHES) = 1.45

3-HOUR POINT RAINFALL VALUE(INCHES) = 2.43

6-HOUR POINT RAINFALL VALUE(INCHES) = 3.36

24-HOUR POINT RAINFALL VALUE(INCHES) = 5.63

TOTAL CATCHMENT RUNOFF VOLUME(ACRE-FEET) = 5.98

TOTAL CATCHMENT SOIL-LOSS VOLUME(ACRE-FEET) = 0.95

↑

=====

2 4 - H O U R S T O R M

R U N O F F H Y D R O G R A P H

=====

HYDROGRAPH IN ONE-MINUTE UNIT INTERVALS(CFS)

(Notes: Time indicated is at END of Each Unit Intervals.

Peak 5-minute rainfall intensity is modeled as

a constant value for entire 5-minute period.)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	17.8	35.5	53.3	71.0
-----------	------------	--------	----	------	------	------	------

10.000 1.1970 2.04 .Q V . . .
10.017 1.1998 2.05 .Q V . . .
10.033 1.2027 2.05 .Q V . . .
10.050 1.2055 2.06 .Q V . . .
10.067 1.2083 2.06 .Q V . . .
10.083 1.2112 2.07 .Q V . . .
10.100 1.2140 2.07 .Q V . . .
10.117 1.2169 2.07 .Q V . . .
10.133 1.2197 2.07 .Q V . . .
10.150 1.2226 2.08 .Q V . . .
10.167 1.2255 2.08 .Q V . . .
10.183 1.2283 2.08 .Q V . . .
10.200 1.2312 2.09 .Q V . . .
10.217 1.2341 2.09 .Q V . . .
10.233 1.2370 2.10 .Q V . . .
10.250 1.2398 2.10 .Q V . . .
10.267 1.2427 2.11 .Q V . . .
10.283 1.2457 2.11 .Q V . . .
10.300 1.2486 2.11 .Q V . . .
10.317 1.2515 2.12 .Q V . . .
10.333 1.2544 2.12 .Q V . . .
10.350 1.2573 2.12 .Q V . . .
10.367 1.2602 2.12 .Q V . . .
10.383 1.2632 2.13 .Q V . . .
10.400 1.2661 2.13 .Q V . . .
10.417 1.2691 2.13 .Q V . . .
10.433 1.2720 2.14 .Q V . . .
10.450 1.2750 2.15 .Q V . . .
10.467 1.2779 2.15 .Q V . . .
10.483 1.2809 2.16 .Q V . . .
10.500 1.2839 2.16 .Q V . . .
10.517 1.2868 2.17 .Q V . . .
10.533 1.2898 2.17 .Q V . . .
10.550 1.2928 2.17 .Q V . . .
10.567 1.2958 2.17 .Q V . . .
10.583 1.2988 2.18 .Q V . . .
10.600 1.3018 2.18 .Q V . . .
10.617 1.3048 2.18 .Q V . . .
10.633 1.3078 2.19 .Q V . . .
10.650 1.3109 2.19 .Q V . . .
10.667 1.3139 2.20 .Q V . . .
10.683 1.3169 2.20 .Q V . . .
10.700 1.3200 2.21 .Q V . . .
10.717 1.3230 2.22 .Q V . . .
10.733 1.3261 2.22 .Q V . . .
10.750 1.3291 2.22 .Q V . . .
10.767 1.3322 2.23 .Q V . . .
10.783 1.3353 2.23 .Q V . . .
10.800 1.3383 2.23 .Q V . . .

10.817 1.3414 2.23 .Q V . . .
10.833 1.3445 2.24 .Q V . . .
10.850 1.3476 2.24 .Q V . . .
10.867 1.3507 2.25 .Q V . . .
10.883 1.3538 2.26 .Q V . . .
10.900 1.3569 2.26 .Q V . . .
10.917 1.3600 2.27 .Q V . . .
10.933 1.3632 2.27 .Q V . . .
10.950 1.3663 2.28 .Q V . . .
10.967 1.3695 2.28 .Q V . . .
10.983 1.3726 2.28 .Q V . . .
11.000 1.3758 2.29 .Q V . . .
11.017 1.3789 2.29 .Q V . . .
11.033 1.3821 2.29 .Q V . . .
11.050 1.3852 2.30 .Q V . . .
11.067 1.3884 2.30 .Q V . . .
11.083 1.3916 2.31 .Q V . . .
11.100 1.3948 2.32 .Q V . . .
11.117 1.3980 2.32 .Q V . . .
11.133 1.4012 2.33 .Q V . . .
11.150 1.4044 2.34 .Q V . . .
11.167 1.4076 2.34 .Q V . . .
11.183 1.4109 2.34 .Q V . . .
11.200 1.4141 2.35 .Q V . . .
11.217 1.4173 2.35 .Q V . . .
11.233 1.4206 2.35 .Q V . . .
11.250 1.4238 2.36 .Q V . . .
11.267 1.4271 2.36 .Q V . . .
11.283 1.4303 2.37 .Q V . . .
11.300 1.4336 2.38 .Q V . . .
11.317 1.4369 2.38 .Q V . . .
11.333 1.4402 2.39 .Q V . . .
11.350 1.4435 2.40 .Q V . . .
11.367 1.4468 2.40 .Q V . . .
11.383 1.4501 2.41 .Q V . . .
11.400 1.4534 2.41 .Q V . . .
11.417 1.4568 2.41 .Q V . . .
11.433 1.4601 2.42 .Q V . . .
11.450 1.4634 2.42 .Q V . . .
11.467 1.4668 2.43 .Q V . . .
11.483 1.4701 2.43 .Q V . . .
11.500 1.4735 2.44 .Q V . . .
11.517 1.4768 2.45 .Q V . . .
11.533 1.4802 2.45 .Q V . . .
11.550 1.4836 2.46 .Q V . . .
11.567 1.4870 2.47 .Q V . . .
11.583 1.4904 2.48 .Q V . . .
11.600 1.4938 2.48 .Q V . . .
11.617 1.4973 2.48 .Q V . . .
11.633 1.5007 2.49 .Q V . . .

11.650	1.5041	2.49	.Q	V	.	.	.
11.667	1.5075	2.50	.Q	V	.	.	.
11.683	1.5110	2.50	.Q	V	.	.	.
11.700	1.5144	2.50	.Q	V	.	.	.
11.717	1.5179	2.51	.Q	V	.	.	.
11.733	1.5214	2.52	.Q	V	.	.	.
11.750	1.5249	2.53	.Q	V	.	.	.
11.767	1.5284	2.54	.Q	V	.	.	.
11.783	1.5319	2.55	.Q	V	.	.	.
11.800	1.5354	2.55	.Q	V	.	.	.
11.817	1.5389	2.56	.Q	V	.	.	.
11.833	1.5424	2.56	.Q	V	.	.	.
11.850	1.5460	2.57	.Q	V	.	.	.
11.867	1.5495	2.57	.Q	V	.	.	.
11.883	1.5531	2.58	.Q	V	.	.	.
11.900	1.5566	2.58	.Q	V	.	.	.
11.917	1.5602	2.59	.Q	V	.	.	.
11.933	1.5637	2.59	.Q	V	.	.	.
11.950	1.5673	2.60	.Q	V	.	.	.
11.967	1.5709	2.61	.Q	V	.	.	.
11.983	1.5745	2.62	.Q	V	.	.	.
12.000	1.5781	2.63	.Q	V	.	.	.
12.017	1.5818	2.64	.Q	V	.	.	.
12.033	1.5855	2.70	.Q	V	.	.	.
12.050	1.5893	2.78	.Q	V	.	.	.
12.067	1.5933	2.85	.Q	V	.	.	.
12.083	1.5973	2.92	.Q	V	.	.	.
12.100	1.6014	2.99	.Q	V	.	.	.
12.117	1.6056	3.06	.Q	V	.	.	.
12.133	1.6099	3.13	.Q	V	.	.	.
12.150	1.6143	3.17	.Q	V	.	.	.
12.167	1.6187	3.22	.Q	V	.	.	.
12.183	1.6232	3.27	.Q	V	.	.	.
12.200	1.6278	3.32	.Q	V	.	.	.
12.217	1.6324	3.37	.Q	V	.	.	.
12.233	1.6371	3.41	.Q	V	.	.	.
12.250	1.6419	3.42	.Q	V	.	.	.
12.267	1.6466	3.43	.Q	.V	.	.	.
12.283	1.6513	3.43	.Q	.V	.	.	.
12.300	1.6560	3.44	.Q	.V	.	.	.
12.317	1.6608	3.44	.Q	.V	.	.	.
12.333	1.6655	3.45	.Q	.V	.	.	.
12.350	1.6703	3.46	.Q	.V	.	.	.
12.367	1.6751	3.47	.Q	.V	.	.	.
12.383	1.6799	3.48	.Q	.V	.	.	.
12.400	1.6847	3.49	.Q	.V	.	.	.
12.417	1.6895	3.50	.Q	.V	.	.	.
12.433	1.6943	3.51	.Q	.V	.	.	.
12.450	1.6992	3.52	.Q	.V	.	.	.
12.467	1.7040	3.53	.Q	.V	.	.	.

12.483	1.7089	3.53	.Q	.V	.	.	.
12.500	1.7138	3.54	.Q	.V	.	.	.
12.517	1.7187	3.55	.Q	.V	.	.	.
12.533	1.7236	3.55	. Q	.V	.	.	.
12.550	1.7285	3.56	. Q	.V	.	.	.
12.567	1.7334	3.57	. Q	.V	.	.	.
12.583	1.7383	3.58	. Q	.V	.	.	.
12.600	1.7432	3.59	. Q	.V	.	.	.
12.617	1.7482	3.60	. Q	.V	.	.	.
12.633	1.7532	3.62	. Q	.V	.	.	.
12.650	1.7582	3.63	. Q	.V	.	.	.
12.667	1.7632	3.64	. Q	.V	.	.	.
12.683	1.7682	3.65	. Q	.V	.	.	.
12.700	1.7733	3.65	. Q	.V	.	.	.
12.717	1.7783	3.66	. Q	.V	.	.	.
12.733	1.7833	3.67	. Q	.V	.	.	.
12.750	1.7884	3.67	. Q	.V	.	.	.
12.767	1.7935	3.68	. Q	.V	.	.	.
12.783	1.7985	3.69	. Q	. V	.	.	.
12.800	1.8036	3.70	. Q	. V	.	.	.
12.817	1.8088	3.72	. Q	. V	.	.	.
12.833	1.8139	3.73	. Q	. V	.	.	.
12.850	1.8191	3.74	. Q	. V	.	.	.
12.867	1.8242	3.76	. Q	. V	.	.	.
12.883	1.8294	3.77	. Q	. V	.	.	.
12.900	1.8346	3.78	. Q	. V	.	.	.
12.917	1.8398	3.78	. Q	. V	.	.	.
12.933	1.8451	3.79	. Q	. V	.	.	.
12.950	1.8503	3.80	. Q	. V	.	.	.
12.967	1.8555	3.80	. Q	. V	.	.	.
12.983	1.8608	3.81	. Q	. V	.	.	.
13.000	1.8660	3.82	. Q	. V	.	.	.
13.017	1.8713	3.84	. Q	. V	.	.	.
13.033	1.8766	3.85	. Q	. V	.	.	.
13.050	1.8820	3.87	. Q	. V	.	.	.
13.067	1.8873	3.88	. Q	. V	.	.	.
13.083	1.8927	3.90	. Q	. V	.	.	.
13.100	1.8981	3.91	. Q	. V	.	.	.
13.117	1.9035	3.92	. Q	. V	.	.	.
13.133	1.9089	3.93	. Q	. V	.	.	.
13.150	1.9143	3.94	. Q	. V	.	.	.
13.167	1.9197	3.94	. Q	. V	.	.	.
13.183	1.9252	3.95	. Q	. V	.	.	.
13.200	1.9306	3.96	. Q	. V	.	.	.
13.217	1.9361	3.97	. Q	. V	.	.	.
13.233	1.9416	3.99	. Q	. V	.	.	.
13.250	1.9471	4.01	. Q	. V	.	.	.
13.267	1.9527	4.02	. Q	. V	.	.	.
13.283	1.9582	4.04	. Q	. V	.	.	.
13.300	1.9638	4.06	. Q	. V	.	.	.

13.317	1.9694	4.07	. Q	. V	.	.	.
13.333	1.9751	4.08	. Q	. V	.	.	.
13.350	1.9807	4.09	. Q	. V	.	.	.
13.367	1.9863	4.10	. Q	. V	.	.	.
13.383	1.9920	4.11	. Q	. V	.	.	.
13.400	1.9977	4.12	. Q	. V	.	.	.
13.417	2.0034	4.13	. Q	. V	.	.	.
13.433	2.0091	4.14	. Q	. V	.	.	.
13.450	2.0148	4.16	. Q	. V	.	.	.
13.467	2.0206	4.18	. Q	. V	.	.	.
13.483	2.0263	4.20	. Q	. V	.	.	.
13.500	2.0321	4.22	. Q	. V	.	.	.
13.517	2.0380	4.24	. Q	. V	.	.	.
13.533	2.0438	4.25	. Q	. V	.	.	.
13.550	2.0497	4.26	. Q	. V	.	.	.
13.567	2.0556	4.27	. Q	. V	.	.	.
13.583	2.0615	4.28	. Q	. V	.	.	.
13.600	2.0674	4.29	. Q	. V	.	.	.
13.617	2.0733	4.30	. Q	. V	.	.	.
13.633	2.0793	4.31	. Q	. V	.	.	.
13.650	2.0853	4.33	. Q	. V	.	.	.
13.667	2.0913	4.35	. Q	. V	.	.	.
13.683	2.0973	4.38	. Q	. V	.	.	.
13.700	2.1033	4.40	. Q	. V	.	.	.
13.717	2.1094	4.42	. Q	. V	.	.	.
13.733	2.1155	4.44	. Q	. V	.	.	.
13.750	2.1217	4.46	. Q	. V	.	.	.
13.767	2.1278	4.47	. Q	. V	.	.	.
13.783	2.1340	4.48	. Q	. V	.	.	.
13.800	2.1402	4.49	. Q	. V	.	.	.
13.817	2.1464	4.51	. Q	. V	.	.	.
13.833	2.1526	4.52	. Q	. V	.	.	.
13.850	2.1589	4.53	. Q	. V	.	.	.
13.867	2.1651	4.55	. Q	. V	.	.	.
13.883	2.1714	4.58	. Q	. V	.	.	.
13.900	2.1778	4.60	. Q	. V	.	.	.
13.917	2.1842	4.63	. Q	. V	.	.	.
13.933	2.1906	4.65	. Q	. V	.	.	.
13.950	2.1970	4.68	. Q	. V	.	.	.
13.967	2.2035	4.70	. Q	. V	.	.	.
13.983	2.2100	4.71	. Q	. V	.	.	.
14.000	2.2165	4.72	. Q	. V	.	.	.
14.017	2.2230	4.74	. Q	. V	.	.	.
14.033	2.2295	4.75	. Q	. V	.	.	.
14.050	2.2361	4.76	. Q	. V	.	.	.
14.067	2.2427	4.78	. Q	. V	.	.	.
14.083	2.2493	4.81	. Q	. V	.	.	.
14.100	2.2560	4.84	. Q	. V	.	.	.
14.117	2.2627	4.88	. Q	. V	.	.	.
14.133	2.2694	4.91	. Q	. V	.	.	.

14.150	2.2763	4.94	. Q	. V	.	.	.
14.167	2.2831	4.97	. Q	. V	.	.	.
14.183	2.2900	5.00	. Q	. V	.	.	.
14.200	2.2969	5.02	. Q	. V	.	.	.
14.217	2.3038	5.03	. Q	. V	.	.	.
14.233	2.3108	5.05	. Q	. V	.	.	.
14.250	2.3178	5.06	. Q	. V	.	.	.
14.267	2.3248	5.08	. Q	. V	.	.	.
14.283	2.3318	5.10	. Q	. V	.	.	.
14.300	2.3388	5.13	. Q	. V	.	.	.
14.317	2.3460	5.17	. Q	. V	.	.	.
14.333	2.3531	5.20	. Q	. V	.	.	.
14.350	2.3603	5.23	. Q	. V	.	.	.
14.367	2.3676	5.27	. Q	. V	.	.	.
14.383	2.3749	5.30	. Q	. V	.	.	.
14.400	2.3822	5.33	. Q	. V	.	.	.
14.417	2.3896	5.35	. Q	. V	.	.	.
14.433	2.3970	5.37	. Q	. V	.	.	.
14.450	2.4044	5.39	. Q	. V	.	.	.
14.467	2.4119	5.41	. Q	. V	.	.	.
14.483	2.4193	5.43	. Q	. V	.	.	.
14.500	2.4269	5.45	. Q	. V	.	.	.
14.517	2.4344	5.49	. Q	. V	.	.	.
14.533	2.4420	5.53	. Q	. V	.	.	.
14.550	2.4497	5.58	. Q	. V	.	.	.
14.567	2.4575	5.62	. Q	. V	.	.	.
14.583	2.4653	5.66	. Q	. V	.	.	.
14.600	2.4731	5.70	. Q	. V	.	.	.
14.617	2.4810	5.73	. Q	. V	.	.	.
14.633	2.4889	5.76	. Q	. V	.	.	.
14.650	2.4969	5.78	. Q	. V	.	.	.
14.667	2.5049	5.81	. Q	. V	.	.	.
14.683	2.5129	5.83	. Q	. V	.	.	.
14.700	2.5210	5.85	. Q	. V	.	.	.
14.717	2.5291	5.88	. Q	. V	.	.	.
14.733	2.5373	5.93	. Q	. V	.	.	.
14.750	2.5455	5.99	. Q	. V	.	.	.
14.767	2.5538	6.04	. Q	. V	.	.	.
14.783	2.5622	6.10	. Q	. V	.	.	.
14.800	2.5707	6.15	. Q	. V	.	.	.
14.817	2.5792	6.20	. Q	. V	.	.	.
14.833	2.5878	6.24	. Q	. V	.	.	.
14.850	2.5965	6.27	. Q	. V	.	.	.
14.867	2.6052	6.30	. Q	. V	.	.	.
14.883	2.6139	6.33	. Q	. V	.	.	.
14.900	2.6226	6.36	. Q	. V	.	.	.
14.917	2.6314	6.39	. Q	. V	.	.	.
14.933	2.6403	6.43	. Q	. V	.	.	.
14.950	2.6493	6.50	. Q	. V	.	.	.
14.967	2.6583	6.57	. Q	. V	.	.	.

14.983	2.6675	6.64	.	Q	.	V	.	.	.
15.000	2.6767	6.71	.	Q	.	V	.	.	.
15.017	2.6861	6.78	.	Q	.	V	.	.	.
15.033	2.6955	6.85	.	Q	.	V	.	.	.
15.050	2.7050	6.90	.	Q	.	V	.	.	.
15.067	2.7146	6.94	.	Q	.	V	.	.	.
15.083	2.7242	6.98	.	Q	.	V	.	.	.
15.100	2.7339	7.03	.	Q	.	V	.	.	.
15.117	2.7436	7.07	.	Q	.	V	.	.	.
15.133	2.7534	7.11	.	Q	.	V	.	.	.
15.150	2.7633	7.17	.	Q	.	V	.	.	.
15.167	2.7733	7.26	.	Q	.	V	.	.	.
15.183	2.7834	7.36	.	Q	.	V	.	.	.
15.200	2.7937	7.46	.	Q	.	V	.	.	.
15.217	2.8041	7.56	.	Q	.	V	.	.	.
15.233	2.8146	7.65	.	Q	.	V	.	.	.
15.250	2.8253	7.75	.	Q	.	V	.	.	.
15.267	2.8361	7.82	.	Q	.	V	.	.	.
15.283	2.8469	7.88	.	Q	.	V	.	.	.
15.300	2.8578	7.94	.	Q	.	V	.	.	.
15.317	2.8689	8.00	.	Q	.	V	.	.	.
15.333	2.8800	8.06	.	Q	.	V	.	.	.
15.350	2.8911	8.12	.	Q	.	V	.	.	.
15.367	2.9024	8.15	.	Q	.	V	.	.	.
15.383	2.9136	8.13	.	Q	.	V	.	.	.
15.400	2.9247	8.11	.	Q	.	V	.	.	.
15.417	2.9359	8.09	.	Q	.	V	.	.	.
15.433	2.9470	8.07	.	Q	.	V	.	.	.
15.450	2.9581	8.06	.	Q	.	V	.	.	.
15.467	2.9692	8.04	.	Q	.	V	.	.	.
15.483	2.9804	8.12	.	Q	.	V	.	.	.
15.500	2.9917	8.21	.	Q	.	V	.	.	.
15.517	3.0031	8.31	.	Q	.	V	.	.	.
15.533	3.0147	8.40	.	Q	.	V	.	.	.
15.550	3.0264	8.50	.	Q	.	V	.	.	.
15.567	3.0382	8.59	.	Q	.	V	.	.	.
15.583	3.0503	8.75	.	Q	.	V	.	.	.
15.600	3.0627	9.03	.	Q	.	V	.	.	.
15.617	3.0755	9.30	.	Q	.	V	.	.	.
15.633	3.0887	9.57	.	Q	.	V	.	.	.
15.650	3.1023	9.85	.	Q	.	V	.	.	.
15.667	3.1162	10.12	.	Q	.	V	.	.	.
15.683	3.1305	10.39	.	Q	.	V	.	.	.
15.700	3.1451	10.62	.	Q	.	.V	.	.	.
15.717	3.1601	10.83	.	Q	.	.V	.	.	.
15.733	3.1753	11.04	.	Q	.	.V	.	.	.
15.750	3.1908	11.26	.	Q	.	.V	.	.	.
15.767	3.2066	11.47	.	Q	.	.V	.	.	.
15.783	3.2227	11.69	.	Q	.	.V	.	.	.
15.800	3.2394	12.16	.	Q	.	.V	.	.	.

15.817	3.2573	12.95	.	Q	.	.V	.	.	.
15.833	3.2762	13.74	.	Q	.	.V	.	.	.
15.850	3.2962	14.53	.	Q	.	.V	.	.	.
15.867	3.3173	15.33	.	Q	.	.V	.	.	.
15.883	3.3395	16.12	.	Q	.	.V	.	.	.
15.900	3.3629	16.93	.	Q	.	.V	.	.	.
15.917	3.3875	17.88	.	Q	.	.V	.	.	.
15.933	3.4135	18.86	.	Q	.	.V	.	.	.
15.950	3.4408	19.84	.	.Q	.	.V	.	.	.
15.967	3.4695	20.82	.	.Q	.	.V	.	.	.
15.983	3.4995	21.80	.	.Q	.	.V	.	.	.
16.000	3.5309	22.78	.	.Q	.	.V	.	.	.
16.017	3.5680	26.96	.	.	Q	.V	.	.	.
16.033	3.6153	34.34	.	.	Q.	.V	.	.	.
16.050	3.6728	41.71	.	.	.	QV	.	.	.
16.067	3.7404	49.09	.	.	.	.V	Q	.	.
16.083	3.8182	56.47	.	.	.	.V	.Q	.	.
16.100	3.9061	63.85	.	.	.	.V	.	Q	.
16.117	4.0039	71.00	.	.	.	.V	.	.	Q
16.133	4.0892	61.89	.	.	.	.V	.	Q	.
16.150	4.1622	53.05	.	.	.	.V	Q.	.	.
16.167	4.2231	44.20	.	.	.	Q	.V	.	.
16.183	4.2718	35.36	.	.	Q.	.V	.	.	.
16.200	4.3083	26.52	.	.	Q	.V	.	.	.
16.217	4.3327	17.69	.	Q.	.	.V	.	.	.
16.233	4.3512	13.40	.	Q	.	.V	.	.	.
16.250	4.3687	12.73	.	Q	.	.V	.	.	.
16.267	4.3853	12.05	.	Q	.	.V	.	.	.
16.283	4.4010	11.38	.	Q	.	.V	.	.	.
16.300	4.4157	10.70	.	Q	.	.V	.	.	.
16.317	4.4295	10.03	.	Q	.	.V	.	.	.
16.333	4.4425	9.44	.	Q	.	.V	.	.	.
16.350	4.4552	9.22	.	Q	.	.V	.	.	.
16.367	4.4677	9.05	.	Q	.	.V	.	.	.
16.383	4.4799	8.88	.	Q	.	.V	.	.	.
16.400	4.4919	8.71	.	Q	.	.V	.	.	.
16.417	4.5037	8.54	.	Q	.	.V	.	.	.
16.433	4.5152	8.37	.	Q	.	.V	.	.	.
16.450	4.5266	8.22	.	Q	.	.V	.	.	.
16.467	4.5377	8.09	.	Q	.	.V	.	.	.
16.483	4.5487	7.95	.	Q	.	.V	.	.	.
16.500	4.5594	7.82	.	Q	.	.V	.	.	.
16.517	4.5700	7.68	.	Q	.	.V	.	.	.
16.533	4.5804	7.55	.	Q	.	.V	.	.	.
16.550	4.5906	7.42	.	Q	.	.V	.	.	.
16.567	4.6007	7.29	.	Q	.	.V	.	.	.
16.583	4.6105	7.17	.	Q	.	.V	.	.	.
16.600	4.6202	7.05	.	Q	.	.V	.	.	.
16.617	4.6298	6.92	.	Q	.	.V	.	.	.
16.633	4.6391	6.80	.	Q	.	.V	.	.	.

16.650	4.6483	6.67	.	Q	.	.	.	.V	.
16.667	4.6574	6.57	.	Q	.	.	.	.V	.
16.683	4.6663	6.48	.	Q	.	.	.	.V	.
16.700	4.6751	6.39	.	Q	.	.	.	.V	.
16.717	4.6838	6.30	.	Q	.	.	.	.V	.
16.733	4.6923	6.20	.	Q	.	.	.	.V	.
16.750	4.7007	6.11	.	Q	.	.	.	.V	.
16.767	4.7090	6.03	.	Q	.	.	.	.V	.
16.783	4.7172	5.95	.	Q	.	.	.	.V	.
16.800	4.7253	5.88	.	Q	.	.	.	.V	.
16.817	4.7334	5.81	.	Q	.	.	.	.V	.
16.833	4.7413	5.74	.	Q	.	.	.	.V	.
16.850	4.7491	5.67	.	Q	.	.	.	.V	.
16.867	4.7568	5.60	.	Q	.	.	.	.V	.
16.883	4.7644	5.53	.	Q	.	.	.	.V	.
16.900	4.7719	5.48	.	Q	.	.	.	.V	.
16.917	4.7794	5.42	.	Q	.	.	.	.V	.
16.933	4.7868	5.36	.	Q	.	.	.	.V	.
16.950	4.7941	5.30	.	Q	.	.	.	.V	.
16.967	4.8013	5.25	.	Q	.	.	.	.V	.
16.983	4.8085	5.19	.	Q	.	.	.	.V	.
17.000	4.8155	5.14	.	Q	.	.	.	.V	.
17.017	4.8226	5.09	.	Q	.	.	.	.V	.
17.033	4.8295	5.05	.	Q	.	.	.	.V	.
17.050	4.8364	5.00	.	Q	.	.	.	.V	.
17.067	4.8432	4.95	.	Q	.	.	.	.V	.
17.083	4.8500	4.90	.	Q	.	.	.	.V	.
17.100	4.8567	4.86	.	Q	.	.	.	.V	.
17.117	4.8633	4.81	.	Q	.	.	.	.V	.
17.133	4.8698	4.77	.	Q	.	.	.	.V	.
17.150	4.8764	4.72	.	Q	.	.	.	.V	.
17.167	4.8828	4.68	.	Q	.	.	.	.V	.
17.183	4.8892	4.64	.	Q	.	.	.	.V	.
17.200	4.8955	4.60	.	Q	.	.	.	.V	.
17.217	4.9018	4.56	.	Q	.	.	.	.V	.
17.233	4.9080	4.53	.	Q	.	.	.	.V	.
17.250	4.9142	4.49	.	Q	.	.	.	.V	.
17.267	4.9204	4.46	.	Q	.	.	.	.V	.
17.283	4.9265	4.42	.	Q	.	.	.	.V	.
17.300	4.9325	4.39	.	Q	.	.	.	.V	.
17.317	4.9385	4.36	.	Q	.	.	.	.V	.
17.333	4.9445	4.33	.	Q	.	.	.	.V	.
17.350	4.9504	4.30	.	Q	.	.	.	.V	.
17.367	4.9563	4.27	.	Q	.	.	.	.V	.
17.383	4.9621	4.24	.	Q	.	.	.	.V	.
17.400	4.9679	4.21	.	Q	.	.	.	.V	.
17.417	4.9736	4.18	.	Q	.	.	.	.V	.
17.433	4.9794	4.15	.	Q	.	.	.	.V	.
17.450	4.9850	4.12	.	Q	.	.	.	.V	.
17.467	4.9907	4.10	.	Q	.	.	.	.V	.

17.483	4.9963	4.07	.	Q	.	.	.	.V	.
17.500	5.0019	4.04	.	Q	.	.	.	.V	.
17.517	5.0074	4.02	.	Q	.	.	.	.V	.
17.533	5.0129	3.99	.	Q	.	.	.	.V	.
17.550	5.0184	3.97	.	Q	.	.	.	.V	.
17.567	5.0238	3.95	.	Q	.	.	.	.V	.
17.583	5.0292	3.92	.	Q	.	.	.	.V	.
17.600	5.0346	3.90	.	Q	.	.	.	.V	.
17.617	5.0399	3.87	.	Q	.	.	.	.V	.
17.633	5.0452	3.85	.	Q	.	.	.	.V	.
17.650	5.0505	3.83	.	Q	.	.	.	.V	.
17.667	5.0557	3.81	.	Q	.	.	.	.V	.
17.683	5.0610	3.79	.	Q	.	.	.	.V	.
17.700	5.0661	3.77	.	Q	.	.	.	.V	.
17.717	5.0713	3.75	.	Q	.	.	.	.V	.
17.733	5.0764	3.72	.	Q	.	.	.	.V	.
17.750	5.0815	3.71	.	Q	.	.	.	.V	.
17.767	5.0866	3.69	.	Q	.	.	.	.V	.
17.783	5.0917	3.67	.	Q	.	.	.	.V	.
17.800	5.0967	3.65	.	Q	.	.	.	.V	.
17.817	5.1017	3.63	.	Q	.	.	.	.V	.
17.833	5.1067	3.61	.	Q	.	.	.	.V	.
17.850	5.1116	3.59	.	Q	.	.	.	.V	.
17.867	5.1165	3.57	.	Q	.	.	.	.V	.
17.883	5.1214	3.56	.	Q	.	.	.	.V	.
17.900	5.1263	3.54	.	Q	.	.	.	.V	.
17.917	5.1311	3.52	.	Q	.	.	.	.V	.
17.933	5.1360	3.50	.	Q	.	.	.	.V	.
17.950	5.1408	3.49	.	Q	.	.	.	.V	.
17.967	5.1455	3.47	.	Q	.	.	.	.V	.
17.983	5.1503	3.45	.	Q	.	.	.	.V	.
18.000	5.1550	3.44	.	Q	.	.	.	.V	.
18.017	5.1598	3.42	.	Q	.	.	.	.V	.
18.033	5.1644	3.41	.	Q	.	.	.	.V	.
18.050	5.1691	3.39	.	Q	.	.	.	.V	.
18.067	5.1737	3.31	.	Q	.	.	.	.V	.
18.083	5.1781	3.20	.	Q	.	.	.	.V	.
18.100	5.1823	3.08	.	Q	.	.	.	.V	.
18.117	5.1864	2.96	.	Q	.	.	.	.V	.
18.133	5.1903	2.84	.	Q	.	.	.	.V	.
18.150	5.1940	2.72	.	Q	.	.	.	.V	.
18.167	5.1976	2.62	.	Q	.	.	.	.V	.
18.183	5.2012	2.60	.	Q	.	.	.	.V	.
18.200	5.2048	2.58	.	Q	.	.	.	.V	.
18.217	5.2083	2.57	.	Q	.	.	.	.V	.
18.233	5.2118	2.56	.	Q	.	.	.	.V	.
18.250	5.2153	2.55	.	Q	.	.	.	.V	.
18.267	5.2188	2.53	.	Q	.	.	.	.V	.
18.283	5.2223	2.52	.	Q	.	.	.	.V	.
18.300	5.2258	2.51	.	Q	.	.	.	.V	.

18.317	5.2292	2.50	.Q	.	.	.	V	.
18.333	5.2326	2.49	.Q	.	.	.	V	.
18.350	5.2360	2.47	.Q	.	.	.	V	.
18.367	5.2394	2.46	.Q	.	.	.	V	.
18.383	5.2428	2.45	.Q	.	.	.	V	.
18.400	5.2462	2.44	.Q	.	.	.	V	.
18.417	5.2495	2.43	.Q	.	.	.	V	.
18.433	5.2528	2.42	.Q	.	.	.	V	.
18.450	5.2562	2.41	.Q	.	.	.	V	.
18.467	5.2595	2.40	.Q	.	.	.	V	.
18.483	5.2627	2.39	.Q	.	.	.	V	.
18.500	5.2660	2.38	.Q	.	.	.	V	.
18.517	5.2693	2.37	.Q	.	.	.	V	.
18.533	5.2725	2.36	.Q	.	.	.	V	.
18.550	5.2757	2.35	.Q	.	.	.	V	.
18.567	5.2790	2.34	.Q	.	.	.	V	.
18.583	5.2822	2.33	.Q	.	.	.	V	.
18.600	5.2854	2.32	.Q	.	.	.	V	.
18.617	5.2885	2.31	.Q	.	.	.	V	.
18.633	5.2917	2.30	.Q	.	.	.	V	.
18.650	5.2948	2.29	.Q	.	.	.	V	.
18.667	5.2980	2.28	.Q	.	.	.	V	.
18.683	5.3011	2.27	.Q	.	.	.	V	.
18.700	5.3042	2.26	.Q	.	.	.	V	.
18.717	5.3073	2.25	.Q	.	.	.	V	.
18.733	5.3104	2.24	.Q	.	.	.	V	.
18.750	5.3135	2.23	.Q	.	.	.	V	.
18.767	5.3165	2.22	.Q	.	.	.	V	.
18.783	5.3196	2.22	.Q	.	.	.	V	.
18.800	5.3226	2.21	.Q	.	.	.	V	.
18.817	5.3257	2.20	.Q	.	.	.	V	.
18.833	5.3287	2.19	.Q	.	.	.	V	.
18.850	5.3317	2.18	.Q	.	.	.	V	.
18.867	5.3347	2.17	.Q	.	.	.	V	.
18.883	5.3377	2.16	.Q	.	.	.	V	.
18.900	5.3406	2.16	.Q	.	.	.	V	.
18.917	5.3436	2.15	.Q	.	.	.	V	.
18.933	5.3465	2.14	.Q	.	.	.	V	.
18.950	5.3495	2.13	.Q	.	.	.	V	.
18.967	5.3524	2.13	.Q	.	.	.	V	.
18.983	5.3553	2.12	.Q	.	.	.	V	.
19.000	5.3582	2.11	.Q	.	.	.	V	.
19.017	5.3611	2.10	.Q	.	.	.	V	.
19.033	5.3640	2.09	.Q	.	.	.	V	.
19.050	5.3669	2.09	.Q	.	.	.	V	.
19.067	5.3697	2.08	.Q	.	.	.	V	.
19.083	5.3726	2.07	.Q	.	.	.	V	.
19.100	5.3754	2.07	.Q	.	.	.	V	.
19.117	5.3783	2.06	.Q	.	.	.	V	.
19.133	5.3811	2.05	.Q	.	.	.	V	.

19.150	5.3839	2.04	.Q	.	.	.	V	.
19.167	5.3867	2.04	.Q	.	.	.	V	.
19.183	5.3895	2.03	.Q	.	.	.	V	.
19.200	5.3923	2.02	.Q	.	.	.	V	.
19.217	5.3951	2.02	.Q	.	.	.	V	.
19.233	5.3979	2.01	.Q	.	.	.	V	.
19.250	5.4006	2.00	.Q	.	.	.	V	.
19.267	5.4034	2.00	.Q	.	.	.	V	.
19.283	5.4061	1.99	.Q	.	.	.	V	.
19.300	5.4088	1.98	.Q	.	.	.	V	.
19.317	5.4116	1.98	.Q	.	.	.	V	.
19.333	5.4143	1.97	.Q	.	.	.	V	.
19.350	5.4170	1.96	.Q	.	.	.	V	.
19.367	5.4197	1.96	.Q	.	.	.	V	.
19.383	5.4224	1.95	.Q	.	.	.	V	.
19.400	5.4250	1.95	.Q	.	.	.	V	.
19.417	5.4277	1.94	.Q	.	.	.	V	.
19.433	5.4304	1.93	.Q	.	.	.	V	.
19.450	5.4330	1.93	.Q	.	.	.	V	.
19.467	5.4357	1.92	.Q	.	.	.	V	.
19.483	5.4383	1.92	.Q	.	.	.	V	.
19.500	5.4409	1.91	.Q	.	.	.	V	.
19.517	5.4436	1.90	.Q	.	.	.	V	.
19.533	5.4462	1.90	.Q	.	.	.	V	.
19.550	5.4488	1.89	.Q	.	.	.	V	.
19.567	5.4514	1.89	.Q	.	.	.	V	.
19.583	5.4540	1.88	.Q	.	.	.	V	.
19.600	5.4566	1.87	.Q	.	.	.	V	.
19.617	5.4591	1.87	.Q	.	.	.	V	.
19.633	5.4617	1.86	.Q	.	.	.	V	.
19.650	5.4643	1.86	.Q	.	.	.	V	.
19.667	5.4668	1.85	.Q	.	.	.	V	.
19.683	5.4694	1.85	.Q	.	.	.	V	.
19.700	5.4719	1.84	.Q	.	.	.	V	.
19.717	5.4744	1.84	.Q	.	.	.	V	.
19.733	5.4769	1.83	.Q	.	.	.	V	.
19.750	5.4795	1.83	.Q	.	.	.	V	.
19.767	5.4820	1.82	.Q	.	.	.	V	.
19.783	5.4845	1.82	.Q	.	.	.	V	.
19.800	5.4870	1.81	.Q	.	.	.	V	.
19.817	5.4894	1.81	.Q	.	.	.	V	.
19.833	5.4919	1.80	.Q	.	.	.	V	.
19.850	5.4944	1.80	.Q	.	.	.	V	.
19.867	5.4969	1.79	.Q	.	.	.	V	.
19.883	5.4993	1.79	.Q	.	.	.	V	.
19.900	5.5018	1.78	.Q	.	.	.	V	.
19.917	5.5042	1.78	.Q	.	.	.	V	.
19.933	5.5067	1.77	Q	.	.	.	V	.
19.950	5.5091	1.77	Q	.	.	.	V	.
19.967	5.5115	1.76	Q	.	.	.	V	.

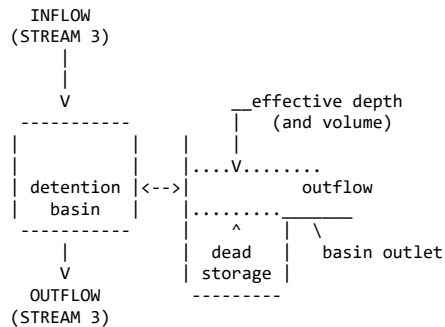
19.983 5.5139 1.76 Q . . . V .
20.000 5.5164 1.75 Q . . . V .

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1201.0
10%	440.0
20%	115.0
30%	70.0
40%	50.0
50%	40.0
60%	35.0
70%	25.0
80%	15.0
90%	5.0

FLOW PROCESS FROM NODE 540.00 TO NODE 540.00 IS CODE = 3.2

>>>>FLOW-THROUGH DETENTION BASIN ROUTING MODEL APPLIED TO STREAM #3<<<<



ROUTE RUNOFF HYDROGRAPH FROM STREAM NUMBER 3
THROUGH A FLOW-THROUGH DETENTION BASIN
SPECIFIED BASIN CONDITIONS ARE AS FOLLOWS:
DEAD STORAGE(AF) = 0.000

SPECIFIED DEAD STORAGE(AF) FILLED = 0.000
SPECIFIED EFFECTIVE VOLUME(AF) FILLED ABOVE OUTLET = 0.000
DETENTION BASIN CONSTANT LOSS RATE(CFS) = 0.00

BASIN DEPTH VERSUS OUTFLOW AND STORAGE INFORMATION:

INTERVAL NUMBER	DEPTH (FT)	OUTFLOW (CFS)	STORAGE (AF)
1	0.00	0.00	0.000
2	0.25	0.01	0.043
3	0.50	0.02	0.087
4	0.75	0.03	0.144
5	1.00	4.25	0.213
6	1.25	6.02	0.289
7	1.50	7.37	0.368
8	1.75	8.51	0.450
9	2.00	9.51	0.534
10	2.25	10.42	0.619
11	2.50	11.26	0.704
12	2.75	12.03	0.788
13	3.00	12.76	0.870
14	3.25	13.45	0.950
15	3.50	14.11	1.025
16	3.75	14.74	1.094
17	4.00	15.34	1.152
18	4.25	18.04	1.195
19	4.50	22.48	1.238
20	4.75	28.05	1.282
21	5.00	34.52	1.325

=====

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

CLOCK TIME (HRS)	DEAD-STORAGE FILLED(AF)	INFLOW (CFS)	LOSS (CFS)	EFFECTIVE DEPTH(FT)	MEAN OUTFLOW (CFS)	EFFECTIVE VOLUME(AF)
10.000	0.000	2.04	0.00	0.87	2.0	0.176
10.017	0.000	2.05	0.00	0.87	2.0	0.176
10.033	0.000	2.05	0.00	0.87	2.0	0.176
10.050	0.000	2.06	0.00	0.87	2.0	0.176
10.067	0.000	2.06	0.00	0.87	2.0	0.176
10.083	0.000	2.07	0.00	0.87	2.0	0.177
10.100	0.000	2.07	0.00	0.87	2.0	0.177
10.117	0.000	2.07	0.00	0.87	2.0	0.177
10.133	0.000	2.07	0.00	0.87	2.0	0.177

10.150	0.000	2.08	0.00	0.87	2.0	0.177
10.167	0.000	2.08	0.00	0.87	2.0	0.177
10.183	0.000	2.08	0.00	0.87	2.0	0.177
10.200	0.000	2.09	0.00	0.87	2.0	0.177
10.217	0.000	2.09	0.00	0.87	2.0	0.177
10.233	0.000	2.10	0.00	0.87	2.1	0.177
10.250	0.000	2.10	0.00	0.87	2.1	0.177
10.267	0.000	2.11	0.00	0.87	2.1	0.177
10.283	0.000	2.11	0.00	0.87	2.1	0.177
10.300	0.000	2.11	0.00	0.87	2.1	0.177
10.317	0.000	2.12	0.00	0.87	2.1	0.177
10.333	0.000	2.12	0.00	0.87	2.1	0.177
10.350	0.000	2.12	0.00	0.87	2.1	0.177
10.367	0.000	2.12	0.00	0.87	2.1	0.178
10.383	0.000	2.13	0.00	0.87	2.1	0.178
10.400	0.000	2.13	0.00	0.87	2.1	0.178
10.417	0.000	2.13	0.00	0.87	2.1	0.178
10.433	0.000	2.14	0.00	0.87	2.1	0.178
10.450	0.000	2.15	0.00	0.87	2.1	0.178
10.467	0.000	2.15	0.00	0.87	2.1	0.178
10.483	0.000	2.16	0.00	0.87	2.1	0.178
10.500	0.000	2.16	0.00	0.87	2.1	0.178
10.517	0.000	2.17	0.00	0.87	2.1	0.178
10.533	0.000	2.17	0.00	0.87	2.1	0.178
10.550	0.000	2.17	0.00	0.87	2.1	0.178
10.567	0.000	2.17	0.00	0.87	2.1	0.178
10.583	0.000	2.18	0.00	0.87	2.1	0.178
10.600	0.000	2.18	0.00	0.87	2.1	0.178
10.617	0.000	2.18	0.00	0.87	2.1	0.178
10.633	0.000	2.19	0.00	0.88	2.1	0.179
10.650	0.000	2.19	0.00	0.88	2.1	0.179
10.667	0.000	2.20	0.00	0.88	2.2	0.179
10.683	0.000	2.20	0.00	0.88	2.2	0.179
10.700	0.000	2.21	0.00	0.88	2.2	0.179
10.717	0.000	2.22	0.00	0.88	2.2	0.179
10.733	0.000	2.22	0.00	0.88	2.2	0.179
10.750	0.000	2.22	0.00	0.88	2.2	0.179
10.767	0.000	2.23	0.00	0.88	2.2	0.179
10.783	0.000	2.23	0.00	0.88	2.2	0.179
10.800	0.000	2.23	0.00	0.88	2.2	0.179
10.817	0.000	2.23	0.00	0.88	2.2	0.179
10.833	0.000	2.24	0.00	0.88	2.2	0.179
10.850	0.000	2.24	0.00	0.88	2.2	0.179
10.867	0.000	2.25	0.00	0.88	2.2	0.179
10.883	0.000	2.26	0.00	0.88	2.2	0.180
10.900	0.000	2.26	0.00	0.88	2.2	0.180
10.917	0.000	2.27	0.00	0.88	2.2	0.180
10.933	0.000	2.27	0.00	0.88	2.2	0.180
10.950	0.000	2.28	0.00	0.88	2.2	0.180
10.967	0.000	2.28	0.00	0.88	2.2	0.180

10.983	0.000	2.28	0.00	0.88	2.2	0.180
11.000	0.000	2.29	0.00	0.88	2.2	0.180
11.017	0.000	2.29	0.00	0.88	2.2	0.180
11.033	0.000	2.29	0.00	0.88	2.2	0.180
11.050	0.000	2.30	0.00	0.88	2.2	0.180
11.067	0.000	2.30	0.00	0.88	2.3	0.180
11.083	0.000	2.31	0.00	0.88	2.3	0.180
11.100	0.000	2.32	0.00	0.88	2.3	0.180
11.117	0.000	2.32	0.00	0.88	2.3	0.181
11.133	0.000	2.33	0.00	0.88	2.3	0.181
11.150	0.000	2.34	0.00	0.88	2.3	0.181
11.167	0.000	2.34	0.00	0.88	2.3	0.181
11.183	0.000	2.34	0.00	0.88	2.3	0.181
11.200	0.000	2.35	0.00	0.88	2.3	0.181
11.217	0.000	2.35	0.00	0.88	2.3	0.181
11.233	0.000	2.35	0.00	0.88	2.3	0.181
11.250	0.000	2.36	0.00	0.88	2.3	0.181
11.267	0.000	2.36	0.00	0.88	2.3	0.181
11.283	0.000	2.37	0.00	0.89	2.3	0.181
11.300	0.000	2.38	0.00	0.89	2.3	0.181
11.317	0.000	2.38	0.00	0.89	2.3	0.181
11.333	0.000	2.39	0.00	0.89	2.3	0.182
11.350	0.000	2.40	0.00	0.89	2.3	0.182
11.367	0.000	2.40	0.00	0.89	2.3	0.182
11.383	0.000	2.41	0.00	0.89	2.3	0.182
11.400	0.000	2.41	0.00	0.89	2.3	0.182
11.417	0.000	2.41	0.00	0.89	2.4	0.182
11.433	0.000	2.42	0.00	0.89	2.4	0.182
11.450	0.000	2.42	0.00	0.89	2.4	0.182
11.467	0.000	2.43	0.00	0.89	2.4	0.182
11.483	0.000	2.43	0.00	0.89	2.4	0.182
11.500	0.000	2.44	0.00	0.89	2.4	0.182
11.517	0.000	2.45	0.00	0.89	2.4	0.182
11.533	0.000	2.45	0.00	0.89	2.4	0.183
11.550	0.000	2.46	0.00	0.89	2.4	0.183
11.567	0.000	2.47	0.00	0.89	2.4	0.183
11.583	0.000	2.48	0.00	0.89	2.4	0.183
11.600	0.000	2.48	0.00	0.89	2.4	0.183
11.617	0.000	2.48	0.00	0.89	2.4	0.183
11.633	0.000	2.49	0.00	0.89	2.4	0.183
11.650	0.000	2.49	0.00	0.89	2.4	0.183
11.667	0.000	2.50	0.00	0.89	2.4	0.183
11.683	0.000	2.50	0.00	0.89	2.4	0.183
11.700	0.000	2.50	0.00	0.89	2.4	0.183
11.717	0.000	2.51	0.00	0.89	2.4	0.184
11.733	0.000	2.52	0.00	0.89	2.5	0.184
11.750	0.000	2.53	0.00	0.89	2.5	0.184
11.767	0.000	2.54	0.00	0.89	2.5	0.184
11.783	0.000	2.55	0.00	0.89	2.5	0.184
11.800	0.000	2.55	0.00	0.90	2.5	0.184

11.817	0.000	2.56	0.00	0.90	2.5	0.184
11.833	0.000	2.56	0.00	0.90	2.5	0.184
11.850	0.000	2.57	0.00	0.90	2.5	0.184
11.867	0.000	2.57	0.00	0.90	2.5	0.184
11.883	0.000	2.58	0.00	0.90	2.5	0.185
11.900	0.000	2.58	0.00	0.90	2.5	0.185
11.917	0.000	2.59	0.00	0.90	2.5	0.185
11.933	0.000	2.59	0.00	0.90	2.5	0.185
11.950	0.000	2.60	0.00	0.90	2.5	0.185
11.967	0.000	2.61	0.00	0.90	2.5	0.185
11.983	0.000	2.62	0.00	0.90	2.5	0.185
12.000	0.000	2.63	0.00	0.90	2.6	0.185
12.017	0.000	2.64	0.00	0.90	2.6	0.185
12.033	0.000	2.70	0.00	0.90	2.6	0.186
12.050	0.000	2.78	0.00	0.90	2.6	0.186
12.067	0.000	2.85	0.00	0.90	2.6	0.186
12.083	0.000	2.92	0.00	0.90	2.6	0.187
12.100	0.000	2.99	0.00	0.91	2.6	0.187
12.117	0.000	3.06	0.00	0.91	2.7	0.188
12.133	0.000	3.13	0.00	0.91	2.7	0.188
12.150	0.000	3.17	0.00	0.91	2.7	0.189
12.167	0.000	3.22	0.00	0.91	2.8	0.189
12.183	0.000	3.27	0.00	0.92	2.8	0.190
12.200	0.000	3.32	0.00	0.92	2.9	0.191
12.217	0.000	3.37	0.00	0.92	2.9	0.191
12.233	0.000	3.41	0.00	0.92	2.9	0.192
12.250	0.000	3.42	0.00	0.93	3.0	0.192
12.267	0.000	3.43	0.00	0.93	3.0	0.193
12.283	0.000	3.43	0.00	0.93	3.0	0.194
12.300	0.000	3.44	0.00	0.93	3.1	0.194
12.317	0.000	3.44	0.00	0.93	3.1	0.194
12.333	0.000	3.45	0.00	0.93	3.1	0.195
12.350	0.000	3.46	0.00	0.94	3.2	0.195
12.367	0.000	3.47	0.00	0.94	3.2	0.196
12.383	0.000	3.48	0.00	0.94	3.2	0.196
12.400	0.000	3.49	0.00	0.94	3.2	0.196
12.417	0.000	3.50	0.00	0.94	3.3	0.197
12.433	0.000	3.51	0.00	0.94	3.3	0.197
12.450	0.000	3.52	0.00	0.94	3.3	0.197
12.467	0.000	3.53	0.00	0.94	3.3	0.198
12.483	0.000	3.53	0.00	0.95	3.3	0.198
12.500	0.000	3.54	0.00	0.95	3.3	0.198
12.517	0.000	3.55	0.00	0.95	3.4	0.199
12.533	0.000	3.55	0.00	0.95	3.4	0.199
12.550	0.000	3.56	0.00	0.95	3.4	0.199
12.567	0.000	3.57	0.00	0.95	3.4	0.199
12.583	0.000	3.58	0.00	0.95	3.4	0.199
12.600	0.000	3.59	0.00	0.95	3.4	0.200
12.617	0.000	3.60	0.00	0.95	3.4	0.200
12.633	0.000	3.62	0.00	0.95	3.5	0.200

12.650	0.000	3.63	0.00	0.95	3.5	0.200
12.667	0.000	3.64	0.00	0.95	3.5	0.201
12.683	0.000	3.65	0.00	0.96	3.5	0.201
12.700	0.000	3.65	0.00	0.96	3.5	0.201
12.717	0.000	3.66	0.00	0.96	3.5	0.201
12.733	0.000	3.67	0.00	0.96	3.5	0.201
12.750	0.000	3.67	0.00	0.96	3.5	0.201
12.767	0.000	3.68	0.00	0.96	3.6	0.202
12.783	0.000	3.69	0.00	0.96	3.6	0.202
12.800	0.000	3.70	0.00	0.96	3.6	0.202
12.817	0.000	3.72	0.00	0.96	3.6	0.202
12.833	0.000	3.73	0.00	0.96	3.6	0.202
12.850	0.000	3.74	0.00	0.96	3.6	0.203
12.867	0.000	3.76	0.00	0.96	3.6	0.203
12.883	0.000	3.77	0.00	0.96	3.6	0.203
12.900	0.000	3.78	0.00	0.96	3.6	0.203
12.917	0.000	3.78	0.00	0.96	3.7	0.203
12.933	0.000	3.79	0.00	0.97	3.7	0.203
12.950	0.000	3.80	0.00	0.97	3.7	0.204
12.967	0.000	3.80	0.00	0.97	3.7	0.204
12.983	0.000	3.81	0.00	0.97	3.7	0.204
13.000	0.000	3.82	0.00	0.97	3.7	0.204
13.017	0.000	3.84	0.00	0.97	3.7	0.204
13.033	0.000	3.85	0.00	0.97	3.7	0.204
13.050	0.000	3.87	0.00	0.97	3.7	0.205
13.067	0.000	3.88	0.00	0.97	3.7	0.205
13.083	0.000	3.90	0.00	0.97	3.8	0.205
13.100	0.000	3.91	0.00	0.97	3.8	0.205
13.117	0.000	3.92	0.00	0.97	3.8	0.205
13.133	0.000	3.93	0.00	0.97	3.8	0.206
13.150	0.000	3.94	0.00	0.97	3.8	0.206
13.167	0.000	3.94	0.00	0.97	3.8	0.206
13.183	0.000	3.95	0.00	0.98	3.8	0.206
13.200	0.000	3.96	0.00	0.98	3.8	0.206
13.217	0.000	3.97	0.00	0.98	3.8	0.206
13.233	0.000	3.99	0.00	0.98	3.9	0.207
13.250	0.000	4.01	0.00	0.98	3.9	0.207
13.267	0.000	4.02	0.00	0.98	3.9	0.207
13.283	0.000	4.04	0.00	0.98	3.9	0.207
13.300	0.000	4.06	0.00	0.98	3.9	0.207
13.317	0.000	4.07	0.00	0.98	3.9	0.208
13.333	0.000	4.08	0.00	0.98	3.9	0.208
13.350	0.000	4.09	0.00	0.98	3.9	0.208
13.367	0.000	4.10	0.00	0.98	4.0	0.208
13.383	0.000	4.11	0.00	0.98	4.0	0.208
13.400	0.000	4.12	0.00	0.98	4.0	0.209
13.417	0.000	4.13	0.00	0.98	4.0	0.209
13.433	0.000	4.14	0.00	0.99	4.0	0.209
13.450	0.000	4.16	0.00	0.99	4.0	0.209
13.467	0.000	4.18	0.00	0.99	4.0	0.209

13.483	0.000	4.20	0.00	0.99	4.0	0.210
13.500	0.000	4.22	0.00	0.99	4.1	0.210
13.517	0.000	4.24	0.00	0.99	4.1	0.210
13.533	0.000	4.25	0.00	0.99	4.1	0.210
13.550	0.000	4.26	0.00	0.99	4.1	0.211
13.567	0.000	4.27	0.00	0.99	4.1	0.211
13.583	0.000	4.28	0.00	0.99	4.1	0.211
13.600	0.000	4.29	0.00	0.99	4.1	0.211
13.617	0.000	4.30	0.00	0.99	4.2	0.211
13.633	0.000	4.31	0.00	1.00	4.2	0.212
13.650	0.000	4.33	0.00	1.00	4.2	0.212
13.667	0.000	4.35	0.00	1.00	4.2	0.212
13.683	0.000	4.38	0.00	1.00	4.2	0.212
13.700	0.000	4.40	0.00	1.00	4.2	0.213
13.717	0.000	4.42	0.00	1.00	4.2	0.213
13.733	0.000	4.44	0.00	1.00	4.2	0.213
13.750	0.000	4.46	0.00	1.00	4.3	0.213
13.767	0.000	4.47	0.00	1.00	4.3	0.214
13.783	0.000	4.48	0.00	1.00	4.3	0.214
13.800	0.000	4.49	0.00	1.00	4.3	0.214
13.817	0.000	4.51	0.00	1.00	4.3	0.215
13.833	0.000	4.52	0.00	1.01	4.3	0.215
13.850	0.000	4.53	0.00	1.01	4.3	0.215
13.867	0.000	4.55	0.00	1.01	4.3	0.215
13.883	0.000	4.58	0.00	1.01	4.3	0.216
13.900	0.000	4.60	0.00	1.01	4.3	0.216
13.917	0.000	4.63	0.00	1.01	4.3	0.217
13.933	0.000	4.65	0.00	1.01	4.3	0.217
13.950	0.000	4.68	0.00	1.01	4.4	0.217
13.967	0.000	4.70	0.00	1.02	4.4	0.218
13.983	0.000	4.71	0.00	1.02	4.4	0.218
14.000	0.000	4.72	0.00	1.02	4.4	0.219
14.017	0.000	4.74	0.00	1.02	4.4	0.219
14.033	0.000	4.75	0.00	1.02	4.4	0.220
14.050	0.000	4.76	0.00	1.02	4.4	0.220
14.067	0.000	4.78	0.00	1.03	4.4	0.221
14.083	0.000	4.81	0.00	1.03	4.4	0.221
14.100	0.000	4.84	0.00	1.03	4.5	0.222
14.117	0.000	4.88	0.00	1.03	4.5	0.222
14.133	0.000	4.91	0.00	1.03	4.5	0.223
14.150	0.000	4.94	0.00	1.03	4.5	0.224
14.167	0.000	4.97	0.00	1.04	4.5	0.224
14.183	0.000	5.00	0.00	1.04	4.5	0.225
14.200	0.000	5.02	0.00	1.04	4.5	0.226
14.217	0.000	5.03	0.00	1.04	4.6	0.226
14.233	0.000	5.05	0.00	1.05	4.6	0.227
14.250	0.000	5.06	0.00	1.05	4.6	0.228
14.267	0.000	5.08	0.00	1.05	4.6	0.228
14.283	0.000	5.10	0.00	1.05	4.6	0.229
14.300	0.000	5.13	0.00	1.05	4.6	0.230

14.317	0.000	5.17	0.00	1.06	4.6	0.230
14.333	0.000	5.20	0.00	1.06	4.7	0.231
14.350	0.000	5.23	0.00	1.06	4.7	0.232
14.367	0.000	5.27	0.00	1.06	4.7	0.233
14.383	0.000	5.30	0.00	1.07	4.7	0.233
14.400	0.000	5.33	0.00	1.07	4.7	0.234
14.417	0.000	5.35	0.00	1.07	4.8	0.235
14.433	0.000	5.37	0.00	1.08	4.8	0.236
14.450	0.000	5.39	0.00	1.08	4.8	0.237
14.467	0.000	5.41	0.00	1.08	4.8	0.237
14.483	0.000	5.43	0.00	1.08	4.8	0.238
14.500	0.000	5.45	0.00	1.09	4.9	0.239
14.517	0.000	5.49	0.00	1.09	4.9	0.240
14.533	0.000	5.53	0.00	1.09	4.9	0.241
14.550	0.000	5.58	0.00	1.09	4.9	0.242
14.567	0.000	5.62	0.00	1.10	4.9	0.243
14.583	0.000	5.66	0.00	1.10	5.0	0.244
14.600	0.000	5.70	0.00	1.10	5.0	0.245
14.617	0.000	5.73	0.00	1.11	5.0	0.246
14.633	0.000	5.76	0.00	1.11	5.0	0.247
14.650	0.000	5.78	0.00	1.11	5.0	0.248
14.667	0.000	5.81	0.00	1.12	5.1	0.249
14.683	0.000	5.83	0.00	1.12	5.1	0.250
14.700	0.000	5.85	0.00	1.12	5.1	0.251
14.717	0.000	5.88	0.00	1.13	5.1	0.252
14.733	0.000	5.93	0.00	1.13	5.2	0.253
14.750	0.000	5.99	0.00	1.13	5.2	0.254
14.767	0.000	6.04	0.00	1.14	5.2	0.255
14.783	0.000	6.10	0.00	1.14	5.2	0.256
14.800	0.000	6.15	0.00	1.15	5.3	0.257
14.817	0.000	6.20	0.00	1.15	5.3	0.259
14.833	0.000	6.24	0.00	1.15	5.3	0.260
14.850	0.000	6.27	0.00	1.16	5.4	0.261
14.867	0.000	6.30	0.00	1.16	5.4	0.262
14.883	0.000	6.33	0.00	1.17	5.4	0.264
14.900	0.000	6.36	0.00	1.17	5.4	0.265
14.917	0.000	6.39	0.00	1.18	5.5	0.266
14.933	0.000	6.43	0.00	1.18	5.5	0.268
14.950	0.000	6.50	0.00	1.18	5.5	0.269
14.967	0.000	6.57	0.00	1.19	5.6	0.270
14.983	0.000	6.64	0.00	1.19	5.6	0.272
15.000	0.000	6.71	0.00	1.20	5.6	0.273
15.017	0.000	6.78	0.00	1.20	5.7	0.275
15.033	0.000	6.85	0.00	1.21	5.7	0.276
15.050	0.000	6.90	0.00	1.21	5.7	0.278
15.067	0.000	6.94	0.00	1.22	5.8	0.280
15.083	0.000	6.98	0.00	1.22	5.8	0.281
15.100	0.000	7.03	0.00	1.23	5.9	0.283
15.117	0.000	7.07	0.00	1.23	5.9	0.284
15.133	0.000	7.11	0.00	1.24	5.9	0.286

15.150	0.000	7.17	0.00	1.25	6.0	0.288
15.167	0.000	7.26	0.00	1.25	6.0	0.289
15.183	0.000	7.36	0.00	1.26	6.0	0.291
15.200	0.000	7.46	0.00	1.26	6.1	0.293
15.217	0.000	7.56	0.00	1.27	6.1	0.295
15.233	0.000	7.65	0.00	1.28	6.1	0.297
15.250	0.000	7.75	0.00	1.28	6.2	0.299
15.267	0.000	7.82	0.00	1.29	6.2	0.302
15.283	0.000	7.88	0.00	1.30	6.3	0.304
15.300	0.000	7.94	0.00	1.30	6.3	0.306
15.317	0.000	8.00	0.00	1.31	6.3	0.308
15.333	0.000	8.06	0.00	1.32	6.4	0.311
15.350	0.000	8.12	0.00	1.33	6.4	0.313
15.367	0.000	8.15	0.00	1.33	6.4	0.315
15.383	0.000	8.13	0.00	1.34	6.5	0.318
15.400	0.000	8.11	0.00	1.35	6.5	0.320
15.417	0.000	8.09	0.00	1.35	6.6	0.322
15.433	0.000	8.07	0.00	1.36	6.6	0.324
15.450	0.000	8.06	0.00	1.37	6.6	0.326
15.467	0.000	8.04	0.00	1.37	6.7	0.328
15.483	0.000	8.12	0.00	1.38	6.7	0.330
15.500	0.000	8.21	0.00	1.39	6.7	0.332
15.517	0.000	8.31	0.00	1.39	6.8	0.334
15.533	0.000	8.40	0.00	1.40	6.8	0.336
15.550	0.000	8.50	0.00	1.41	6.8	0.338
15.567	0.000	8.59	0.00	1.41	6.9	0.341
15.583	0.000	8.75	0.00	1.42	6.9	0.343
15.600	0.000	9.03	0.00	1.43	7.0	0.346
15.617	0.000	9.30	0.00	1.44	7.0	0.349
15.633	0.000	9.57	0.00	1.45	7.1	0.353
15.650	0.000	9.85	0.00	1.46	7.1	0.356
15.667	0.000	10.12	0.00	1.48	7.2	0.360
15.683	0.000	10.39	0.00	1.49	7.3	0.365
15.700	0.000	10.62	0.00	1.50	7.3	0.369
15.717	0.000	10.83	0.00	1.52	7.4	0.374
15.733	0.000	11.04	0.00	1.53	7.5	0.379
15.750	0.000	11.26	0.00	1.55	7.6	0.384
15.767	0.000	11.47	0.00	1.56	7.6	0.389
15.783	0.000	11.69	0.00	1.58	7.7	0.395
15.800	0.000	12.16	0.00	1.60	7.8	0.401
15.817	0.000	12.95	0.00	1.62	7.9	0.408
15.833	0.000	13.74	0.00	1.65	8.0	0.416
15.850	0.000	14.53	0.00	1.67	8.1	0.425
15.867	0.000	15.33	0.00	1.70	8.2	0.434
15.883	0.000	16.12	0.00	1.73	8.4	0.445
15.900	0.000	16.93	0.00	1.77	8.5	0.457
15.917	0.000	17.88	0.00	1.81	8.7	0.469
15.933	0.000	18.86	0.00	1.85	8.8	0.483
15.950	0.000	19.84	0.00	1.89	9.0	0.498
15.967	0.000	20.82	0.00	1.94	9.2	0.514

15.983	0.000	21.80	0.00	1.99	9.4	0.531
16.000	0.000	22.78	0.00	2.05	9.6	0.549
16.017	0.000	26.96	0.00	2.11	9.8	0.573
16.033	0.000	34.34	0.00	2.21	10.1	0.606
16.050	0.000	41.71	0.00	2.34	10.5	0.649
16.067	0.000	49.09	0.00	2.49	11.0	0.702
16.083	0.000	56.47	0.00	2.68	11.5	0.764
16.100	0.000	63.85	0.00	2.89	12.1	0.835
16.117	0.000	71.00	0.00	3.14	12.8	0.915
16.133	0.000	61.89	0.00	3.36	13.4	0.982
16.150	0.000	53.05	0.00	3.54	14.0	1.036
16.167	0.000	44.20	0.00	3.69	14.4	1.077
16.183	0.000	35.36	0.00	3.80	14.7	1.105
16.200	0.000	26.52	0.00	3.87	14.9	1.121
16.217	0.000	17.69	0.00	3.88	15.0	1.125
16.233	0.000	13.40	0.00	3.87	15.0	1.123
16.250	0.000	12.73	0.00	3.86	15.0	1.119
16.267	0.000	12.05	0.00	3.84	15.0	1.115
16.283	0.000	11.38	0.00	3.82	14.9	1.111
16.300	0.000	10.70	0.00	3.80	14.9	1.105
16.317	0.000	10.03	0.00	3.77	14.8	1.098
16.333	0.000	9.44	0.00	3.74	14.7	1.091
16.350	0.000	9.22	0.00	3.71	14.7	1.083
16.367	0.000	9.05	0.00	3.68	14.6	1.076
16.383	0.000	8.88	0.00	3.66	14.5	1.068
16.400	0.000	8.71	0.00	3.63	14.5	1.060
16.417	0.000	8.54	0.00	3.60	14.4	1.052
16.433	0.000	8.37	0.00	3.57	14.3	1.044
16.450	0.000	8.22	0.00	3.54	14.2	1.035
16.467	0.000	8.09	0.00	3.51	14.2	1.027
16.483	0.000	7.95	0.00	3.48	14.1	1.019
16.500	0.000	7.82	0.00	3.45	14.0	1.010
16.517	0.000	7.68	0.00	3.42	13.9	1.001
16.533	0.000	7.55	0.00	3.39	13.9	0.993
16.550	0.000	7.42	0.00	3.36	13.8	0.984
16.567	0.000	7.29	0.00	3.33	13.7	0.975
16.583	0.000	7.17	0.00	3.30	13.6	0.966
16.600	0.000	7.05	0.00	3.27	13.6	0.957
16.617	0.000	6.92	0.00	3.24	13.5	0.948
16.633	0.000	6.80	0.00	3.22	13.4	0.939
16.650	0.000	6.67	0.00	3.19	13.3	0.930
16.667	0.000	6.57	0.00	3.16	13.2	0.921
16.683	0.000	6.48	0.00	3.13	13.2	0.912
16.700	0.000	6.39	0.00	3.10	13.1	0.902
16.717	0.000	6.30	0.00	3.07	13.0	0.893
16.733	0.000	6.20	0.00	3.04	12.9	0.884
16.750	0.000	6.11	0.00	3.01	12.8	0.875
16.767	0.000	6.03	0.00	2.99	12.8	0.865
16.783	0.000	5.95	0.00	2.96	12.7	0.856
16.800	0.000	5.88	0.00	2.93	12.6	0.847

16.817	0.000	5.81	0.00	2.90	12.5	0.838
16.833	0.000	5.74	0.00	2.87	12.4	0.828
16.850	0.000	5.67	0.00	2.84	12.3	0.819
16.867	0.000	5.60	0.00	2.82	12.3	0.810
16.883	0.000	5.53	0.00	2.79	12.2	0.801
16.900	0.000	5.48	0.00	2.76	12.1	0.792
16.917	0.000	5.42	0.00	2.73	12.0	0.783
16.933	0.000	5.36	0.00	2.71	11.9	0.774
16.950	0.000	5.30	0.00	2.68	11.9	0.764
16.967	0.000	5.25	0.00	2.65	11.8	0.756
16.983	0.000	5.19	0.00	2.63	11.7	0.747
17.000	0.000	5.14	0.00	2.60	11.6	0.738
17.017	0.000	5.09	0.00	2.57	11.5	0.729
17.033	0.000	5.05	0.00	2.55	11.4	0.720
17.050	0.000	5.00	0.00	2.52	11.4	0.711
17.067	0.000	4.95	0.00	2.50	11.3	0.702
17.083	0.000	4.90	0.00	2.47	11.2	0.694
17.100	0.000	4.86	0.00	2.44	11.1	0.685
17.117	0.000	4.81	0.00	2.42	11.0	0.677
17.133	0.000	4.77	0.00	2.39	10.9	0.668
17.150	0.000	4.72	0.00	2.37	10.9	0.660
17.167	0.000	4.68	0.00	2.34	10.8	0.651
17.183	0.000	4.64	0.00	2.32	10.7	0.643
17.200	0.000	4.60	0.00	2.30	10.6	0.635
17.217	0.000	4.56	0.00	2.27	10.5	0.626
17.233	0.000	4.53	0.00	2.25	10.5	0.618
17.250	0.000	4.49	0.00	2.22	10.4	0.610
17.267	0.000	4.46	0.00	2.20	10.3	0.602
17.283	0.000	4.42	0.00	2.18	10.2	0.594
17.300	0.000	4.39	0.00	2.15	10.1	0.586
17.317	0.000	4.36	0.00	2.13	10.0	0.578
17.333	0.000	4.33	0.00	2.11	9.9	0.571
17.350	0.000	4.30	0.00	2.09	9.9	0.563
17.367	0.000	4.27	0.00	2.06	9.8	0.555
17.383	0.000	4.24	0.00	2.04	9.7	0.548
17.400	0.000	4.21	0.00	2.02	9.6	0.540
17.417	0.000	4.18	0.00	2.00	9.5	0.533
17.433	0.000	4.15	0.00	1.98	9.5	0.526
17.450	0.000	4.12	0.00	1.95	9.4	0.519
17.467	0.000	4.10	0.00	1.93	9.3	0.511
17.483	0.000	4.07	0.00	1.91	9.2	0.504
17.500	0.000	4.04	0.00	1.89	9.1	0.497
17.517	0.000	4.02	0.00	1.87	9.0	0.490
17.533	0.000	3.99	0.00	1.85	9.0	0.484
17.550	0.000	3.97	0.00	1.83	8.9	0.477
17.567	0.000	3.95	0.00	1.81	8.8	0.470
17.583	0.000	3.92	0.00	1.79	8.7	0.464
17.600	0.000	3.90	0.00	1.77	8.6	0.457
17.617	0.000	3.87	0.00	1.75	8.6	0.451
17.633	0.000	3.85	0.00	1.73	8.5	0.444

17.650	0.000	3.83	0.00	1.71	8.4	0.438
17.667	0.000	3.81	0.00	1.69	8.3	0.432
17.683	0.000	3.79	0.00	1.68	8.2	0.426
17.700	0.000	3.77	0.00	1.66	8.1	0.420
17.717	0.000	3.75	0.00	1.64	8.0	0.414
17.733	0.000	3.72	0.00	1.62	8.0	0.408
17.750	0.000	3.71	0.00	1.60	7.9	0.402
17.767	0.000	3.69	0.00	1.59	7.8	0.396
17.783	0.000	3.67	0.00	1.57	7.7	0.391
17.800	0.000	3.65	0.00	1.55	7.6	0.385
17.817	0.000	3.63	0.00	1.54	7.6	0.380
17.833	0.000	3.61	0.00	1.52	7.5	0.375
17.850	0.000	3.59	0.00	1.50	7.4	0.369
17.867	0.000	3.57	0.00	1.49	7.3	0.364
17.883	0.000	3.56	0.00	1.47	7.3	0.359
17.900	0.000	3.54	0.00	1.46	7.2	0.354
17.917	0.000	3.52	0.00	1.44	7.1	0.349
17.933	0.000	3.50	0.00	1.42	7.0	0.344
17.950	0.000	3.49	0.00	1.41	6.9	0.340
17.967	0.000	3.47	0.00	1.40	6.8	0.335
17.983	0.000	3.45	0.00	1.38	6.8	0.330
18.000	0.000	3.44	0.00	1.37	6.7	0.326
18.017	0.000	3.42	0.00	1.35	6.6	0.321
18.033	0.000	3.41	0.00	1.34	6.5	0.317
18.050	0.000	3.39	0.00	1.33	6.5	0.313
18.067	0.000	3.31	0.00	1.31	6.4	0.309
18.083	0.000	3.20	0.00	1.30	6.3	0.304
18.100	0.000	3.08	0.00	1.28	6.2	0.300
18.117	0.000	2.96	0.00	1.27	6.2	0.296
18.133	0.000	2.84	0.00	1.26	6.1	0.291
18.150	0.000	2.72	0.00	1.24	6.0	0.287
18.167	0.000	2.62	0.00	1.23	5.9	0.282
18.183	0.000	2.60	0.00	1.21	5.8	0.278
18.200	0.000	2.58	0.00	1.20	5.7	0.273
18.217	0.000	2.57	0.00	1.18	5.6	0.269
18.233	0.000	2.56	0.00	1.17	5.5	0.265
18.250	0.000	2.55	0.00	1.16	5.4	0.261
18.267	0.000	2.53	0.00	1.15	5.3	0.257
18.283	0.000	2.52	0.00	1.13	5.2	0.254
18.300	0.000	2.51	0.00	1.12	5.2	0.250
18.317	0.000	2.50	0.00	1.11	5.1	0.246
18.333	0.000	2.49	0.00	1.10	5.0	0.243
18.350	0.000	2.47	0.00	1.09	4.9	0.240
18.367	0.000	2.46	0.00	1.08	4.8	0.236
18.383	0.000	2.45	0.00	1.07	4.8	0.233
18.400	0.000	2.44	0.00	1.06	4.7	0.230
18.417	0.000	2.43	0.00	1.05	4.6	0.227
18.433	0.000	2.42	0.00	1.04	4.5	0.224
18.450	0.000	2.41	0.00	1.03	4.5	0.221
18.467	0.000	2.40	0.00	1.02	4.4	0.218

18.483	0.000	2.39	0.00	1.01	4.3	0.216
18.500	0.000	2.38	0.00	1.00	4.3	0.213
18.517	0.000	2.37	0.00	0.99	4.2	0.211
18.533	0.000	2.36	0.00	0.98	4.0	0.208
18.550	0.000	2.35	0.00	0.98	3.9	0.206
18.567	0.000	2.34	0.00	0.97	3.8	0.204
18.583	0.000	2.33	0.00	0.96	3.7	0.202
18.600	0.000	2.32	0.00	0.96	3.6	0.201
18.617	0.000	2.31	0.00	0.95	3.4	0.199
18.633	0.000	2.30	0.00	0.94	3.4	0.198
18.650	0.000	2.29	0.00	0.94	3.3	0.196
18.667	0.000	2.28	0.00	0.93	3.2	0.195
18.683	0.000	2.27	0.00	0.93	3.1	0.194
18.700	0.000	2.26	0.00	0.93	3.0	0.193
18.717	0.000	2.25	0.00	0.92	3.0	0.192
18.733	0.000	2.24	0.00	0.92	2.9	0.191
18.750	0.000	2.23	0.00	0.92	2.9	0.190
18.767	0.000	2.22	0.00	0.91	2.8	0.189
18.783	0.000	2.22	0.00	0.91	2.8	0.188
18.800	0.000	2.21	0.00	0.91	2.7	0.188
18.817	0.000	2.20	0.00	0.91	2.7	0.187
18.833	0.000	2.19	0.00	0.90	2.6	0.186
18.850	0.000	2.18	0.00	0.90	2.6	0.186
18.867	0.000	2.17	0.00	0.90	2.6	0.185
18.883	0.000	2.16	0.00	0.90	2.5	0.185
18.900	0.000	2.16	0.00	0.90	2.5	0.184
18.917	0.000	2.15	0.00	0.89	2.5	0.184
18.933	0.000	2.14	0.00	0.89	2.5	0.183
18.950	0.000	2.13	0.00	0.89	2.4	0.183
18.967	0.000	2.13	0.00	0.89	2.4	0.183
18.983	0.000	2.12	0.00	0.89	2.4	0.182
19.000	0.000	2.11	0.00	0.89	2.4	0.182
19.017	0.000	2.10	0.00	0.89	2.3	0.182
19.033	0.000	2.09	0.00	0.88	2.3	0.181
19.050	0.000	2.09	0.00	0.88	2.3	0.181
19.067	0.000	2.08	0.00	0.88	2.3	0.181
19.083	0.000	2.07	0.00	0.88	2.3	0.180
19.100	0.000	2.07	0.00	0.88	2.2	0.180
19.117	0.000	2.06	0.00	0.88	2.2	0.180
19.133	0.000	2.05	0.00	0.88	2.2	0.180
19.150	0.000	2.04	0.00	0.88	2.2	0.179
19.167	0.000	2.04	0.00	0.88	2.2	0.179
19.183	0.000	2.03	0.00	0.88	2.2	0.179
19.200	0.000	2.02	0.00	0.88	2.2	0.179
19.217	0.000	2.02	0.00	0.88	2.2	0.179
19.233	0.000	2.01	0.00	0.87	2.1	0.178
19.250	0.000	2.00	0.00	0.87	2.1	0.178
19.267	0.000	2.00	0.00	0.87	2.1	0.178
19.283	0.000	1.99	0.00	0.87	2.1	0.178
19.300	0.000	1.98	0.00	0.87	2.1	0.178

19.317	0.000	1.98	0.00	0.87	2.1	0.178
19.333	0.000	1.97	0.00	0.87	2.1	0.177
19.350	0.000	1.96	0.00	0.87	2.1	0.177
19.367	0.000	1.96	0.00	0.87	2.1	0.177
19.383	0.000	1.95	0.00	0.87	2.1	0.177
19.400	0.000	1.95	0.00	0.87	2.0	0.177
19.417	0.000	1.94	0.00	0.87	2.0	0.177
19.433	0.000	1.93	0.00	0.87	2.0	0.177
19.450	0.000	1.93	0.00	0.87	2.0	0.176
19.467	0.000	1.92	0.00	0.87	2.0	0.176
19.483	0.000	1.92	0.00	0.87	2.0	0.176
19.500	0.000	1.91	0.00	0.87	2.0	0.176
19.517	0.000	1.90	0.00	0.87	2.0	0.176
19.533	0.000	1.90	0.00	0.87	2.0	0.176
19.550	0.000	1.89	0.00	0.86	2.0	0.176
19.567	0.000	1.89	0.00	0.86	2.0	0.176
19.583	0.000	1.88	0.00	0.86	2.0	0.175
19.600	0.000	1.87	0.00	0.86	2.0	0.175
19.617	0.000	1.87	0.00	0.86	1.9	0.175
19.633	0.000	1.86	0.00	0.86	1.9	0.175
19.650	0.000	1.86	0.00	0.86	1.9	0.175
19.667	0.000	1.85	0.00	0.86	1.9	0.175
19.683	0.000	1.85	0.00	0.86	1.9	0.175
19.700	0.000	1.84	0.00	0.86	1.9	0.175
19.717	0.000	1.84	0.00	0.86	1.9	0.175
19.733	0.000	1.83	0.00	0.86	1.9	0.175
19.750	0.000	1.83	0.00	0.86	1.9	0.174
19.767	0.000	1.82	0.00	0.86	1.9	0.174
19.783	0.000	1.82	0.00	0.86	1.9	0.174
19.800	0.000	1.81	0.00	0.86	1.9	0.174
19.817	0.000	1.81	0.00	0.86	1.9	0.174
19.833	0.000	1.80	0.00	0.86	1.9	0.174
19.850	0.000	1.80	0.00	0.86	1.9	0.174
19.867	0.000	1.79	0.00	0.86	1.9	0.174
19.883	0.000	1.79	0.00	0.86	1.9	0.174
19.900	0.000	1.78	0.00	0.86	1.8	0.174
19.917	0.000	1.78	0.00	0.86	1.8	0.174
19.933	0.000	1.77	0.00	0.86	1.8	0.173
19.950	0.000	1.77	0.00	0.86	1.8	0.173
19.967	0.000	1.76	0.00	0.86	1.8	0.173
19.983	0.000	1.76	0.00	0.86	1.8	0.173
20.000	0.000	1.75	0.00	0.86	1.8	0.173

PROCESS SUMMARY OF STORAGE:

INFLOW VOLUME = 5.985 AF

BASIN STORAGE = 0.007 AF (WITH 0.000 AF INITIALLY FILLED)

OUTFLOW VOLUME = 5.978 AF

LOSS VOLUME = 0.000 AF

FLOW PROCESS FROM NODE 700.00 TO NODE 700.00 IS CODE = 7

>>>>STREAM NUMBER 3 ADDED TO STREAM NUMBER 2<<<<<

FLOW PROCESS FROM NODE 700.00 TO NODE 700.00 IS CODE = 7

>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<

FLOW PROCESS FROM NODE 700.00 TO NODE 700.00 IS CODE = 11

>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<

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

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	50.0	100.0	150.0	200.0
10.000	3.8527	7.81	.Q V .	.	.	.	.
10.017	3.8635	7.83	.Q V .	.	.	.	.
10.033	3.8743	7.84	.Q V .	.	.	.	.
10.050	3.8851	7.85	.Q V .	.	.	.	.
10.067	3.8960	7.87	.Q V .	.	.	.	.
10.083	3.9068	7.88	.Q V .	.	.	.	.
10.100	3.9177	7.89	.Q V .	.	.	.	.
10.117	3.9286	7.91	.Q V .	.	.	.	.
10.133	3.9395	7.92	.Q V .	.	.	.	.
10.150	3.9504	7.93	.Q V .	.	.	.	.
10.167	3.9614	7.94	.Q V .	.	.	.	.
10.183	3.9723	7.96	.Q V .	.	.	.	.
10.200	3.9833	7.97	.Q V .	.	.	.	.
10.217	3.9943	7.98	.Q V .	.	.	.	.
10.233	4.0053	8.00	.Q V .	.	.	.	.
10.250	4.0163	8.01	.Q V .	.	.	.	.
10.267	4.0274	8.03	.Q V .	.	.	.	.
10.283	4.0385	8.04	.Q V .	.	.	.	.
10.300	4.0496	8.05	.Q V .	.	.	.	.
10.317	4.0607	8.07	.Q V .	.	.	.	.
10.333	4.0718	8.08	.Q V .	.	.	.	.
10.350	4.0830	8.10	.Q V .	.	.	.	.
10.367	4.0941	8.11	.Q V .	.	.	.	.

10.383	4.1053	8.12	.Q V .	.	.	.	.
10.400	4.1165	8.14	.Q V .	.	.	.	.
10.417	4.1278	8.15	.Q V .	.	.	.	.
10.433	4.1390	8.17	.Q V .	.	.	.	.
10.450	4.1503	8.18	.Q V .	.	.	.	.
10.467	4.1616	8.19	.Q V .	.	.	.	.
10.483	4.1729	8.21	.Q V .	.	.	.	.
10.500	4.1842	8.22	.Q V .	.	.	.	.
10.517	4.1955	8.24	.Q V .	.	.	.	.
10.533	4.2069	8.25	.Q V .	.	.	.	.
10.550	4.2183	8.27	.Q V .	.	.	.	.
10.567	4.2297	8.28	.Q V .	.	.	.	.
10.583	4.2411	8.30	.Q V .	.	.	.	.
10.600	4.2526	8.31	.Q V .	.	.	.	.
10.617	4.2641	8.33	.Q V .	.	.	.	.
10.633	4.2755	8.34	.Q V .	.	.	.	.
10.650	4.2871	8.36	.Q V .	.	.	.	.
10.667	4.2986	8.37	.Q V .	.	.	.	.
10.683	4.3101	8.39	.Q V .	.	.	.	.
10.700	4.3217	8.40	.Q V .	.	.	.	.
10.717	4.3333	8.42	.Q V .	.	.	.	.
10.733	4.3449	8.44	.Q V .	.	.	.	.
10.750	4.3566	8.45	.Q V .	.	.	.	.
10.767	4.3682	8.47	.Q V .	.	.	.	.
10.783	4.3799	8.48	.Q V .	.	.	.	.
10.800	4.3916	8.50	.Q V .	.	.	.	.
10.817	4.4033	8.51	.Q V .	.	.	.	.
10.833	4.4151	8.53	.Q V .	.	.	.	.
10.850	4.4269	8.55	.Q V .	.	.	.	.
10.867	4.4387	8.56	.Q V .	.	.	.	.
10.883	4.4505	8.58	.Q V .	.	.	.	.
10.900	4.4623	8.59	.Q V .	.	.	.	.
10.917	4.4742	8.61	.Q V .	.	.	.	.
10.933	4.4861	8.63	.Q V .	.	.	.	.
10.950	4.4980	8.64	.Q V .	.	.	.	.
10.967	4.5099	8.66	.Q V .	.	.	.	.
10.983	4.5219	8.68	.Q V .	.	.	.	.
11.000	4.5338	8.69	.Q V .	.	.	.	.
11.017	4.5458	8.71	.Q V .	.	.	.	.
11.033	4.5578	8.73	.Q V .	.	.	.	.
11.050	4.5699	8.74	.Q V .	.	.	.	.
11.067	4.5820	8.76	.Q V .	.	.	.	.
11.083	4.5941	8.78	.Q V .	.	.	.	.
11.100	4.6062	8.80	.Q V .	.	.	.	.
11.117	4.6183	8.82	.Q V .	.	.	.	.
11.133	4.6305	8.83	.Q V .	.	.	.	.
11.150	4.6427	8.85	.Q V .	.	.	.	.
11.167	4.6549	8.87	.Q V .	.	.	.	.
11.183	4.6671	8.89	.Q V .	.	.	.	.
11.200	4.6794	8.90	.Q V .	.	.	.	.

11.217	4.6917	8.92	.Q	V	.	.	.
11.233	4.7040	8.94	.Q	V	.	.	.
11.250	4.7163	8.96	.Q	V	.	.	.
11.267	4.7287	8.97	.Q	V	.	.	.
11.283	4.7411	8.99	.Q	V	.	.	.
11.300	4.7535	9.01	.Q	V	.	.	.
11.317	4.7659	9.03	.Q	V	.	.	.
11.333	4.7784	9.05	.Q	V	.	.	.
11.350	4.7909	9.07	.Q	V	.	.	.
11.367	4.8034	9.09	.Q	V	.	.	.
11.383	4.8159	9.11	.Q	V	.	.	.
11.400	4.8285	9.13	.Q	V	.	.	.
11.417	4.8411	9.14	.Q	V	.	.	.
11.433	4.8537	9.16	.Q	V	.	.	.
11.450	4.8664	9.18	.Q	V	.	.	.
11.467	4.8791	9.20	.Q	V	.	.	.
11.483	4.8918	9.22	.Q	V	.	.	.
11.500	4.9045	9.24	.Q	V	.	.	.
11.517	4.9173	9.26	.Q	V	.	.	.
11.533	4.9300	9.28	.Q	V	.	.	.
11.550	4.9429	9.30	.Q	V	.	.	.
11.567	4.9557	9.32	.Q	V	.	.	.
11.583	4.9686	9.34	.Q	V	.	.	.
11.600	4.9815	9.36	.Q	V	.	.	.
11.617	4.9944	9.38	.Q	V	.	.	.
11.633	5.0073	9.40	.Q	V	.	.	.
11.650	5.0203	9.42	.Q	V	.	.	.
11.667	5.0333	9.45	.Q	V	.	.	.
11.683	5.0464	9.47	.Q	V	.	.	.
11.700	5.0594	9.49	.Q	V	.	.	.
11.717	5.0725	9.51	.Q	V	.	.	.
11.733	5.0857	9.53	.Q	V	.	.	.
11.750	5.0988	9.55	.Q	V	.	.	.
11.767	5.1120	9.57	.Q	V	.	.	.
11.783	5.1252	9.60	.Q	V	.	.	.
11.800	5.1385	9.62	.Q	V	.	.	.
11.817	5.1518	9.64	.Q	V	.	.	.
11.833	5.1651	9.66	.Q	V	.	.	.
11.850	5.1784	9.68	.Q	V	.	.	.
11.867	5.1918	9.71	.Q	V	.	.	.
11.883	5.2052	9.73	.Q	V	.	.	.
11.900	5.2186	9.75	.Q	V	.	.	.
11.917	5.2321	9.77	.Q	V	.	.	.
11.933	5.2456	9.80	.Q	V	.	.	.
11.950	5.2591	9.82	.Q	V	.	.	.
11.967	5.2726	9.84	.Q	V	.	.	.
11.983	5.2862	9.87	.Q	V	.	.	.
12.000	5.2999	9.89	.Q	V	.	.	.
12.017	5.3135	9.92	.Q	V	.	.	.
12.033	5.3272	9.94	.Q	V	.	.	.

12.050	5.3410	9.98	.Q	V	.	.	.
12.067	5.3548	10.03	.Q	V	.	.	.
12.083	5.3687	10.09	.Q	V	.	.	.
12.100	5.3827	10.16	.Q	V	.	.	.
12.117	5.3968	10.25	.Q	V	.	.	.
12.133	5.4110	10.35	.Q	V	.	.	.
12.150	5.4254	10.46	.Q	V	.	.	.
12.167	5.4400	10.58	.Q	V	.	.	.
12.183	5.4548	10.71	.Q	V	.	.	.
12.200	5.4697	10.84	.Q	V	.	.	.
12.217	5.4848	10.96	.Q	V	.	.	.
12.233	5.5001	11.09	.Q	V	.	.	.
12.250	5.5155	11.22	.Q	V	.	.	.
12.267	5.5311	11.33	.Q	V	.	.	.
12.283	5.5469	11.43	.Q	V	.	.	.
12.300	5.5627	11.51	.Q	V	.	.	.
12.317	5.5787	11.59	.Q	V	.	.	.
12.333	5.5948	11.67	.Q	V	.	.	.
12.350	5.6110	11.74	.Q	V	.	.	.
12.367	5.6272	11.79	.Q	V	.	.	.
12.383	5.6435	11.85	.Q	V	.	.	.
12.400	5.6599	11.90	.Q	V	.	.	.
12.417	5.6764	11.95	.Q	V	.	.	.
12.433	5.6929	12.00	.Q	V	.	.	.
12.450	5.7095	12.04	.Q	V	.	.	.
12.467	5.7261	12.09	.Q	V	.	.	.
12.483	5.7428	12.14	.Q	V	.	.	.
12.500	5.7596	12.18	.Q	V	.	.	.
12.517	5.7765	12.23	.Q	V	.	.	.
12.533	5.7934	12.27	.Q	V	.	.	.
12.550	5.8103	12.31	.Q	V	.	.	.
12.567	5.8273	12.35	.Q	V	.	.	.
12.583	5.8444	12.39	.Q	V	.	.	.
12.600	5.8615	12.43	.Q	V	.	.	.
12.617	5.8787	12.48	.Q	V	.	.	.
12.633	5.8959	12.52	.Q	V	.	.	.
12.650	5.9132	12.56	.Q	V	.	.	.
12.667	5.9306	12.60	.Q	V	.	.	.
12.683	5.9480	12.64	.Q	V	.	.	.
12.700	5.9655	12.68	.Q	V	.	.	.
12.717	5.9830	12.72	.Q	V	.	.	.
12.733	6.0006	12.76	.Q	V	.	.	.
12.750	6.0182	12.80	.Q	V	.	.	.
12.767	6.0359	12.84	.Q	V	.	.	.
12.783	6.0536	12.87	.Q	V	.	.	.
12.800	6.0714	12.91	.Q	V	.	.	.
12.817	6.0892	12.95	.Q	V	.	.	.
12.833	6.1071	12.99	.Q	V	.	.	.
12.850	6.1251	13.03	.Q	V	.	.	.
12.867	6.1431	13.07	.Q	V	.	.	.

12.883	6.1611	13.11	. Q	V	.	.	.
12.900	6.1792	13.15	. Q	V	.	.	.
12.917	6.1974	13.19	. Q	V	.	.	.
12.933	6.2156	13.23	. Q	V	.	.	.
12.950	6.2339	13.26	. Q	V	.	.	.
12.967	6.2522	13.30	. Q	V	.	.	.
12.983	6.2706	13.34	. Q	V	.	.	.
13.000	6.2890	13.38	. Q	V	.	.	.
13.017	6.3075	13.42	. Q	V	.	.	.
13.033	6.3260	13.46	. Q	V	.	.	.
13.050	6.3446	13.50	. Q	V	.	.	.
13.067	6.3633	13.54	. Q	V	.	.	.
13.083	6.3820	13.58	. Q	V	.	.	.
13.100	6.4007	13.62	. Q	V	.	.	.
13.117	6.4195	13.66	. Q	V	.	.	.
13.133	6.4384	13.70	. Q	V	.	.	.
13.150	6.4573	13.74	. Q	.V	.	.	.
13.167	6.4763	13.78	. Q	.V	.	.	.
13.183	6.4954	13.82	. Q	.V	.	.	.
13.200	6.5144	13.86	. Q	.V	.	.	.
13.217	6.5336	13.90	. Q	.V	.	.	.
13.233	6.5528	13.94	. Q	.V	.	.	.
13.250	6.5720	13.98	. Q	.V	.	.	.
13.267	6.5914	14.02	. Q	.V	.	.	.
13.283	6.6107	14.06	. Q	.V	.	.	.
13.300	6.6302	14.11	. Q	.V	.	.	.
13.317	6.6497	14.15	. Q	.V	.	.	.
13.333	6.6692	14.19	. Q	.V	.	.	.
13.350	6.6888	14.24	. Q	.V	.	.	.
13.367	6.7085	14.28	. Q	.V	.	.	.
13.383	6.7282	14.32	. Q	.V	.	.	.
13.400	6.7480	14.37	. Q	.V	.	.	.
13.417	6.7678	14.41	. Q	.V	.	.	.
13.433	6.7877	14.45	. Q	.V	.	.	.
13.450	6.8077	14.49	. Q	.V	.	.	.
13.467	6.8277	14.54	. Q	.V	.	.	.
13.483	6.8478	14.58	. Q	.V	.	.	.
13.500	6.8680	14.63	. Q	.V	.	.	.
13.517	6.8882	14.67	. Q	.V	.	.	.
13.533	6.9085	14.72	. Q	.V	.	.	.
13.550	6.9288	14.77	. Q	.V	.	.	.
13.567	6.9492	14.81	. Q	.V	.	.	.
13.583	6.9697	14.86	. Q	.V	.	.	.
13.600	6.9902	14.91	. Q	.V	.	.	.
13.617	7.0108	14.96	. Q	.V	.	.	.
13.633	7.0315	15.00	. Q	.V	.	.	.
13.650	7.0522	15.05	. Q	. V	.	.	.
13.667	7.0730	15.10	. Q	. V	.	.	.
13.683	7.0939	15.14	. Q	. V	.	.	.
13.700	7.1148	15.19	. Q	. V	.	.	.

13.717	7.1358	15.24	. Q	. V	.	.	.
13.733	7.1568	15.29	. Q	. V	.	.	.
13.750	7.1780	15.34	. Q	. V	.	.	.
13.767	7.1992	15.38	. Q	. V	.	.	.
13.783	7.2204	15.42	. Q	. V	.	.	.
13.800	7.2417	15.46	. Q	. V	.	.	.
13.817	7.2631	15.51	. Q	. V	.	.	.
13.833	7.2845	15.55	. Q	. V	.	.	.
13.850	7.3060	15.60	. Q	. V	.	.	.
13.867	7.3275	15.64	. Q	. V	.	.	.
13.883	7.3491	15.69	. Q	. V	.	.	.
13.900	7.3708	15.73	. Q	. V	.	.	.
13.917	7.3925	15.78	. Q	. V	.	.	.
13.933	7.4143	15.83	. Q	. V	.	.	.
13.950	7.4362	15.87	. Q	. V	.	.	.
13.967	7.4581	15.92	. Q	. V	.	.	.
13.983	7.4801	15.97	. Q	. V	.	.	.
14.000	7.5022	16.02	. Q	. V	.	.	.
14.017	7.5243	16.08	. Q	. V	.	.	.
14.033	7.5465	16.13	. Q	. V	.	.	.
14.050	7.5688	16.18	. Q	. V	.	.	.
14.067	7.5912	16.23	. Q	. V	.	.	.
14.083	7.6136	16.29	. Q	. V	.	.	.
14.100	7.6361	16.34	. Q	. V	.	.	.
14.117	7.6587	16.40	. Q	. V	.	.	.
14.133	7.6814	16.45	. Q	. V	.	.	.
14.150	7.7041	16.50	. Q	. V	.	.	.
14.167	7.7269	16.55	. Q	. V	.	.	.
14.183	7.7498	16.60	. Q	. V	.	.	.
14.200	7.7727	16.66	. Q	. V	.	.	.
14.217	7.7957	16.70	. Q	. V	.	.	.
14.233	7.8188	16.75	. Q	. V	.	.	.
14.250	7.8419	16.80	. Q	. V	.	.	.
14.267	7.8652	16.86	. Q	. V	.	.	.
14.283	7.8885	16.91	. Q	. V	.	.	.
14.300	7.9118	16.96	. Q	. V	.	.	.
14.317	7.9352	17.01	. Q	. V	.	.	.
14.333	7.9587	17.07	. Q	. V	.	.	.
14.350	7.9823	17.12	. Q	. V	.	.	.
14.367	8.0060	17.17	. Q	. V	.	.	.
14.383	8.0297	17.23	. Q	. V	.	.	.
14.400	8.0535	17.29	. Q	. V	.	.	.
14.417	8.0774	17.35	. Q	. V	.	.	.
14.433	8.1014	17.41	. Q	. V	.	.	.
14.450	8.1255	17.47	. Q	. V	.	.	.
14.467	8.1496	17.53	. Q	. V	.	.	.
14.483	8.1738	17.59	. Q	. V	.	.	.
14.500	8.1981	17.65	. Q	. V	.	.	.
14.517	8.2225	17.71	. Q	. V	.	.	.
14.533	8.2470	17.78	. Q	. V	.	.	.

14.550	8.2716	17.84	.	Q	.	V	.	.	.
14.567	8.2963	17.91	.	Q	.	V	.	.	.
14.583	8.3210	17.98	.	Q	.	V	.	.	.
14.600	8.3459	18.04	.	Q	.	V	.	.	.
14.617	8.3708	18.11	.	Q	.	V	.	.	.
14.633	8.3959	18.18	.	Q	.	V	.	.	.
14.650	8.4210	18.26	.	Q	.	V	.	.	.
14.667	8.4463	18.33	.	Q	.	V	.	.	.
14.683	8.4716	18.40	.	Q	.	V	.	.	.
14.700	8.4971	18.48	.	Q	.	V	.	.	.
14.717	8.5226	18.55	.	Q	.	V	.	.	.
14.733	8.5483	18.63	.	Q	.	V	.	.	.
14.750	8.5740	18.71	.	Q	.	V	.	.	.
14.767	8.5999	18.78	.	Q	.	V	.	.	.
14.783	8.6259	18.87	.	Q	.	V	.	.	.
14.800	8.6520	18.95	.	Q	.	V	.	.	.
14.817	8.6782	19.03	.	Q	.	V	.	.	.
14.833	8.7045	19.12	.	Q	.	V	.	.	.
14.850	8.7310	19.20	.	Q	.	V	.	.	.
14.867	8.7576	19.29	.	Q	.	V	.	.	.
14.883	8.7843	19.38	.	Q	.	V	.	.	.
14.900	8.8111	19.47	.	Q	.	V	.	.	.
14.917	8.8380	19.56	.	Q	.	V	.	.	.
14.933	8.8651	19.65	.	Q	.	V	.	.	.
14.950	8.8923	19.75	.	Q	.	V	.	.	.
14.967	8.9196	19.85	.	Q	.	V	.	.	.
14.983	8.9471	19.94	.	Q	.	V	.	.	.
15.000	8.9747	20.05	.	Q	.	V	.	.	.
15.017	9.0025	20.15	.	Q	.	V	.	.	.
15.033	9.0304	20.25	.	Q	.	V	.	.	.
15.050	9.0584	20.36	.	Q	.	V	.	.	.
15.067	9.0866	20.47	.	Q	.	V	.	.	.
15.083	9.1150	20.57	.	Q	.	V	.	.	.
15.100	9.1434	20.67	.	Q	.	V	.	.	.
15.117	9.1721	20.78	.	Q	.	V	.	.	.
15.133	9.2008	20.88	.	Q	.	V	.	.	.
15.150	9.2297	20.98	.	Q	.	V	.	.	.
15.167	9.2587	21.08	.	Q	.	V	.	.	.
15.183	9.2879	21.19	.	Q	.	V	.	.	.
15.200	9.3173	21.29	.	Q	.	V	.	.	.
15.217	9.3467	21.40	.	Q	.	V	.	.	.
15.233	9.3763	21.50	.	Q	.	V	.	.	.
15.250	9.4061	21.62	.	Q	.	V	.	.	.
15.267	9.4361	21.73	.	Q	.	V	.	.	.
15.283	9.4661	21.85	.	Q	.	V	.	.	.
15.300	9.4964	21.97	.	Q	.	V	.	.	.
15.317	9.5268	22.09	.	Q	.	V	.	.	.
15.333	9.5574	22.21	.	Q	.	V	.	.	.
15.350	9.5882	22.33	.	Q	.	V	.	.	.
15.367	9.6191	22.45	.	Q	.	V	.	.	.

15.383	9.6502	22.57	.	Q	.	V	.	.	.
15.400	9.6814	22.69	.	Q	.	V	.	.	.
15.417	9.7129	22.81	.	Q	.	V	.	.	.
15.433	9.7444	22.93	.	Q	.	V	.	.	.
15.450	9.7762	23.05	.	Q	.	V	.	.	.
15.467	9.8081	23.16	.	Q	.	V	.	.	.
15.483	9.8401	23.27	.	Q	.	V	.	.	.
15.500	9.8724	23.39	.	Q	.	V	.	.	.
15.517	9.9047	23.50	.	Q	.	V	.	.	.
15.533	9.9373	23.62	.	Q	.	V	.	.	.
15.550	9.9700	23.74	.	Q	.	V	.	.	.
15.567	10.0028	23.87	.	Q	.	V	.	.	.
15.583	10.0359	23.99	.	Q	.	V	.	.	.
15.600	10.0691	24.12	.	Q	.	V	.	.	.
15.617	10.1025	24.27	.	Q	.	V	.	.	.
15.633	10.1362	24.42	.	Q	.	V	.	.	.
15.650	10.1700	24.58	.	Q	.	V	.	.	.
15.667	10.2041	24.75	.	Q	.	V	.	.	.
15.683	10.2385	24.94	.	Q	.	V	.	.	.
15.700	10.2731	25.13	.	Q	.	V	.	.	.
15.717	10.3080	25.32	.	Q	.	V	.	.	.
15.733	10.3431	25.52	.	Q	.	V	.	.	.
15.750	10.3785	25.72	.	Q	.	V	.	.	.
15.767	10.4143	25.93	.	Q	.	V	.	.	.
15.783	10.4503	26.14	.	Q	.	V	.	.	.
15.800	10.4866	26.37	.	Q	.	V	.	.	.
15.817	10.5233	26.63	.	Q	.	V	.	.	.
15.833	10.5604	26.92	.	Q	.	V	.	.	.
15.850	10.5979	27.23	.	Q	.	V	.	.	.
15.867	10.6358	27.57	.	Q	.	V	.	.	.
15.883	10.6743	27.93	.	Q	.	V	.	.	.
15.900	10.7133	28.31	.	Q	.	V	.	.	.
15.917	10.7529	28.72	.	Q	.	V	.	.	.
15.933	10.7930	29.16	.	Q	.	V	.	.	.
15.950	10.8338	29.63	.	Q	.	V	.	.	.
15.967	10.8753	30.12	.	Q	.	V	.	.	.
15.983	10.9175	30.63	.	Q	.	V	.	.	.
16.000	10.9604	31.16	.	Q	.	V	.	.	.
16.017	11.0042	31.77	.	Q	.	V	.	.	.
16.033	11.0491	32.58	.	Q	.	V	.	.	.
16.050	11.0954	33.64	.	Q	.	V	.	.	.
16.067	11.1435	34.91	.	Q	.	V	.	.	.
16.083	11.1938	36.48	.	Q	.	V	.	.	.
16.100	11.2489	40.02	.	Q	.	V	.	.	.
16.117	11.3212	52.50	.	Q	.	V	.	.	.
16.133	11.4219	73.13	.	.	Q	V	.	.	.
16.150	11.5495	92.60	.	.	.	QV	.	.	.
16.167	11.6955	105.99	.	.	.	V.Q	.	.	.
16.183	11.8497	112.01	.	.	.	V Q	.	.	.
16.200	12.0036	111.71	.	.	.	V Q	.	.	.

16.217	12.1502	106.43	.	.	VQ	.	.
16.233	12.2856	98.27	.	.	QV	.	.
16.250	12.4093	89.82	.	.	.V	.	.
16.267	12.5233	82.74	.	.	.V	.	.
16.283	12.6292	76.92	.	.	.V	.	.
16.300	12.7280	71.76	.	.	.V	.	.
16.317	12.8211	67.56	.	.	.V	.	.
16.333	12.9100	64.57	.	.	.V	.	.
16.350	12.9957	62.19	.	.	.V	.	.
16.367	13.0783	59.95	.	.	.V	.	.
16.383	13.1580	57.87	.	.	.V	.	.
16.400	13.2350	55.95	.	.	.V	.	.
16.417	13.3097	54.17	.	.	.V	.	.
16.433	13.3820	52.52	.	.	.V	.	.
16.450	13.4522	51.00	.	.	.V	.	.
16.467	13.5204	49.48	.	.	.V	.	.
16.483	13.5865	47.97	.	.	.V	.	.
16.500	13.6507	46.61	.	.	.V	.	.
16.517	13.7132	45.42	.	.	.V	.	.
16.533	13.7743	44.35	.	.	.V	.	.
16.550	13.8341	43.39	.	.	.V	.	.
16.567	13.8928	42.62	.	.	.V	.	.
16.583	13.9508	42.12	.	.	.V	.	.
16.600	14.0083	41.77	.	.	.V	.	.
16.617	14.0654	41.42	.	.	.V	.	.
16.633	14.1220	41.07	.	.	.V	.	.
16.650	14.1781	40.73	.	.	.V	.	.
16.667	14.2337	40.39	.	.	.V	.	.
16.683	14.2889	40.05	.	.	.V	.	.
16.700	14.3436	39.72	.	.	.V	.	.
16.717	14.3978	39.39	.	.	.V	.	.
16.733	14.4516	39.07	.	.	.V	.	.
16.750	14.5050	38.75	.	.	.V	.	.
16.767	14.5579	38.43	.	.	.V	.	.
16.783	14.6104	38.12	.	.	.V	.	.
16.800	14.6627	37.91	.	.	.V	.	.
16.817	14.7147	37.78	.	.	.V	.	.
16.833	14.7666	37.65	.	.	.V	.	.
16.850	14.8182	37.52	.	.	.V	.	.
16.867	14.8697	37.39	.	.	.V	.	.
16.883	14.9210	37.25	.	.	.V	.	.
16.900	14.9722	37.12	.	.	.V	.	.
16.917	15.0231	36.99	.	.	.V	.	.
16.933	15.0739	36.85	.	.	.V	.	.
16.950	15.1244	36.71	.	.	.V	.	.
16.967	15.1748	36.58	.	.	.V	.	.
16.983	15.2250	36.44	.	.	.V	.	.
17.000	15.2750	36.30	.	.	.V	.	.
17.017	15.3248	36.16	.	.	.V	.	.
17.033	15.3744	36.02	.	.	.V	.	.

17.050	15.4239	35.89	.	Q	.	.	V	.	.
17.067	15.4731	35.75	.	Q	.	.	V	.	.
17.083	15.5222	35.61	.	Q	.	.	V	.	.
17.100	15.5710	35.46	.	Q	.	.	V	.	.
17.117	15.6197	35.32	.	Q	.	.	V	.	.
17.133	15.6681	35.18	.	Q	.	.	V	.	.
17.150	15.7164	35.04	.	Q	.	.	V	.	.
17.167	15.7644	34.89	.	Q	.	.	V	.	.
17.183	15.8123	34.75	.	Q	.	.	V	.	.
17.200	15.8600	34.60	.	Q	.	.	V	.	.
17.217	15.9074	34.45	.	Q	.	.	V	.	.
17.233	15.9547	34.29	.	Q	.	.	V	.	.
17.250	16.0017	34.13	.	Q	.	.	V	.	.
17.267	16.0484	33.96	.	Q	.	.	V	.	.
17.283	16.0950	33.80	.	Q	.	.	V	.	.
17.300	16.1413	33.63	.	Q	.	.	V	.	.
17.317	16.1874	33.47	.	Q	.	.	V	.	.
17.333	16.2333	33.30	.	Q	.	.	V	.	.
17.350	16.2789	33.14	.	Q	.	.	V	.	.
17.367	16.3244	32.98	.	Q	.	.	V	.	.
17.383	16.3696	32.81	.	Q	.	.	V	.	.
17.400	16.4145	32.65	.	Q	.	.	V	.	.
17.417	16.4593	32.49	.	Q	.	.	V	.	.
17.433	16.5038	32.33	.	Q	.	.	V	.	.
17.450	16.5481	32.16	.	Q	.	.	V	.	.
17.467	16.5922	31.99	.	Q	.	.	V	.	.
17.483	16.6360	31.82	.	Q	.	.	V	.	.
17.500	16.6796	31.66	.	Q	.	.	V	.	.
17.517	16.7230	31.50	.	Q	.	.	V	.	.
17.533	16.7661	31.34	.	Q	.	.	V	.	.
17.550	16.8091	31.17	.	Q	.	.	V	.	.
17.567	16.8518	31.01	.	Q	.	.	V	.	.
17.583	16.8943	30.85	.	Q	.	.	V	.	.
17.600	16.9366	30.69	.	Q	.	.	V	.	.
17.617	16.9786	30.54	.	Q	.	.	V	.	.
17.633	17.0205	30.37	.	Q	.	.	V	.	.
17.650	17.0621	30.21	.	Q	.	.	V	.	.
17.667	17.1035	30.04	.	Q	.	.	V	.	.
17.683	17.1446	29.87	.	Q	.	.	V	.	.
17.700	17.1855	29.71	.	Q	.	.	V	.	.
17.717	17.2262	29.55	.	Q	.	.	V	.	.
17.733	17.2667	29.39	.	Q	.	.	V	.	.
17.750	17.3070	29.23	.	Q	.	.	V	.	.
17.767	17.3470	29.07	.	Q	.	.	V	.	.
17.783	17.3868	28.91	.	Q	.	.	V	.	.
17.800	17.4264	28.75	.	Q	.	.	V	.	.
17.817	17.4658	28.60	.	Q	.	.	V	.	.
17.833	17.5050	28.45	.	Q	.	.	V	.	.
17.850	17.5440	28.29	.	Q	.	.	V	.	.
17.867	17.5827	28.13	.	Q	.	.	V	.	.

17.883	17.6212	27.96	.	Q	.	.	V	.
17.900	17.6595	27.79	.	Q	.	.	V	.
17.917	17.6975	27.62	.	Q	.	.	V	.
17.933	17.7353	27.45	.	Q	.	.	V	.
17.950	17.7729	27.28	.	Q	.	.	V	.
17.967	17.8103	27.12	.	Q	.	.	V	.
17.983	17.8474	26.96	.	Q	.	.	V	.
18.000	17.8843	26.79	.	Q	.	.	V	.
18.017	17.9210	26.63	.	Q	.	.	V	.
18.033	17.9575	26.47	.	Q	.	.	V	.
18.050	17.9937	26.32	.	Q	.	.	V	.
18.067	18.0297	26.16	.	Q	.	.	V	.
18.083	18.0656	26.00	.	Q	.	.	V	.
18.100	18.1011	25.84	.	Q	.	.	V	.
18.117	18.1365	25.67	.	Q	.	.	V	.
18.133	18.1716	25.51	.	Q	.	.	V	.
18.150	18.2065	25.33	.	Q	.	.	.V	.
18.167	18.2412	25.14	.	Q	.	.	.V	.
18.183	18.2755	24.94	.	Q	.	.	.V	.
18.200	18.3096	24.74	.	Q	.	.	.V	.
18.217	18.3434	24.54	.	Q	.	.	.V	.
18.233	18.3769	24.34	.	Q	.	.	.V	.
18.250	18.4102	24.15	.	Q	.	.	.V	.
18.267	18.4432	23.96	.	Q	.	.	.V	.
18.283	18.4759	23.77	.	Q	.	.	.V	.
18.300	18.5084	23.58	.	Q	.	.	.V	.
18.317	18.5406	23.39	.	Q	.	.	.V	.
18.333	18.5726	23.21	.	Q	.	.	.V	.
18.350	18.6043	23.03	.	Q	.	.	.V	.
18.367	18.6358	22.86	.	Q	.	.	.V	.
18.383	18.6671	22.68	.	Q	.	.	.V	.
18.400	18.6981	22.51	.	Q	.	.	.V	.
18.417	18.7289	22.35	.	Q	.	.	.V	.
18.433	18.7594	22.18	.	Q	.	.	.V	.
18.450	18.7897	22.02	.	Q	.	.	.V	.
18.467	18.8198	21.86	.	Q	.	.	.V	.
18.483	18.8497	21.70	.	Q	.	.	.V	.
18.500	18.8794	21.54	.	Q	.	.	.V	.
18.517	18.9088	21.34	.	Q	.	.	.V	.
18.533	18.9379	21.10	.	Q	.	.	.V	.
18.550	18.9666	20.86	.	Q	.	.	.V	.
18.567	18.9950	20.63	.	Q	.	.	.V	.
18.583	19.0231	20.41	.	Q	.	.	.V	.
18.600	19.0510	20.20	.	Q	.	.	.V	.
18.617	19.0785	20.00	.	Q	.	.	.V	.
18.633	19.1058	19.80	.	Q	.	.	.V	.
18.650	19.1328	19.61	.	Q	.	.	.V	.
18.667	19.1595	19.43	.	Q	.	.	.V	.
18.683	19.1861	19.25	.	Q	.	.	.V	.
18.700	19.2124	19.09	.	Q	.	.	.V	.

18.717	19.2384	18.92	.	Q	.	.	.V	.
18.733	19.2643	18.76	.	Q	.	.	.V	.
18.750	19.2899	18.61	.	Q	.	.	.V	.
18.767	19.3153	18.46	.	Q	.	.	.V	.
18.783	19.3406	18.32	.	Q	.	.	.V	.
18.800	19.3656	18.18	.	Q	.	.	.V	.
18.817	19.3904	18.04	.	Q	.	.	.V	.
18.833	19.4151	17.91	.	Q	.	.	.V	.
18.850	19.4396	17.78	.	Q	.	.	.V	.
18.867	19.4639	17.65	.	Q	.	.	.V	.
18.883	19.4880	17.52	.	Q	.	.	.V	.
18.900	19.5120	17.40	.	Q	.	.	.V	.
18.917	19.5358	17.27	.	Q	.	.	.V	.
18.933	19.5594	17.14	.	Q	.	.	.V	.
18.950	19.5829	17.02	.	Q	.	.	.V	.
18.967	19.6061	16.90	.	Q	.	.	.V	.
18.983	19.6292	16.77	.	Q	.	.	.V	.
19.000	19.6522	16.64	.	Q	.	.	.V	.
19.017	19.6749	16.52	.	Q	.	.	.V	.
19.033	19.6975	16.40	.	Q	.	.	.V	.
19.050	19.7199	16.28	.	Q	.	.	.V	.
19.067	19.7422	16.16	.	Q	.	.	.V	.
19.083	19.7643	16.04	.	Q	.	.	.V	.
19.100	19.7862	15.93	.	Q	.	.	.V	.
19.117	19.8080	15.82	.	Q	.	.	.V	.
19.133	19.8296	15.71	.	Q	.	.	.V	.
19.150	19.8511	15.60	.	Q	.	.	.V	.
19.167	19.8725	15.49	.	Q	.	.	.V	.
19.183	19.8936	15.38	.	Q	.	.	.V	.
19.200	19.9147	15.28	.	Q	.	.	.V	.
19.217	19.9356	15.17	.	Q	.	.	.V	.
19.233	19.9563	15.07	.	Q	.	.	.V	.
19.250	19.9770	14.97	.	Q	.	.	.V	.
19.267	19.9974	14.87	.	Q	.	.	.V	.
19.283	20.0178	14.77	.	Q	.	.	.V	.
19.300	20.0380	14.67	.	Q	.	.	.V	.
19.317	20.0581	14.58	.	Q	.	.	.V	.
19.333	20.0780	14.48	.	Q	.	.	.V	.
19.350	20.0979	14.39	.	Q	.	.	.V	.
19.367	20.1175	14.29	.	Q	.	.	.V	.
19.383	20.1371	14.18	.	Q	.	.	.V	.
19.400	20.1564	14.07	.	Q	.	.	.V	.
19.417	20.1757	13.97	.	Q	.	.	.V	.
19.433	20.1948	13.86	.	Q	.	.	.V	.
19.450	20.2137	13.76	.	Q	.	.	.V	.
19.467	20.2325	13.66	.	Q	.	.	.V	.
19.483	20.2512	13.54	.	Q	.	.	.V	.
19.500	20.2697	13.43	.	Q	.	.	.V	.
19.517	20.2880	13.32	.	Q	.	.	.V	.
19.533	20.3062	13.21	.	Q	.	.	.V	.

19.550	20.3243	13.10	. Q	.	.	.	V	.
19.567	20.3422	13.00	. Q	.	.	.	V	.
19.583	20.3600	12.90	. Q	.	.	.	V	.
19.600	20.3776	12.79	. Q	.	.	.	V	.
19.617	20.3951	12.69	. Q	.	.	.	V	.
19.633	20.4124	12.59	. Q	.	.	.	V	.
19.650	20.4296	12.50	. Q	.	.	.	V	.
19.667	20.4467	12.40	. Q	.	.	.	V	.
19.683	20.4636	12.30	. Q	.	.	.	V	.
19.700	20.4805	12.21	. Q	.	.	.	V	.
19.717	20.4972	12.12	. Q	.	.	.	V	.
19.733	20.5137	12.03	. Q	.	.	.	V	.
19.750	20.5302	11.94	. Q	.	.	.	V	.
19.767	20.5465	11.85	. Q	.	.	.	V	.
19.783	20.5627	11.76	. Q	.	.	.	V	.
19.800	20.5788	11.67	. Q	.	.	.	V	.
19.817	20.5947	11.59	. Q	.	.	.	V	.
19.833	20.6106	11.51	. Q	.	.	.	V	.
19.850	20.6263	11.42	. Q	.	.	.	V	.
19.867	20.6419	11.34	. Q	.	.	.	V	.
19.883	20.6574	11.26	. Q	.	.	.	V	.
19.900	20.6729	11.18	. Q	.	.	.	V	.
19.917	20.6881	11.11	. Q	.	.	.	V	.
19.933	20.7033	11.03	. Q	.	.	.	V	.
19.950	20.7184	10.95	. Q	.	.	.	V	.
19.967	20.7334	10.88	. Q	.	.	.	V	.
19.983	20.7483	10.80	. Q	.	.	.	V	.
20.000	20.7631	10.73	. Q	.	.	.	V	.

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
=====	=====
0%	1201.0
10%	1201.0
20%	915.0
30%	380.0
40%	125.0
50%	80.0
60%	60.0
70%	40.0
80%	35.0
90%	20.0

=====

END OF FLOODSCx ROUTING ANALYSIS

Basin - Area C (on-site flows)

AMC II

25 Year Storm - Proposed Condition

P25	4.49 in.									
CN	S	Ia	Y	Ybar	Total A		Fm	Tc	Calibration Co.	
90	1.11	0.22	0.75	0.25			13.51	0.03	11.9	0.9

Rainfall	Depth (in)
5 min	0.40
30 min	0.87
1 hr	1.15
3 hr	1.94
6 hr	2.71
24 hr	4.49

Soil Group	B
Fp	0.3
Fm	ap*Fp
ap	0.10
Fm	0.03

AMC III

100 Year Storm - Proposed Condition

P100	5.63 in.									
CN	S	Ia	Y	Ybar			Total A	Fm	Tc	Calibration Co.
98	0.20	0.04	0.96	0.04			13.51	0.03	11.64	0.9

Rainfall	Depth (in)
5 min	0.52
30 min	1.09
1 hr	1.45
3 hr	2.43
6 hr	3.36
24 hr	5.63

Soil Group	B
Fp	0.3
Fm	ap*Fp
ap	0.10
Fm	0.03

DVC Storage Vol (cf) =				44199	Is DCV met?	At what elevation?
					YES	177.67

Stage	Elevation (sys)	Head in Basin	Total. Vol (af)*	Total Flows (cfs)
1.000	174.20	0.00	0.000	0.000
2.000	174.45	0.25	0.043	0.000
3.000	174.70	0.50	0.087	0.000
4.000	174.95	0.75	0.144	0.000
5.000	175.20	1.00	0.213	4.254
6.000	175.45	1.25	0.289	6.017
7.000	175.70	1.50	0.368	7.369
8.000	175.95	1.75	0.450	8.509
9.000	176.20	2.00	0.534	9.513
10.000	176.45	2.25	0.619	10.421
11.000	176.70	2.50	0.704	11.256
12.000	176.95	2.75	0.788	12.033
13.000	177.20	3.00	0.870	12.763
14.000	177.45	3.25	0.950	13.454
15.000	177.70	3.50	1.025	14.110
16.000	177.95	3.75	1.094	14.738
17.000	178.20	4.00	1.152	15.339
18.000	178.45	4.25	1.195	15.918
20.000	178.70	4.50	1.238	17.996
21.000	178.95	4.75	1.282	22.143
22.000	179.20	5.00	1.325	27.485

*

WEIR

SEE NEXT SHEET FOR DETAILED CALCULATIONS

DIVERSION MANHOLE C

High Flow Orifice C =	0.6	Low Flow Orifice C =	0.6
High Flow Orifice Size (inch) =	36	Low Flow Orifice Size (inch) =	18
Centroid Elevation (ft) =	1.50	Centroid Elevation (ft) =	0.75
Weir Length (Feet) =	5.50	Diversion Manhole C RIM Elevation	181.11
Weir C =	3.087	Inside Manhole C Top Elevation	180.11

172.3			SYSTEM VOLUME				MANHOLE C								
Stage (Feet)	Water Elevation at Manhole (ft)	Head in Basin (ft)	Pipe Volume (per linear foot)*	Rock/voids volume (per linear foot)*	Cumulative Volume Storage (cu.ft)*	Cumulative Volume Storage (ace-ft)*	Water Level at Manhole (ft)	Head (Feet)	Low Flow Orifice (cfs)	Weir Head (Feet)	Weir Flow (cfs)	Head (Feet)	High Flow Orifice (cfs)	Flow Regime	Flow (cfs)
1	174.20	0.00	0	0.00	0	0.000	0.00	0.00				0.00			0.00
2	174.45	0.25	0	6.00	1887	0.043	0.25	0.25				0.25			0.00
3	174.70	0.50	0	6.00	3774	0.087	0.50	0.50				0.50			0.00
4	174.95	0.75	3.36	4.66	6294	0.144	0.75	0.75	0.00			0.75			0.00
5	175.20	1.00	5.92	3.63	9297	0.213	1.00	1.00	4.25			1.00			4.25
6	175.45	1.25	7.36	3.06	12573	0.289	1.25	1.25	6.02			1.25		0.00	6.02
7	175.70	1.50	8.33	2.67	16031	0.368	1.50	1.50	7.37			1.50	0.00	0.00	7.37
8	175.95	1.75	8.98	2.41	19612	0.450	1.75	1.75	8.51			1.75	17.02	0.00	8.51
9	176.20	2.00	9.39	2.24	23272	0.534	2.00	2.00	9.51			2.00	24.07	0.00	9.51
10	176.45	2.25	9.59	2.16	26969	0.619	2.25	2.25	10.42			2.25	29.48	0.00	10.42
11	176.70	2.50	9.59	2.16	30666	0.704	2.50	2.50	11.26			2.50	34.04	0.00	11.26
12	176.95	2.75	9.39	3.28	34325	0.788	2.75	2.75	12.03			2.75	38.05	0.00	12.03
13	177.20	3.00	8.98	4.30	37906	0.870	3.00	3.00	12.76			3.00	41.68	0.00	12.76
14	177.45	3.25	8.33	2.67	41364	0.950	3.25	3.25	13.45			3.25	45.02	0.00	13.45
15	177.70	3.50	7.36	3.06	44640	1.025	3.50	3.50	14.11			3.50	48.13	0.00	14.11
16	177.95	3.75	5.92	3.63	47644	1.094	3.75	3.75	14.74			3.75	51.05	0.00	14.74
17	178.20	4.00	3.36	4.66	50164	1.152	4.00	4.00	15.34			4.00	53.81	0.00	15.34
18	178.45	4.25	0	6.00	52051	1.195	4.25	4.25	15.92			4.25	56.44	0.00	15.92
19	178.50	4.30	0	6.00	52428	1.204	4.30	4.30	16.03	0.00	0.0	4.30	56.95	0.00	16.03
20	178.70	4.50	0	6.00	53938	1.238	4.50	4.50	16.48	0.20	1.5	4.50	58.95	1.52	18.00
21	178.95	4.75	0	6.00	55825	1.282	4.75	4.75	17.02	0.45	5.1	4.75	61.36	5.13	22.14
22	179.20	5.00	0	6.00	57712	1.325	5.00	5.00	17.54	0.70	9.9	5.00	63.67	9.94	27.48

WEIR

Notes:

$$Q_o = KA\sqrt{2gH_o}$$

Qo = Orifice Outflow (cfs)

Ho = Water height above orifice center (ft)

K = Orifice flow coef., 0.6

A = Cross sectional area of orifice (ft^2)

g = gravitational accel., 32.2 ft/sec^2

$$Q_w = \frac{C L H^3}{2}$$

Qw = Weir flow (CFS)

Cw = Weir flow Coef., 3.087

C = Length of Weir (Ft)

L = Water height above top of Weir (Ft)

H

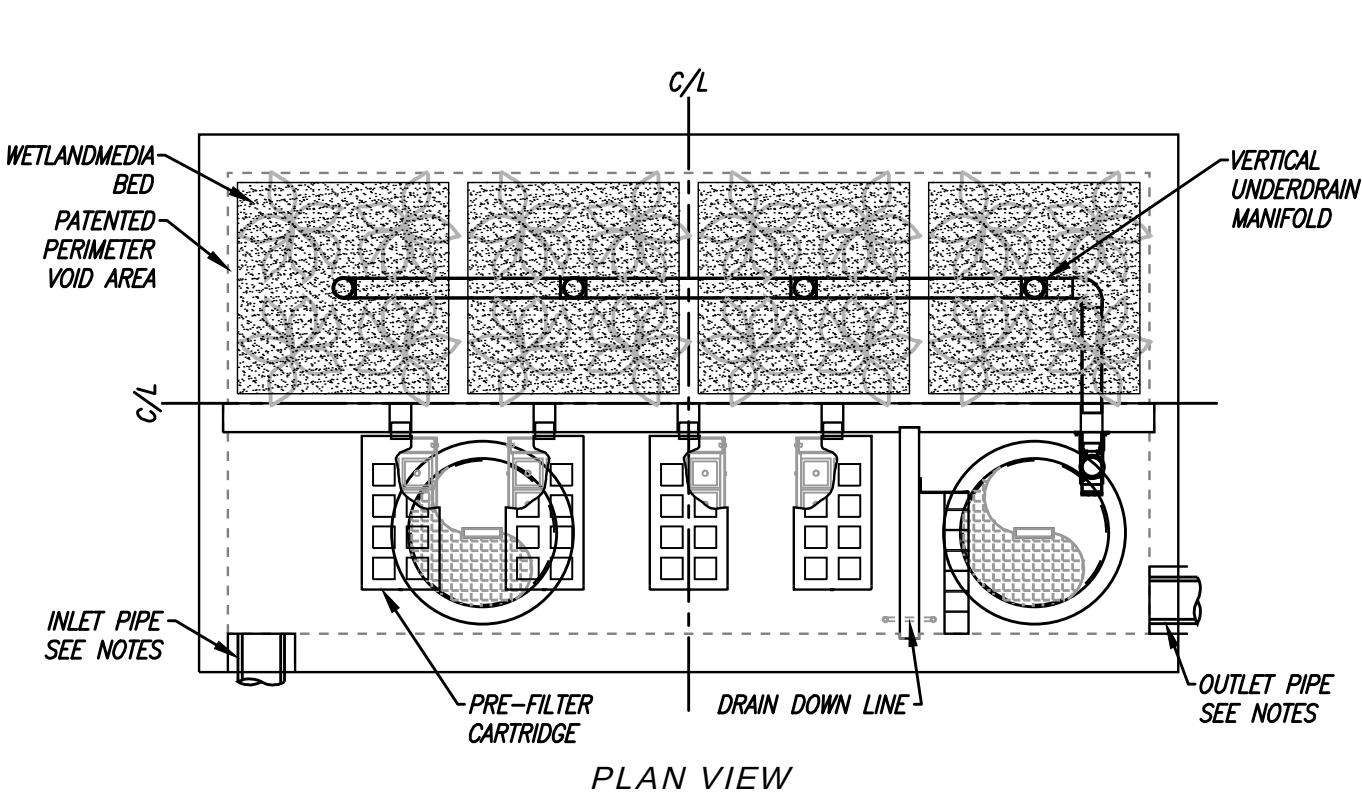
SITE SPECIFIC DATA			
PROJECT NUMBER		11012	
PROJECT NAME		GOODMAN LOGISTICS CENTER	
PROJECT LOCATION		FULLERTON, CA	
STRUCTURE ID		C1	
TREATMENT REQUIRED			
VOLUME BASED (CF)		FLOW BASED (CFS)	
24000		N/A	
TREATMENT HGL AVAILABLE (FT)			N/K
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			OFFLINE
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	173.94	PVC	8”
INLET PIPE 2	N/A	N/A	N/A
OUTLET PIPE	173.60	PVC	8”
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION	182.29	182.29	182.29
SURFACE LOAD	PEDESTRIAN	N/A	PEDESTRIAN
FRAME & COVER	ø30”	OPEN PLANTER	ø30”
WETLANDMEDIA VOLUME (CY)			17.74
ORIFICE SIZE (DIA. INCHES)			TBD
NOTES: ENGINEER TO CONFIRM PIPE SIZE AND MATERIAL.			

INSTALLATION NOTES

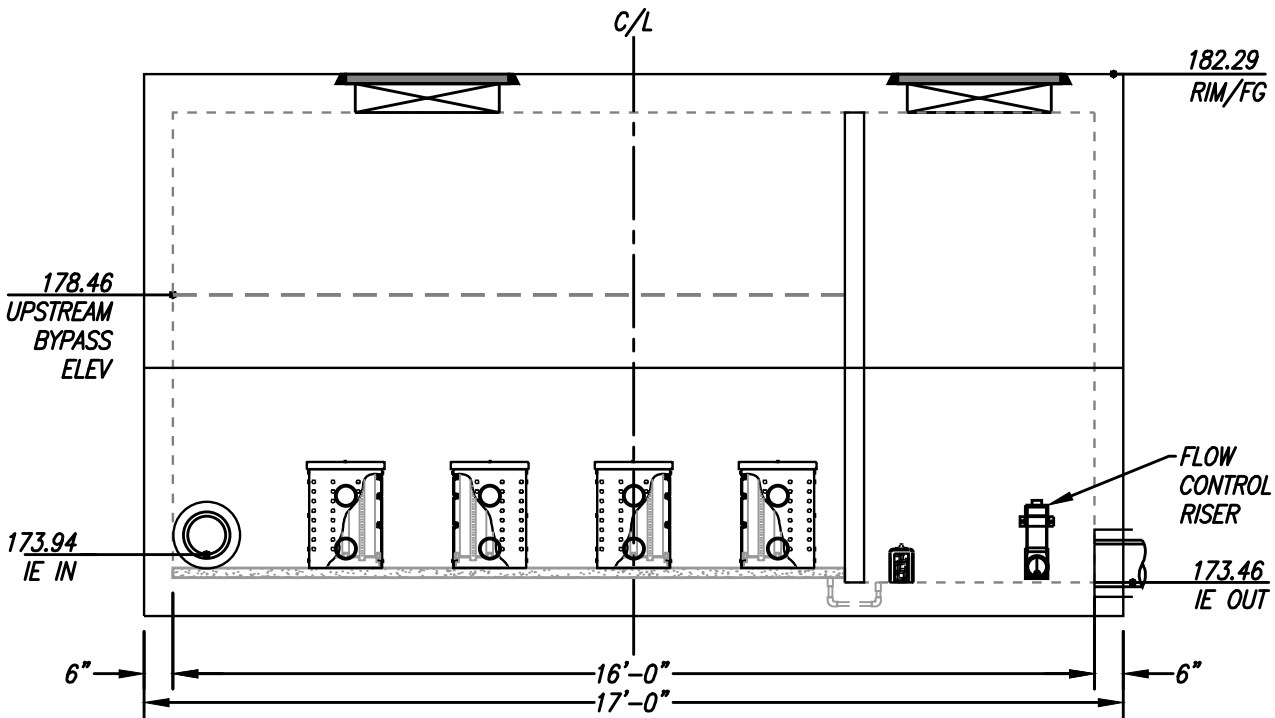
1. CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS' SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURER'S CONTRACT.
2. UNIT MUST BE INSTALLED ON LEVEL BASE. MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE TO VERIFY PROJECT ENGINEERS RECOMMENDED BASE SPECIFICATIONS.
4. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE. (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL PIPES SHALL BE SEALED WATER TIGHT PER MANUFACTURER'S STANDARD CONNECTION DETAIL.
5. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO GROUT ALL MANHOLES AND HATCHES TO MATCH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
6. VEGETATION SUPPLIED AND INSTALLED BY OTHERS. ALL UNITS WITH VEGETATION MUST HAVE DRIP OR SPRAY IRRIGATION SUPPLIED AND INSTALLED BY OTHERS.
7. CONTRACTOR RESPONSIBLE FOR CONTACTING BIO CLEAN FOR ACTIVATION OF UNIT. MANUFACTURER'S WARRANTY IS VOID WITHOUT PROPER ACTIVATION BY A BIO CLEAN REPRESENTATIVE.

GENERAL NOTES

1. MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS AND CAPACITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, WEIGHTS AND ACCESSORIES PLEASE CONTACT BIO CLEAN.



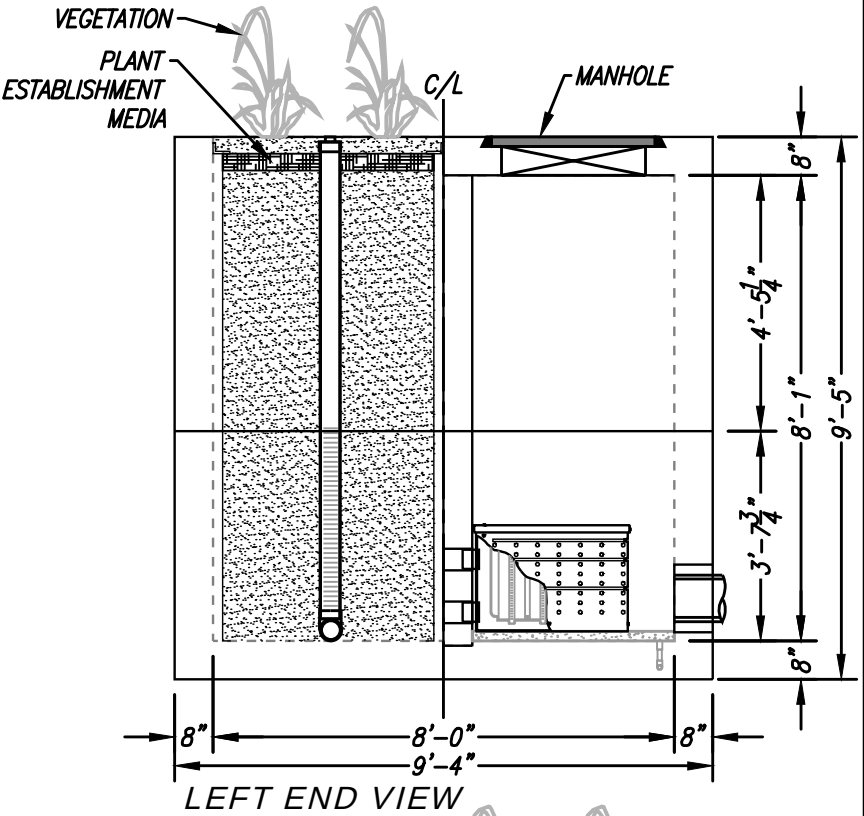
PLAN VIEW



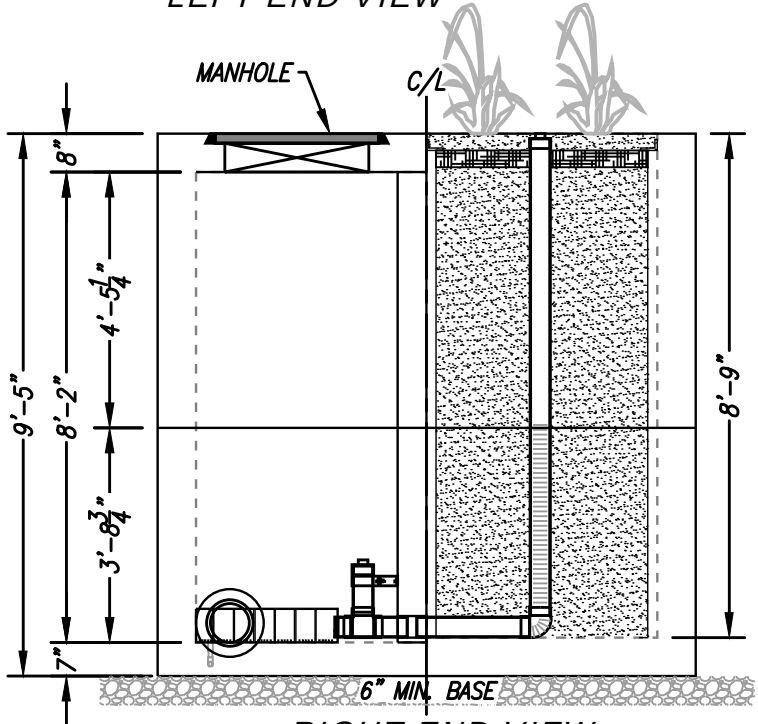
ELEVATION VIEW

LOW INFLOW PIPE DISCLOSURE:

IT IS RECOMMENDED THAT A SUFFICIENT VARIATION IN ELEVATION BETWEEN THE INLET AND OUTLET BE PROVIDED TO ALLOW FOR ACCUMULATION OF SEDIMENT IN THE PRE-TREATMENT CHAMBER. FAILURE TO DO SO MAY RESULT IN BLOCKAGE AT INFLOW POINT(S) WHICH MAY CAUSE UPSTREAM FLOODING.

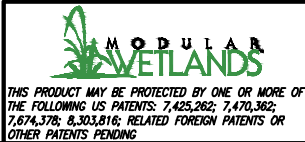


LEFT END VIEW



RIGHT END VIEW

REQUIRED TREATMENT VOLUME (CF)	24,000
DRAINDOWN DURATION (HOURS)	48
AVERAGE DISCHARGE RATE PER MWS UNIT(GPM)	62.46
OPERATING HEAD (FT)	5.0
WETLANDMEDIA INFILTRATION RATE (IN/HR)	21.10
WETLANDMEDIA LOADING RATE (GPM/SF)	0.21



PROPRIETARY AND CONFIDENTIAL:
THE INFORMATION CONTAINED IN THIS DOCUMENT IS THE SOLE PROPERTY OF FORTERRA AND ITS COMPANIES. THIS DOCUMENT, NOR ANY PART THEREOF, MAY BE USED, REPRODUCED OR MODIFIED IN ANY MANNER WITH OUT THE WRITTEN CONSENT OF FORTERRA.



MWS-L-8-16-8'-9"-V-HC
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

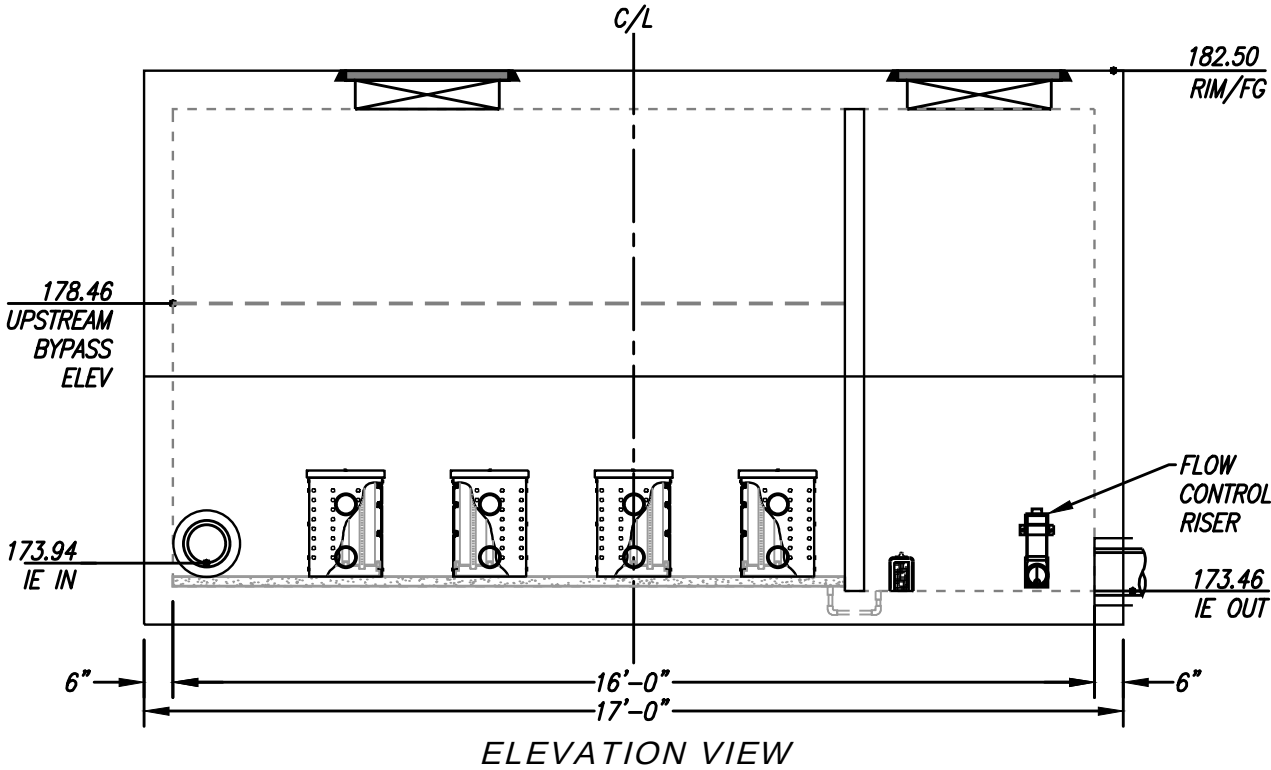
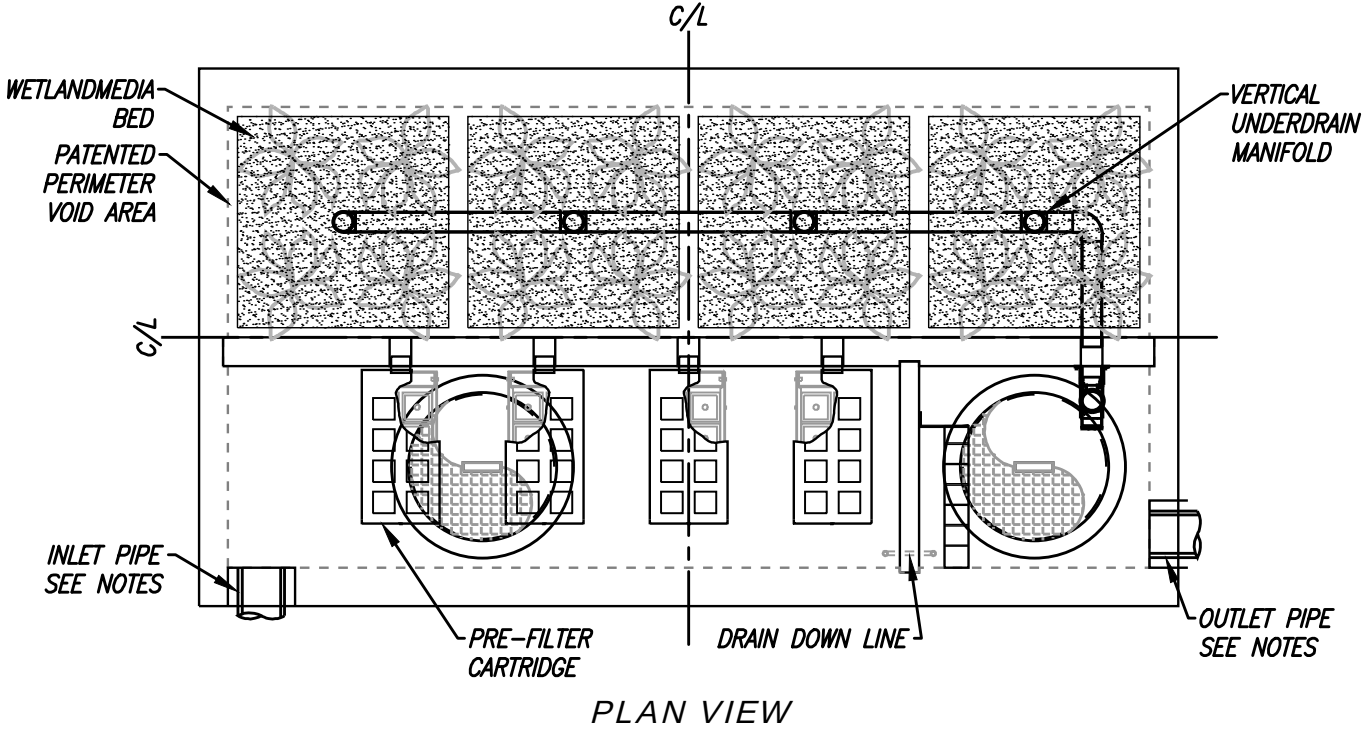
SITE SPECIFIC DATA			
PROJECT NUMBER		11012	
PROJECT NAME		GOODMAN LOGISTICS CENTER	
PROJECT LOCATION		FULLERTON, CA	
STRUCTURE ID		C2	
TREATMENT REQUIRED			
VOLUME BASED (CF)		FLOW BASED (CFS)	
24000		N/A	
TREATMENT HGL AVAILABLE (FT)			N/K
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			OFFLINE
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	173.94	PVC	8”
INLET PIPE 2	N/A	N/A	N/A
OUTLET PIPE	173.60	PVC	8”
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION	182.50	182.50	182.50
SURFACE LOAD	PEDESTRIAN	N/A	PEDESTRIAN
FRAME & COVER	ø30”	OPEN PLANTER	ø30”
WETLANDMEDIA VOLUME (CY)			18.17
ORIFICE SIZE (DIA. INCHES)			TBD
NOTES: ENGINEER TO CONFIRM PIPE SIZE AND MATERIAL.			

INSTALLATION NOTES

- CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS' SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURER'S CONTRACT.
- UNIT MUST BE INSTALLED ON LEVEL BASE. MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE TO VERIFY PROJECT ENGINEERS RECOMMENDED BASE SPECIFICATIONS.
- CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE. (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL PIPES SHALL BE SEALED WATER TIGHT PER MANUFACTURER'S STANDARD CONNECTION DETAIL.
- CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO GROUT ALL MANHOLES AND HATCHES TO MATCH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
- VEGETATION SUPPLIED AND INSTALLED BY OTHERS. ALL UNITS WITH VEGETATION MUST HAVE DRIP OR SPRAY IRRIGATION SUPPLIED AND INSTALLED BY OTHERS.
- CONTRACTOR RESPONSIBLE FOR CONTACTING BIO CLEAN FOR ACTIVATION OF UNIT. MANUFACTURER'S WARRANTY IS VOID WITHOUT PROPER ACTIVATION BY A BIO CLEAN REPRESENTATIVE.

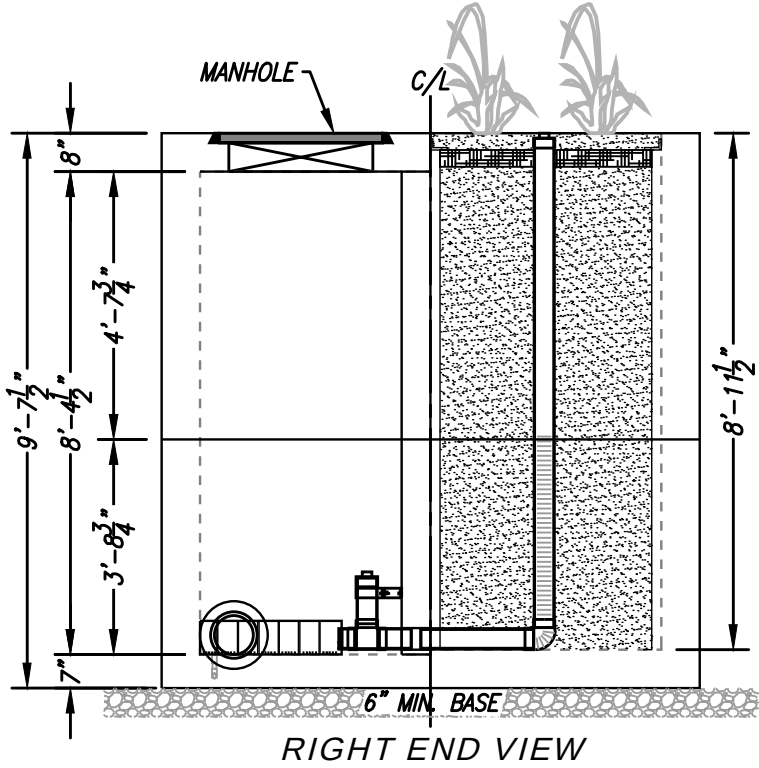
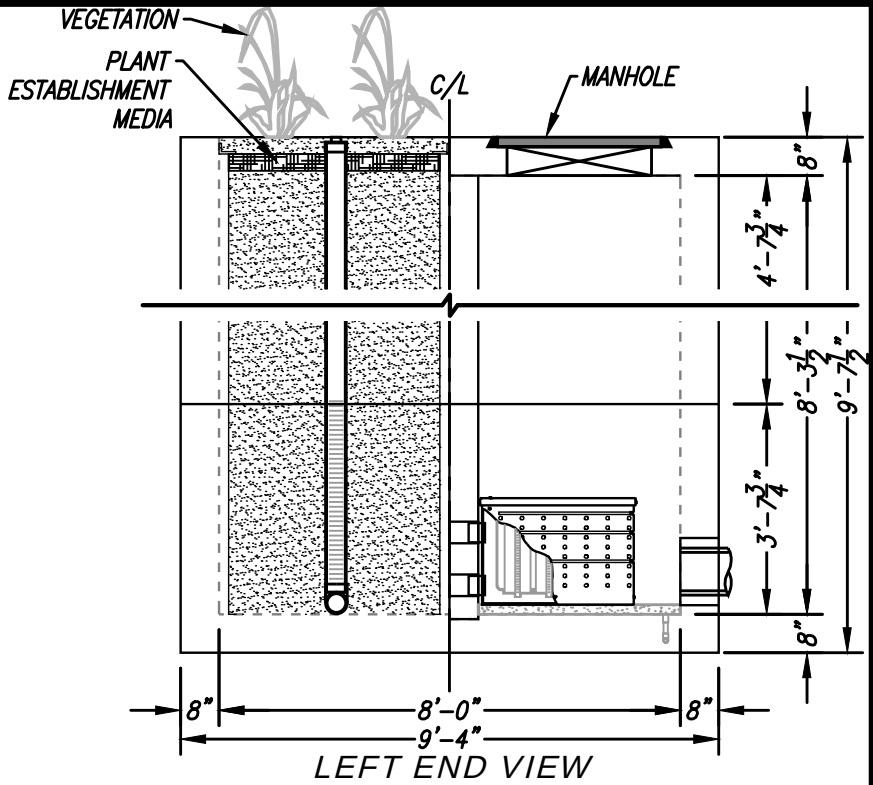
GENERAL NOTES

- MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
- ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS AND CAPACITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, WEIGHTS AND ACCESSORIES PLEASE CONTACT BIO CLEAN.



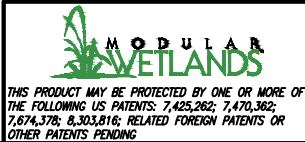
LOW INFLOW PIPE DISCLOSURE:

IT IS RECOMMENDED THAT A SUFFICIENT VARIATION IN ELEVATION BETWEEN THE INLET AND OUTLET BE PROVIDED TO ALLOW FOR ACCUMULATION OF SEDIMENT IN THE PRE-TREATMENT CHAMBER. FAILURE TO DO SO MAY RESULT IN BLOCKAGE AT INFLOW POINT(S) WHICH MAY CAUSE UPSTREAM FLOODING.



REQUIRED TREATMENT VOLUME (CF)	24,000
DRAINDOWN DURATION (HOURS)	48
AVERAGE DISCHARGE RATE PER MWS UNIT(GPM)	62.46
OPERATING HEAD (FT)	5.0
WETLANDMEDIA INFILTRATION RATE (IN/HR)	21.10
WETLANDMEDIA LOADING RATE (GPM/SF)	0.21

MWS-L-8-16-8'-11.5"-V-HC
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL



PROPRIETARY AND CONFIDENTIAL:
THE INFORMATION CONTAINED IN THIS DOCUMENT IS THE SOLE PROPERTY OF FORTERRA AND ITS COMPANIES. THIS DOCUMENT, NOR ANY PART THEREOF, MAY BE USED, REPRODUCED OR MODIFIED IN ANY MANNER WITHOUT THE WRITTEN CONSENT OF FORTERRA.



ITEM #70 - DIVERSION STRUCTURE, PLAN SHEET 31
BASIN C -
STORMVAULT DIVERTER MANHOLE - MODEL: SVDMMH-96

MANHOLE DATA :

DIVERTED STORMWATER QUALITY DESIGN FLOW (SQDF)	66-CFS (29,622-GPM)
MANHOLE INTERNAL DIAMETER INCHES (Ø)	96"
RIM ELEVATION (FT)	180.9'

PIPE DATA	DIAMETER (Ø)	MATERIAL	INV. EL.	ORIENTATION
INLET PIPE	36"	CMP	174.16' ±	180°
WATER QUALITY FLOW INLET PIPE	6"	HDPE	174.16' ±	135°
WATER QUALITY FLOW OUTLET PIPE	18"	HDPE	174.16' ±	0°
OUTLET PIPE	36"	RCP	174.16' ±	270°

WEIR ELEVATIONS AND HEIGHTS - PHASE I VOLUME CONTROL :

A	5'-6" LONG STEPPED WEIR WALL ELEVATION - PHASE I	178.20' ±
B	FLOOR ELEVATION	174.20' ±
C	STEPPED WEIR WALL TOTAL HEIGHT - PHASE I	4.0'

WEIR ELEVATIONS AND HEIGHTS - PHASE II VOLUME CONTROL :

D	5'-6" LONG STEPPED WEIR WALL ELEVATION - PHASE II	178.50' ±
-	STEPPED WEIR WALL TOTAL HEIGHT - PHASE II	4.3'

(*) WEIR HEIGHT DIMENSION DETERMINED BY DESIGN ENGINEER'S HYDRAULIC ANALYSIS

PIPE AND WEIR ORIENTATION KEY:	NOTES/SPECIAL REQUIREMENTS:
	WEIR LENGTH "L" = 5.5'

GENERAL NOTES :

- THIS SHEET IS IN ENGINEERING & CONSTRUCTION FORMATTED DETAIL.
- PLAN VIEW FRAME AND COVER NOT SHOWN FOR CLARITY.
- 66" DIAMETER RCP/HDPE IS THE LARGEST SUGGESTED INLET/OUTLET PIPE SIZE FOR THIS DIVERSION STRUCTURE.
- DESIGN LOAD: H-20 TRAFFIC FROM 1' TO 6' OF COVER PER ASTM C890 & C915 AND ASSHTO LOADING METHODS.

CONSTRUCTION NOTES :

- CONTRACTOR TO VERIFY VERTICAL DIMENSIONS OF ALL PRECAST PIECES IN FIELD.
- VERIFY SUBBASE ELEVATION BEFORE PLACING PRECAST COMPONENTS OR BACKFILLING.
- APPLY BUTYL MASTIC AND/OR GROUT TO SEAL JOINTS OF STRUCTURE.
- CONTRACTOR TO GROUT ALL PIPE PENETRATIONS IN FIELD AS NECESSARY.
- CONTRACTOR TO ADJUST FRAME/COVER ELEVATION IN FIELD AS NECESSARY.
- CONCRETE WEIR INSTALLED BY MANUFACTURER.

MATERIALS :

- ALL DIMENSIONS ARE IN FEET OR DECIMAL INCHES
- PRECAST MATERIALS AND MANUFACTURING METHODS SHALL CONFORM TO ASTM C-857 & C-478.
- CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH F'c = 3,000-PSI AT 28-DAYS.
- THE PORTLAND CEMENT USED IN THE PRECAST SECTION SHALL MEET THE REQUIREMENTS OF TYPE II/V HIGH SULFATE RESISTANT CEMENT IN ACCORDANCE WITH ASTM CLASS M C-150.

LIFTING WEIGHTS :

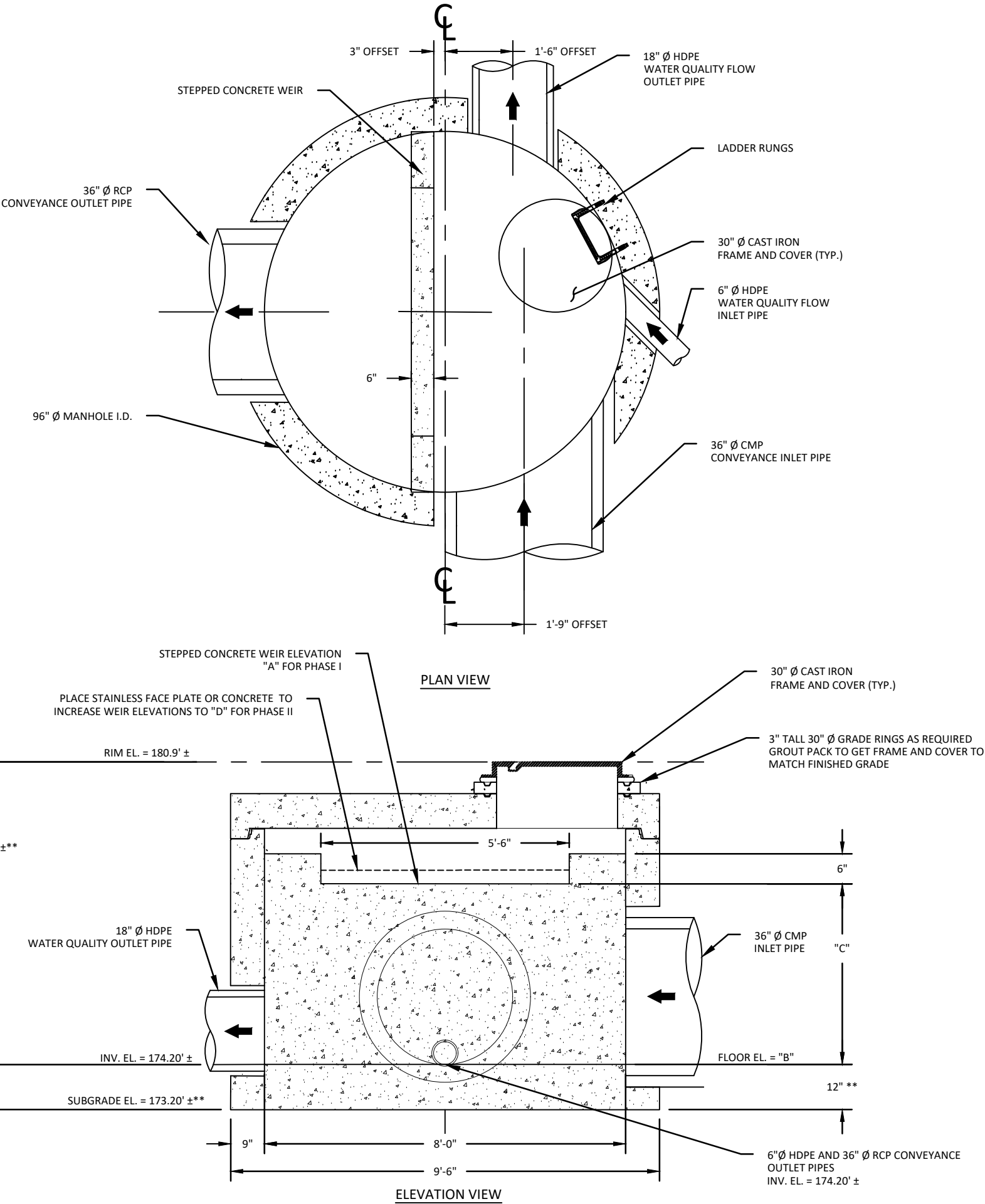
- HEAVIEST PICK WEIGHT IS 30,500-LBS.
- JENSEN CRANE TRUCK CAN SET A MAXIMUM OF 25,000-LBS AT 15-FT OFFSET DISTANCE FROM CENTER OF CRANE TRUNNION.

[**] REGIONAL MANUFACTURING DIFFERENCE :

THESE ARE TEMPLATE DRAWINGS. JOINTS, WALL, TOP AND BOTTOM SLAB THICKNESS VARY ACROSS JENSEN'S REGIONAL MANUFACTURING FACILITIES AND ALSO FOR SITE SPECIFIC LOADING CONDITIONS. CONFIRM FINAL THICKNESS, PIPING CONFIGURATION AND CONCRETE THICKNESS PER CONSTRUCTION SUBMITTAL DRAWINGS. ADJUST FINAL DIMENSIONS TO EXTERIOR INVERT AND SUBGRADE ELEVATION PER REGIONAL DIFFERENCES.

MODEL: SVDMMH-96 STORMVAULT DIVERTER MANHOLE	PROJECT: GOODMAN LOGISTICS CENTER FULLERTON, CA			 521 DUNN CIRCLE, SPARKS, NV 89431-6312 (877) 649-0095 FAX (775) 440-2013	
	ORG. DWG. DATE 10/15/2021	SCALE: AS SHOWN	SHEET SIZE 11" X 17"	DRAWN BY T.SCHMALING & W. STEIN	SHEET NUMBER SVDMMH-96

Copyright Information © 2011 Jensen Precast All Rights Reserved. All materials appearing as Jensen Precast documents and the like are propriety work product and are protected under U.S. copyright and other laws. Unless in conjunction with business conducted with Jensen Precast, any use of Jensen Precast work product without express, written consent is prohibited and recipient is prohibited from distributing any and all work product to non-approved third parties under penalty of civil action.



SCALE: 1" = 32"

Appendix F – Goodman Logistic Center Hydrology Report

Hydrology Report

Goodman Logistics Center Fullerton
2001 E. Orangethorpe Ave.

Fullerton, CA. 92834

March 18, 2020
Rev. August 5, 2021

This Hydrology Report has been prepared by, and under the direction of, the undersigned, a duly Registered Civil Engineer in the State of California. Except as noted, the undersigned attests to the technical information contained herein, and has judged to be acceptable the qualifications of any technical specialists providing engineering data for this report, upon which findings, conclusions, and recommendations are based.

Jacob Vandervis, P.E.

Registered Civil Engineer No. C46301

Exp.: 12/31/22



Prepared for:

Prepared by:

Goodman
18201 Von Karman Ave.
Suite 1170
Irvine, CA 92612
Phone: T.B.D.



Tait & Associates, Inc.
701 N. Parkcenter Drive
Santa Ana, CA 92705
(714) 560-8200

TAIT JOB # **SP8454**

Table of Contents

Section 1	Purpose and Scope.....	3
Section 2	Project Information.....	4
2.1	Project Description.....	4
2.1.1	Project Location	4
2.2	Hydrologic Setting.....	5
2.2.1	Watershed.....	5
2.2.2	Existing Topography and Facilities	5
2.2.3	Adjacent Land Use	5
2.2.4	Soil Conditions	5
2.2.5	Downstream Conditions	6
2.2.6	Existing Drainage Patterns	6
2.2.7	Proposed Drainage Patterns	6
2.2.8	Impervious Cover	8
Section 3	Hydrology Design and Criteria	9
3.1	Design Criteria.....	9
3.1.1	Rational Method	9
3.1.2	Small Area Hydrograph	9
Section 4	Hydrology and Drainage Analysis.....	11
4.1	Drainage Delineation	11
4.2	Summary of Results	11
Section 5	Detention Basin and Hydraulic Design.....	17
5.1	Detention Basin Design.....	17
5.2	Hydraulic Design	18
Section 6	Conclusion.....	19
Appendix A	Soil Group Map	A
Appendix B	Existing Hydrological Condition	B
Appendix C	Existing 25 & 100 Year Storm AES Files	C
Appendix D	Proposed Hydrological Condition.....	D
Appendix E	Proposed 25 & 100 Year Storm AES Files.....	E

Appendix F – Detention Basin Design Calculations & Details	F
Appendix G – Kimberly Storm Channel As-built Plans	G
Appendix H –Profile Main Line A & HGL Calculations.....	H

Section 1 Purpose and Scope

This hydrology study presents an analysis of the hydrologic effects of the development of 65.8 acre Commercial development, in the City of Fullerton, California.

This hydrology study addresses runoff from the project site and its impact to the existing downstream storm drainage system. The study includes calculations for the 25-year & 100-year storm event for both the existing and proposed condition. The study also details the general project characteristics, the design, criteria, and methodology applied to the analysis of the project. The report provides a design analysis for the drainage facilities proposed as part of the project, with the drainage improvements being designed to for the 25 year storm event and proposed buildings being protected from the 100 year storm.

This Hydrology Study fulfills the requirements of the Orange County Hydrology Manual.

The plans and specifications in the Hydrology Study are not for construction purposes; the contractor shall refer to final approved construction documents for plans and specifications.

2.1 Project Description

2.1.1 Project Location

This aerial map from Google Earth shows the project location in the Rosslyn neighborhood of Arlington, Virginia. A red rectangle and arrow highlight the 'PROJECT' site, which is bounded by E Rosslyn Ave to the north, E Elm Ave to the south, and S State College Blvd to the east. The map shows surrounding streets, buildings, and a park area to the west.

Page 4

2.2 Hydrologic Setting

This section summarizes the project's size and location in the context of the larger watershed perspective, topography, soil and vegetation conditions, percent impervious area, natural and infrastructure drainage features, and other relevant hydrologic and environmental factors to be protected specific to the project area's watershed.

2.2.1 Watershed

The project site is located within Watershed A of the OCFCDD Drainage System. The project discharges to the Kimberly Storm Channel which joins the Fullerton Creek Channel. From there, it goes to Coyote Creek; then to the San Gabriel River; and, ultimately, to the Pacific Ocean.

2.2.2 Existing Topography and Facilities

The existing topography of the project site is relatively flat with slopes varying from approximately 0.1% to 2% in paved areas and up to 10% in landscape areas. The existing site is mostly developed with several buildings, above ground storage tanks, landscaping including an orchard, cogeneration plant, and an SCE substation. Site elevations range from 167 to 187 above Mean Sea Level.

2.2.3 Adjacent Land Use

The project is bounded by manufacturing/industrial developments in all directions.

2.2.4 Soil Conditions

The project site location resides within the hydrology soil group A and B.

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

Group B soils are typically silt loams and loams. They have a moderate infiltration rate when thoroughly wet. They consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

See Appendix A.

2.2.5 Downstream Conditions

The offsite drainage pattern, from the existing storm drain lines on Kimberly Avenue, diverts flows to the west via a reinforced concrete channel (Kimberly Storm Channel, A03S05) which connects to the Fullerton Creek Channel and leads west. Fullerton Creek Channel then joins Coyote Creek which flows to the San Gabriel River and, ultimately, to the Pacific Ocean.

2.2.6 Existing Drainage Patterns

The site has three outfall locations.

Outfall 1 comprises a majority of the site (drainage areas A), and drains from the southwest to the northwest, ultimately discharging to the 48"RCP public storm drain line on Kimberly Avenue.

Outfall 2 is comprised of the northeast corner of the site (drainage areas C), which drains to the north. All runoff was designed to sheet flow towards valley gutters to a grated inlet that is connected to an existing 24"RCP public storm drain line on Kimberly Avenue.

Outfall 3 is comprised of the southwest corner of the site (drainage areas B), which drains to the west and discharges to the curb and gutter along S. Acacia Avenue. The curb and gutter flows in the northerly direction to a catch basin at the intersection of Kimberly Avenue. The catch basin is connected to an existing 30"CMP public storm drain line.

See the existing hydrology map in Appendix B for outfall locations and drainage areas.

2.2.7 Proposed Drainage Patterns

The proposed condition will have the same three outfall locations as the existing.

Outfall 1 is comprised of the majority of the site (drainage areas A, B and C), which consists of portions of the building roofs, parking lot area and landscaped islands. The building roofs discharge to the parking lot. Stormwater runoff from the concrete paved surface areas will sheet flow to catch basins/grated inlets that are part of a private storm drain system that conveys runoff to proposed detention basins. Roof drains will discharge at grade. The private storm drain system drains to three proposed detention basins: A, B and C respectively, that were designed to capture the design capture volumes (DCV) for stormwater treatment and to mitigate project peak flows. The basins will connect to a Diversion Manhole(s) that will have an orifice at the bottom that discharges low flows to proposed Modular Wetland Systems for water treatment, and a high flow discharge set above the DCV volume via a weir that

discharges to an orifice. The high flows and treatment flows are both conveyed thru a main line, private storm drain system with sizes 36" and 48" that runs north of the site and conveys flows to the existing public 48" RCP pipe that crosses Kimberly and discharges to the Channel.

Outfall 2 is comprised of a portion of the Building 4 roof (drainage areas D), landscape areas along State College and Kimberly Avenue (drainage area L-1, H-2 and H-3), and the water department easement area (drainage area I-1, J-1 and J-2). The eastern portion of the building roof (drainage areas D) will sheet flow to downspouts that discharge into proposed bio-filtration planters. The bio-filtration planters will be equipped with an underdrain and overflow riser which will both comingle and divert treatment flows and overflow out through an underground storm drain pipe that is connected to the proposed catch basin on Kimberly Avenue which is connected to the existing 24" RCP public storm drain line on Kimberly Avenue. The eastern and northern perimeter of the site consists of the proposed landscape buffer adjacent to the proposed sidewalk on State College Boulevard (drainage area L-1) and Kimberly Avenue (drainage area H-2 and H-3), which sheet flow to the adjacent existing public curb and gutter. The existing curb and gutter on State College Boulevard flows north onto the existing curb and gutter on Kimberly Avenue. The proposed curb and gutter on Kimberly Avenue flows west to the beforementioned proposed catch basin on Kimberly Avenue which is connected to the existing 24" RCP public storm drain.

Outfall 3 is comprised of the perimeter landscape downstream of outfall 2 (drainage area H-1). Also the southern perimeter of the site consists of parking lot and landscaped islands (drainage areas E). The parking lot sheet flows to curb and gutter which divert flows to proposed catch basins. Within the catch basin, the low flows will be directed via an on-site storm drain system to the underground detention system of Outfall 1 for treatment. The high flows will be directed via a parkway culvert to the existing curb and gutter on Orangethorpe Avenue which flows west onto the existing curb and gutter on S. Acacia Avenue. The southern perimeter landscape buffer adjacent to the proposed public sidewalk on Orangethorpe Avenue (drainage areas F) will sheet flow to the proposed curb and gutter on Orangethorpe Avenue which flows west onto the curb and gutter on S. Acacia Avenue. The western perimeter of the site includes the proposed landscape buffer adjacent to the proposed public sidewalk on S. Acacia Avenue (drainage area G-1). The proposed landscaping will sheet flow to the existing curb and gutter on S. Acacia Avenue and continue to flow north in the S. Acacia Avenue curb and gutter to a proposed catch basin at the intersection of Kimberly which is connected to the existing 30" CMP public storm drain. The proposed landscaping of drainage area H-1 sheet flows to the proposed curb on Kimberly Avenue and continues to flow west to a proposed catch basin at the intersection of S Acacia Avenue. The proposed catch basin is connected to the existing 30" CMP public storm drain.

The proposed condition Hydrology map is included in Appendix D of this report. The proposed 25-year and 100-year AES files are included in Appendix E of this report.

2.2.8 Impervious Cover

In the existing condition, the property is developed with a 10-acre pervious orchard. In the proposed condition, the orchard will be replaced with impervious area; thus, the increase in impervious area. This increase is not significant compared to the size of the project.

Section 3 Hydrology Design and Criteria

3.1 Design Criteria

This section summarizes the design criteria and methodology applied during the drainage analysis of the project site. The design criteria and methodology follow the 1986 Orange County Hydrology Manual (OCHM), its 1996 Addendum, and the 1996 Orange County Local Drainage Manual (LDM) requirements.

3.1.1 Rational Method

Computer models were completed using AES RATSCX software with built-in methodology following the OCHM. The RATSCX module was used to analyze and route runoff through each subarea using elevations, relative slopes, flow lengths, soil types, and acreage inputs to calculate time of concentration and peak flow rates.

Design input criteria for the model were as follows:

Design Storm:	25- and 100-year storm events
Antecedent Moisture Condition (AMC):	II for 25-year and III for 100-year
SCS Soil Group:	A and B
Existing Land Use:	"Commercial" (90% impervious) "Public Park" (15% impervious) - for Orchard Area
Proposed Land Use:	"Commercial" (90% impervious)

Full on-site AES rational method analysis and values are included Appendix C for the existing condition and Appendix E for the proposed condition.

3.1.2 Small Area Hydrograph

The Small Area Unit Hydrograph (SAH) was prepared to analyze the proposed underground detention basins for the project outfall 1. The SAH analyzes the ability to reduce peak flow runoff for flood control purposes. Per the Orange County Hydrology Manual, the SAH applies to watershed smaller than 640 acres. This analysis was prepared using the FLOODSCX module of AES, which utilizes the time of concentration obtained from the rational method, the rainfall depth, the total tributary area and the loss rates (F_m and $\bar{Y}$) to calculate the watershed hydrograph. Additionally, the Rational Method Coefficient used for the analysis was 0.9, as noted per OCHM Equation D.3: for $I > F_p$ then $C = 0.9 (I - F_m)$ otherwise $C = 0.9$.

The hydrograph is then routed through the proposed basin using the stage-storage-discharge table and the outflow discharge hydrograph is obtained. The small area hydrograph was run for the 25-year and 100- year storm events to analyze the capacity of the proposed basins and the flow through the storm drain system. The basin calculations and design are describe further in Section 5 of this report.

Section 4 Hydrology and Drainage Analysis

This section summarizes the quantitative hydrologic analysis of the existing and proposed conditions of the site.

4.1 Drainage Delineation

A hydrology map for the existing and proposed conditions are provided in the Appendix B & D of this report, depicting subareas, elevations, and flow lengths corresponding with the node based Rational Method peak flow analysis.

4.2 Summary of Results

The current study provides the existing and proposed condition hydrology analyses for the 25- and 100-year storm event. The proposed peak flows for the 25 and 100 year have been mitigated to prevent project peak flow increase. The following pages is a summary of the final project peak flows per outfall. Also, a complete summary table of all project areas is included in Table 1.

Outfall #1- Existing 48" RCP

The total existing peak flows to this outfall consist of 109.9 cfs for the 25-year storm and 142.32 cfs for the 100-year per the rational method. Mitigated flows are **42.81 cfs** for the 25-year and **111.07 cfs** for the 100-year.

Outfall #2- Existing 24" RCP

The total existing peak flows to this outfall consist of 14.61 cfs for the 25-year storm and 19.10 cfs for the 100-year. Proposed flows are **7.68 cfs** for the 25-year and **9.86 cfs** for the 100-year.

Outfall #3- Existing 30" CMP (Two catch basins at corner of Kimberly and Acacia)

The total existing peak flows to this outfall consist of 13.31 cfs for the 25-year storm and 17.4 cfs for the 100-year. Proposed flows excluding the treatment flows are **16.21** for the 25-year and **21.21 cfs** for the 100-year.

SUMMARY OF RESULTS - TABLE 1

Outfall 1-Existing 48” RCP in Kimberly 350ft from Acacia Avenue						
	Existing		Proposed			
	ID	Area (AC)	ID	Area (AC)	ID	Area (AC)
	A-1	3.66	A-1	0.13	AR-15	0.67
	A-2	4.87	A-2	0.17	AR-15.1	0.56
	A-3	3.88	A-3	0.14	AR-16	0.67
	A-4	4.59	A-4	0.17	AR-16.1	0.56
	A-5	5.54	A-5	0.23	AR-16.2	1.01
	A-6A	2.80	A-6	0.51	AR-16.3	0.77
	A-6B	7.00	A-7	0.15	B-1	0.38
	A-6C	3.80	A-8	0.33	B-2	0.11
	A-7A	5.30	A-9	0.87	B-3	0.12
	A-7B	5.80	A-10	0.72	B-4	0.15
	A-7C	3.90	A-11	0.72	B-5	0.30
			A-12	0.72	B-6	0.21
			A-13	0.72	B-7	0.14
			A-14	0.72	B-8	0.04
			A-15	0.72	B-9	1.09
			A-16	0.87	B-10	0.83
			A-17	0.24	B-11	0.83
			A-18	0.15	B-12	0.83
			A-19	0.12	B-13	0.83
			A-23	0.17	B-14	0.83
			AR-7	0.77	B-15	0.83
			AR-9	0.67	B-16	0.68
			AR-9.1	0.56	B-17	0.27
			AR-9.2	1.01	B-18	0.24
			AR-10	0.67	B-19	0.21
			AR-10.1	0.56	B-20	0.08
			AR-11	0.68	B-21	0.09
			AR-11.1	0.56	B-22	0.25
			AR-12	0.67	B-23	0.02
			AR-12.1	0.56	B-24	0.12
			AR-13	0.67	BR-9	0.56
			AR-13.1	0.56	BR-9.1	0.77
			AR-14	0.67	BR-9.2	0.77
			AR-14.1	0.56	BR-9.3	0.54
Outfall 1-Existing 48” RCP in Kimberly						

350ft from Acacia Avenue (Continued)						
	Existing		Proposed			
	ID	Area (AC)	ID	Area (AC)	ID	Area (AC)
			BR-10	0.56	C-12	0.51
			BR-10.1	0.63	C-13	0.29
			BR-11	0.56	C-14	0.29
			BR-11.1	0.63	C-15	0.53
			BR-12	0.56	C-16	0.36
			BR-12.1	0.63	C-17	0.49
			BR-13	0.56	C-18	0.21
			BR-13.1	0.63	C-19	0.13
			BR-14	0.56	CR-8	0.46
			BR-14.1	0.63	CR-8.1	0.20
			BR-15	0.56	CR-8.2	0.64
			BR-15.1	0.63	CR-8.3	0.49
			BR-16	0.56	CR-9	0.46
			BR-16.1	0.90	CR-9.1	0.25
			BR-16.3	0.77	CR-10	0.46
			C-1	0.09	CR-10.1	0.25
			C-2	0.31	CR-11	0.46
			C-3	0.09	CR-11.1	0.25
			C-4	0.10	CR-12	0.46
			C-5	0.43	CR-12.1	0.13
			C-6	0.17	CR-12.2	0.49
			C-7	0.20	CR-13	0.46
			C-8	0.62	CR-14	0.46
			C-9	0.56	CR-15	0.46
			C-10	0.56	CR-15.1	0.64
			C-11	0.56		
TOTAL (AC)	51.14		57.03			
25-YEAR RM (CFS)	109.90		213.94			
25-YEAR MITIGATED (CFS)			42.81			
100-YEAR RM (CFS)	142.32		274.79			
100-YEAR MITIGATED (CFS)			111.07			

Outfall 2-Existing 24" RCP in Kimberly Avenue 925ft from State college Blvd.				
	Existing		Proposed	
	ID	Area (AC)	ID	Area (AC)
	C-1	1.07	D-1	0.35
	C-2	3.50	D-2	0.32
	C-3	1.79	D-3	0.36
			D-4	0.34
			D-5	0.27
			D-6	0.25
			H-2	0.18
			H-3	0.08
			I-1	0.39
			J-1	0.03
			J-2	0.09
			L-1	0.33
TOTAL (AC)		6.36	2.97	
25-YEAR (CFS)		14.61	7.68	
100-YEAR(CFS)		19.10	9.86	

Outfall 3-Existing 30" CMP at Intersection of Kimberly Avenue and Acacia Avenue							
	Existing		Proposed				
	ID	Area (AC)	ID	Area (AC)	25- year Peak Flow (CFS)	100-year Peak Flow (CFS)	Treatment Flow (CFS)*
	B-1	1.17	E-1	0.04	0.17	0.22	0.01
	B-2	2.58	E-2	0.07	0.30	0.39	0.02
	B-3	3.30	E-3	0.21	0.87	1.11	0.05
			E-4	0.10	0.43	0.55	0.03
			E-5	0.15	0.64	0.82	0.04
			E-6	0.14	0.60	0.78	0.03
			E-7	0.11	0.47	0.61	0.03
			E-8	0.41	1.56	2	0.10
			E-9	0.62	2.24	2.87	0.15
			E-10	0.84	3.22	4.13	0.20
			E-11	0.42	1.66	2.13	0.10
			E-12	0.27	1.07	1.37	0.06
			E-13	0.07	0.30	0.39	0.02
			F-1	0.82	1.13	1.48	
			F-2	0.12	0.30	0.39	
			G-1	0.61	0.95	1.24	
			H-1	0.75	1.12	1.46	
TOTAL (AC)	7.05		5.78				
25-YEAR (CFS)	13.31		17.03				
100-YEAR (CFS)	17.40		21.94				
25-YEAR (CFS) Minus Treatment Flow	N/A		16.21				
100-YEAR (CFS) Minus Treatment Flow	N/A		21.21				

* Water Quality Treatment Flows are routed to the Basins; therefore, tributary to Outfall 1.

A total area of 65.8 ac has been analyzed for the existing and proposed condition hydrology.

The existing total peak flows from the project contributing to the existing Kimberly Storm Channel are 178.82 for the 100-year storm and 137.82 cfs for the 25-year. The proposed total peak flows from the project contributing to the existing Kimberly Storm Channel are **142.14 cfs** for the 100-year storm and **66.7 cfs** for the 25-year. This is a total reduction of 71.12 cfs for the 25-year storm and of 36.68 cfs for the 100-year. Thus the project is design to mitigate the effects of the impervious areas increase, reducing negative impacts to the downstream receiving waters.

Section 5 Detention Basin and Hydraulic Design

5.1 Detention Basin Design

Three detention basins are proposed to meet water quality regulations for treatment as well as mitigate peak flows for the project. Each detention basin system connects to a Diversion Manhole structure that will be designed with a low flow orifice that will discharge flows to propose Modular Wetland Units for water quality treatment. Each Diversion Manhole structure will have a weir that will be set above the elevation at which the Design Capture Volume is achieved at each basin, to provide the required water quality treatment. The peak flows will be discharged over the weir which then connects to a high flow bypass orifice. Calculations for the outlet structures head versus discharge are included in Appendix F, and these utilize the weir and orifice equations as shown below.

Orifice Flow:

$$Q_o = KA\sqrt{2gH_o}$$

Where:

- Q_o = Orifice Outflow (cfs)
- H_o = Water height above orifice center (ft)
- K = Orifice flow coef., 0.6
- A = Cross sectional area of orifice (ft²)
- g = gravitational accel., 32.2 ft/sec²

Weir Flow:

$$Q_w = CLH^{2/3}$$

Where:

- Q_w = Weir Outflow (CFS)
- C = Weir flow Coef., 3.087
- L = Length of Weir (Ft)
- H = Water height above top of Weir (Ft)

The detention basin analysis was prepared using AES Small Unit Hydrograph method for each of the detention basins for areas A, B, and C which ultimately discharge to the private main line A that runs north of the site and discharges into Outfall #1. The 25-year and 100-year storm events were analyzed.

Pacific Corrugated Pipe Underground Retention Systems are being utilized for the proposed underground basins. Basin A and Basin B are 36" diameter corrugated steel and aluminum

CMP, and Basin C is a 42" diameter corrugated steel and aluminum CMP. The CMP pipe will be perforated and encased in a layer of rock then wrapped all around by a 30 mil PVC impermeable liner. The stage storage for each basin and detention basin design parameters are included in Appendix F. A summary of the basins results is included below.

The calculations as shown on this report provides an adequate Basis of Design that demonstrates that the proposed project will not have a negative impact to the public storm drain system downstream of the project. The project grading has been designed to allow up to 2.5ft of ponding at the dock areas before overflows discharge to the street.

Basin ID	Basin Volume (CF)	25-Year Unmitigated Peak Discharge (cfs)	25-Year Mitigated Discharge Peak (cfs)	100-Year Unmitigated Peak Discharge (cfs)	100-Year Mitigated Peak Discharge (cfs)
Basin A	93,698	82.51	15.3	107.29	48.4
Basin B	92,683	76.43	15.6	99.20	49.6
Basin C	60,429	49.59	12.0	64.86	14

5.2 Hydraulic Design

The Water Surface Pressure Gradient (WSPGW), a software developed by the Los Angeles County Flood Control District and approved by the County of Orange was utilized to calculate the HGL for the main private storm drain line A. WSPG uses the Bernoulli equation to calculate the HGL for each storm drain line utilizing the flow and the boundary conditions.

Since the as-built plans and information obtained for the Kimberly Storm Channel indicate that the channel was design for the 25-year storm, the downstream water surface elevation utilized for the model was set at the top of the channel for both the 100-year and the 25-year storm models of the private main line A. The private storm drain was design to handle the 25-year without ponding on-site. The results for the 100-year model results in a pressured flows and up to 5" of ponding in the dock areas; however, the 100-year HGL always set below 1ft from all proposed finished floor elevations per the Orange County Local Drainage Manual. The Finished Floor of the buildings is set 4ft above the loading level and therefore the buildings are protected from flooding in the 100 year storm event. In the event that, the storm drain system fails due to clogging or any other unforeseen situation, the project grading design allows for the project runoff to pond a maximum of 2.5 ft at the loading docks before flows are conveyed to Kimberly Avenue via sheet flow thru the project driveways.

Section 6 Conclusion

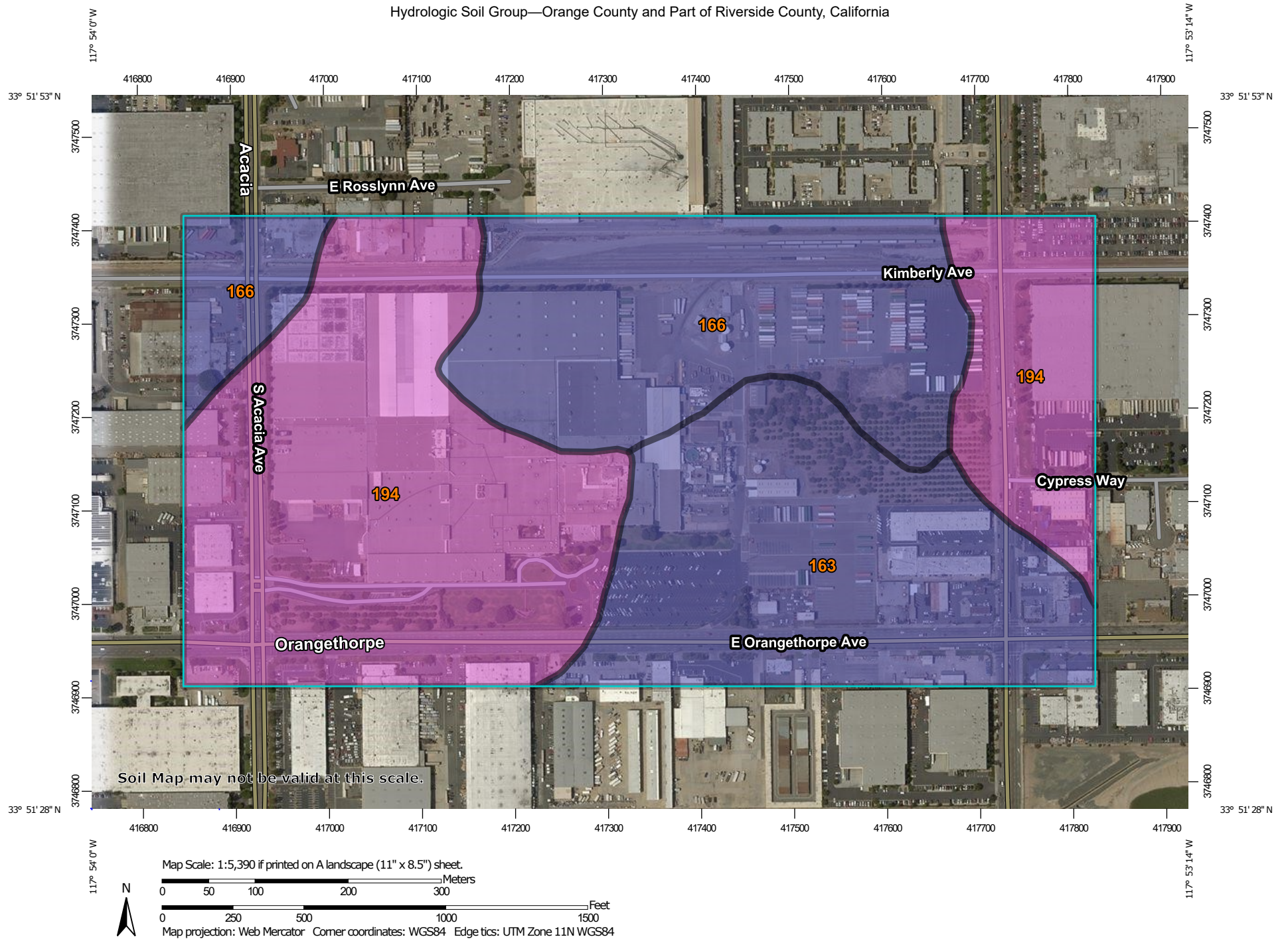
Based on the hydrology and Hydraulic results presented on this report, the project will not have a negative impact on the public downstream drainage structures and the buildings will be protected from 100-year storm events. The total peak flows contributing to the Kimberly Channel for the 25-year and 100-year events will be reduced for the 25-year storm and the 100—year storm events. Three underground detention basins are proposed to mitigate the peak flows increase associated with the proposed improvements.

APPENDIX

Appendix A – Soil Group Map

Soil Group Map

Hydrologic Soil Group—Orange County and Part of Riverside County, California



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

Soil Rating Polygons

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

Soil Rating Lines

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

Soil Rating Points

 A
 A/D
 B
 B/D

 C
 C/D
 D
 Not rated or not available

Water Features

 Streams and Canals

Transportation

 Rails
 Interstate Highways
 US Routes
 Major Roads
 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Orange County and Part of Riverside County, California
 Survey Area Data: Version 12, Sep 12, 2018

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

Date(s) aerial images were photographed: May 16, 2014—Feb 8, 2019

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
163	Metz loamy sand	B	32.5	26.5%
166	Mocho loam, 0 to 2 percent slopes, warm MAAT, MLRA 19	B	34.8	28.4%
194	San Emigdio fine sandy loam, 0 to 2 percent slopes	A	55.2	45.0%
Totals for Area of Interest			122.5	100.0%

Description

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

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

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

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

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

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

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

Rating Options

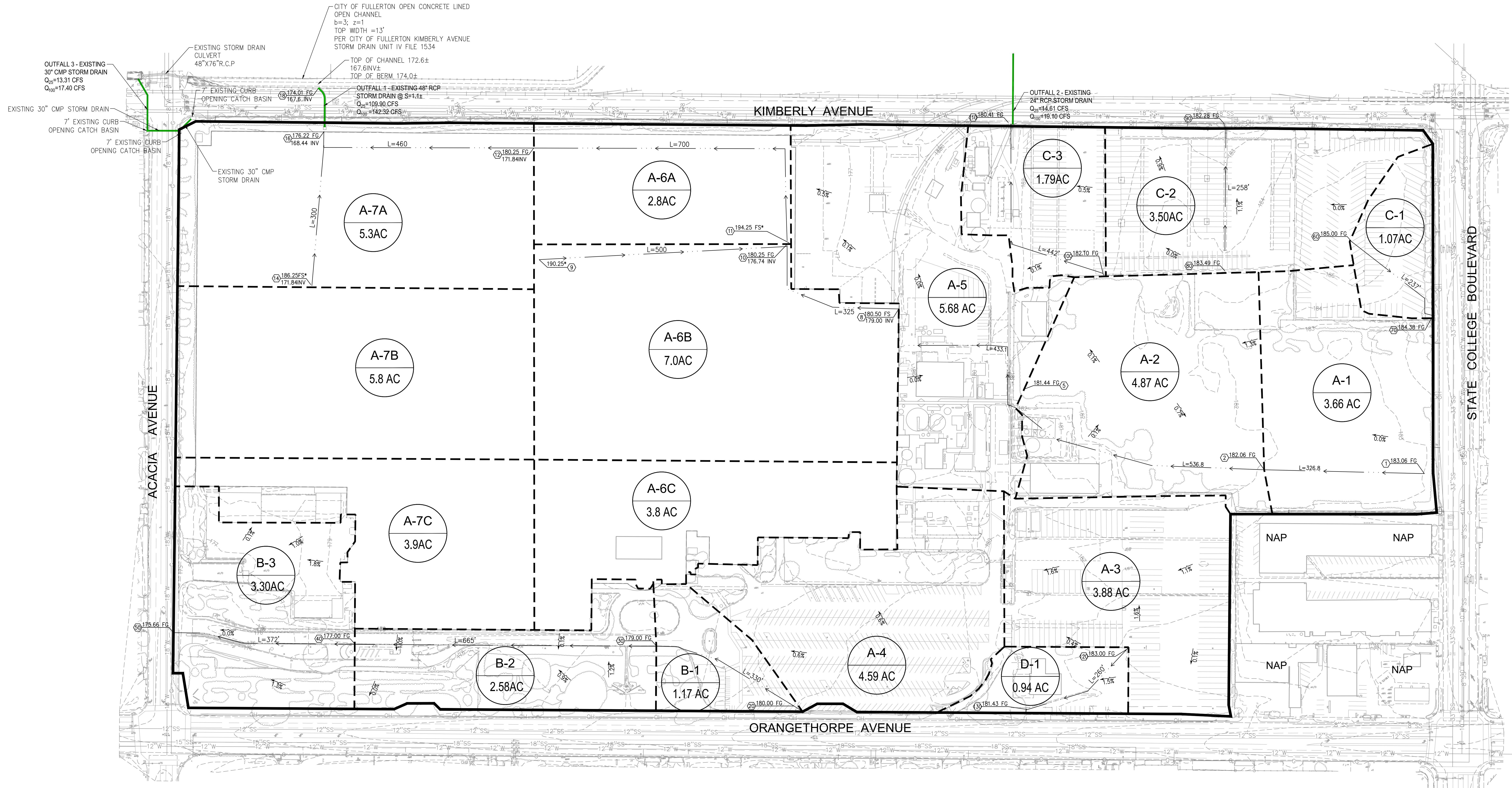
Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Appendix B – Existing Hydrological Condition

Existing Hydrological Condition

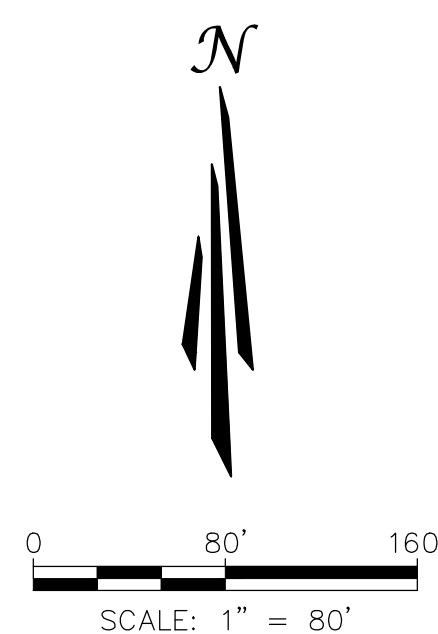


- LEGEND**
- 180--- EXISTING CONTOUR
 - FLOW LINE
 - 0.5% SLOPE
 - EXISTING STORM DRAIN
 - AREA BOUNDARY
 - SUB-AREA BOUNDARY
 - Ⓢ NODE

X-#
###AC

AREA ID
AREA (AC)

- ABBREVIATIONS**
- | | |
|-----|------------------|
| EX | EXISTING |
| FS | FINISHED SURFACE |
| FG | FINISHED GRADE |
| INV | INVERT |
- * ASSUMES ROOF RUNOFF IS 2% FOR HYDROLOGY MODELING PURPOSES



Appendix C – Existing 25 & 100 Year Storm AES Files

Existing 25 & 100 year AES Files

RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
(c) Copyright 1983-2016 Advanced Engineering Software (aes)
Ver. 23.0 Release Date: 07/01/2016 License ID 1334

Analysis prepared by:

***** DESCRIPTION OF STUDY *****
* KIMBERLY CLARK - FULLERTON *
* RATIONAL METHOD EXISTING CONDITION HYDROLOGY 48-INCH RCP AREA A *
* 25-YEAR STORM EVENT DM *

FILE NAME: GRMX25A.DAT
TIME/DATE OF STUDY: 16:29 03/15/2020

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--*TIME-OF-CONCENTRATION MODEL*--

USER SPECIFIED STORM EVENT(YEAR) = 25.00
SPECIFIED MINIMUM PIPE SIZE(INCH) = 4.00
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
DATA BANK RAINFALL USED
ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD

USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL								
	HALF- WIDTH	CROWN TO CROSSFALL	STREET-CROSSFALL: IN- / OUT-/PARK- SIDE / SIDE/ WAY	CURB HEIGHT	GUTTER-GEOMETRIES: WIDTH	LIP	HIKE	MANNING FACTOR
NO.	(FT)	(FT)		(FT)	(FT)	(FT)	(FT)	(n)
===	=====	=====	=====	=====	=====	=====	=====	=====
1	32.0	20.0	0.200/0.200/0.020	0.67	2.00	0.0312	0.167	0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

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

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

*USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

FLOW PROCESS FROM NODE 1.00 TO NODE 2.00 IS CODE = 21

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

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 326.80
ELEVATION DATA: UPSTREAM(FEET) = 184.18 DOWNSTREAM(FEET) = 182.23

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

SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 13.630

* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.734

SUBAREA T_c AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	T_c (MIN.)
PUBLIC PARK	B	3.66	0.30	0.850	56	13.63

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

SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.850

SUBAREA RUNOFF(CFS) = 8.17

TOTAL AREA(ACRES) = 3.66 PEAK FLOW RATE(CFS) = 8.17

FLOW PROCESS FROM NODE 2.00 TO NODE 5.00 IS CODE = 51

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

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 182.23 DOWNSTREAM(FEET) = 181.53

CHANNEL LENGTH THRU SUBAREA(FEET) = 553.70 CHANNEL SLOPE = 0.0013

CHANNEL BASE(FEET) = 30.00 "Z" FACTOR = 20.000

MANNING'S FACTOR = 0.014 MAXIMUM DEPTH(FEET) = 2.00

* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.184

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
PUBLIC PARK	B	4.87	0.30	0.850	56

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

SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.850

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 12.42

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 1.39

AVERAGE FLOW DEPTH(FEET) = 0.25 TRAVEL TIME(MIN.) = 6.64

T_c (MIN.) = 20.27

SUBAREA AREA(ACRES) = 4.87 SUBAREA RUNOFF(CFS) = 8.46

EFFECTIVE AREA(ACRES) = 8.53 AREA-AVERAGED F_m (INCH/HR) = 0.25

AREA-AVERAGED F_p (INCH/HR) = 0.30 AREA-AVERAGED A_p = 0.85

TOTAL AREA(ACRES) = 8.5 PEAK FLOW RATE(CFS) = 14.81

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.28 FLOW VELOCITY(FEET/SEC.) = 1.49

LONGEST FLOWPATH FROM NODE 1.00 TO NODE 5.00 = 880.50 FEET.

FLOW PROCESS FROM NODE 5.00 TO NODE 8.00 IS CODE = 51

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

ELEVATION DATA: UPSTREAM(FEET) = 181.53 DOWNSTREAM(FEET) = 180.50
CHANNEL LENGTH THRU SUBAREA(FEET) = 402.10 CHANNEL SLOPE = 0.0026
CHANNEL BASE(FEET) = 2.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.014 MAXIMUM DEPTH(FEET) = 2.00
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.092

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	5.54	0.30	0.100	56

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

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 19.95

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.17

AVERAGE FLOW DEPTH(FEET) = 1.13 TRAVEL TIME(MIN.) = 1.61

Tc(MIN.) = 21.88

SUBAREA AREA(ACRES) = 5.54 SUBAREA RUNOFF(CFS) = 10.28

EFFECTIVE AREA(ACRES) = 14.07 AREA-AVERAGED Fm(INCH/HR) = 0.17

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.55

TOTAL AREA(ACRES) = 14.1 PEAK FLOW RATE(CFS) = 24.38

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.24 FLOW VELOCITY(FEET/SEC.) = 4.38

LONGEST FLOWPATH FROM NODE 1.00 TO NODE 8.00 = 1282.60 FEET.

FLOW PROCESS FROM NODE 8.00 TO NODE 8.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 21.88

* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.092

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	3.88	0.30	0.100	56

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

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100

SUBAREA AREA(ACRES) = 3.88 SUBAREA RUNOFF(CFS) = 7.20

EFFECTIVE AREA(ACRES) = 17.95 AREA-AVERAGED Fm(INCH/HR) = 0.14

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.46

TOTAL AREA(ACRES) = 18.0 PEAK FLOW RATE(CFS) = 31.58

FLOW PROCESS FROM NODE 8.00 TO NODE 8.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 21.88

* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.092

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	4.59	0.30	0.100	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA AREA(ACRES) = 4.59 SUBAREA RUNOFF(CFS) = 8.52
EFFECTIVE AREA(ACRES) = 22.54 AREA-AVERAGED Fm(INCH/HR) = 0.12
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.38
TOTAL AREA(ACRES) = 22.5 PEAK FLOW RATE(CFS) = 40.10

FLOW PROCESS FROM NODE 8.00 TO NODE 10.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 179.00 DOWNSTREAM(FEET) = 176.73
FLOW LENGTH(FEET) = 325.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 33.0 INCH PIPE IS 25.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 8.24
ESTIMATED PIPE DIAMETER(INCH) = 33.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 40.10
PIPE TRAVEL TIME(MIN.) = 0.66 Tc(MIN.) = 22.54
LONGEST FLOWPATH FROM NODE 1.00 TO NODE 10.00 = 1607.60 FEET.

FLOW PROCESS FROM NODE 10.00 TO NODE 10.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 22.54
RAINFALL INTENSITY(INCH/HR) = 2.06
AREA-AVERAGED Fm(INCH/HR) = 0.12
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.38
EFFECTIVE STREAM AREA(ACRES) = 22.54
TOTAL STREAM AREA(ACRES) = 22.54
PEAK FLOW RATE(CFS) AT CONFLUENCE = 40.10

FLOW PROCESS FROM NODE 9.00 TO NODE 10.00 IS CODE = 21

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

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 500.00
ELEVATION DATA: UPSTREAM(FEET) = 190.25 DOWNSTREAM(FEET) = 180.25

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION \text{ CHANGE})] ** 0.20$
SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 7.985
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 3.701
SUBAREA T_c AND LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA F_p A_p SCS T_c
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
COMMERCIAL B 7.00 0.30 0.100 56 7.98
SUBAREA AVERAGE PERVIOUS LOSS RATE, F_p (INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100
SUBAREA RUNOFF(CFS) = 23.13
TOTAL AREA(ACRES) = 7.00 PEAK FLOW RATE(CFS) = 23.13

FLOW PROCESS FROM NODE 10.00 TO NODE 10.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 7.98
RAINFALL INTENSITY(INCH/HR) = 3.70
AREA-AVERAGED F_m (INCH/HR) = 0.03
AREA-AVERAGED F_p (INCH/HR) = 0.30
AREA-AVERAGED A_p = 0.10
EFFECTIVE STREAM AREA(ACRES) = 7.00
TOTAL STREAM AREA(ACRES) = 7.00
PEAK FLOW RATE(CFS) AT CONFLUENCE = 23.13

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	T_c (MIN.)	Intensity (INCH/HR)	$F_p(F_m)$ (INCH/HR)	A_p	A_e (ACRES)	HEADWATER NODE
1	40.10	22.54	2.057	0.30(0.12)	0.38	22.5	1.00
2	23.13	7.98	3.701	0.30(0.03)	0.10	7.0	9.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	T_c (MIN.)	Intensity (INCH/HR)	$F_p(F_m)$ (INCH/HR)	A_p	A_e (ACRES)	HEADWATER NODE
1	49.36	7.98	3.701	0.30(0.08)	0.25	15.0	9.00
2	52.87	22.54	2.057	0.30(0.09)	0.32	29.5	1.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 52.87 Tc(MIN.) = 22.54
 EFFECTIVE AREA(ACRES) = 29.54 AREA-AVERAGED Fm(INCH/HR) = 0.09
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.32
 TOTAL AREA(ACRES) = 29.5
 LONGEST FLOWPATH FROM NODE 1.00 TO NODE 10.00 = 1607.60 FEET.

FLOW PROCESS FROM NODE 10.00 TO NODE 10.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 22.54
 * 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.057
 SUBAREA LOSS RATE DATA(AMC II):
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
 COMMERCIAL B 3.80 0.30 0.100 56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
 SUBAREA AREA(ACRES) = 3.80 SUBAREA RUNOFF(CFS) = 6.93
 EFFECTIVE AREA(ACRES) = 33.34 AREA-AVERAGED Fm(INCH/HR) = 0.09
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.29
 TOTAL AREA(ACRES) = 33.3 PEAK FLOW RATE(CFS) = 59.10

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap (DECIMAL)	Ae (ACRES)	HEADWATER NODE
1	61.45	7.98	3.701	0.30(0.07)	0.22	18.8	9.00
2	59.10	22.54	2.057	0.30(0.09)	0.29	33.3	1.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 61.45 Tc(MIN.) = 7.98
 AREA-AVERAGED Fm(INCH/HR) = 0.07 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.22 EFFECTIVE AREA(ACRES) = 18.79

FLOW PROCESS FROM NODE 10.00 TO NODE 12.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 176.74 DOWNSTREAM(FEET) = 171.84
 FLOW LENGTH(FEET) = 700.00 MANNING'S N = 0.013
 DEPTH OF FLOW IN 39.0 INCH PIPE IS 29.3 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 9.20
 ESTIMATED PIPE DIAMETER(INCH) = 39.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 61.45
 PIPE TRAVEL TIME(MIN.) = 1.27 Tc(MIN.) = 9.25
 LONGEST FLOWPATH FROM NODE 1.00 TO NODE 12.00 = 2307.60 FEET.

FLOW PROCESS FROM NODE 12.00 TO NODE 12.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 9.25
RAINFALL INTENSITY(INCH/HR) = 3.40
AREA-AVERAGED Fm(INCH/HR) = 0.07
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.22
EFFECTIVE STREAM AREA(ACRES) = 18.79
TOTAL STREAM AREA(ACRES) = 33.34
PEAK FLOW RATE(CFS) AT CONFLUENCE = 61.45

FLOW PROCESS FROM NODE 11.00 TO NODE 12.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 700.00
ELEVATION DATA: UPSTREAM(FEET) = 194.25 DOWNSTREAM(FEET) = 180.25

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$
SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 9.135
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 3.430
SUBAREA T_c AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	B	2.80	0.30	0.100	56	9.13

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 8.57
TOTAL AREA(ACRES) = 2.80 PEAK FLOW RATE(CFS) = 8.57

FLOW PROCESS FROM NODE 12.00 TO NODE 12.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 9.13
RAINFALL INTENSITY(INCH/HR) = 3.43
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 2.80

TOTAL STREAM AREA(ACRES) = 2.80
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 8.57

**** CONFLUENCE DATA ****

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	61.45	9.25	3.405	0.30(0.07)	0.22	18.8	9.00
1	59.10	23.81	1.994	0.30(0.09)	0.29	33.3	1.00
2	8.57	9.13	3.430	0.30(0.03)	0.10	2.8	11.00

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

**** PEAK FLOW RATE TABLE ****

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	69.69	9.13	3.430	0.30(0.06)	0.20	21.3	11.00
2	69.96	9.25	3.405	0.30(0.06)	0.21	21.6	9.00
3	64.05	23.81	1.994	0.30(0.08)	0.28	36.1	1.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 69.96 Tc(MIN.) = 9.25
 EFFECTIVE AREA(ACRES) = 21.59 AREA-AVERAGED Fm(INCH/HR) = 0.06
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.21
 TOTAL AREA(ACRES) = 36.1
 LONGEST FLOWPATH FROM NODE 1.00 TO NODE 12.00 = 2307.60 FEET.

FLOW PROCESS FROM NODE 12.00 TO NODE 12.00 IS CODE = 81

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

=====

MAINLINE Tc(MIN.) = 9.25

* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 3.405

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	3.90	0.30	0.100	56

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

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100

SUBAREA AREA(ACRES) = 3.90 SUBAREA RUNOFF(CFS) = 11.85

EFFECTIVE AREA(ACRES) = 25.49 AREA-AVERAGED Fm(INCH/HR) = 0.06

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.19

TOTAL AREA(ACRES) = 40.0 PEAK FLOW RATE(CFS) = 76.80

FLOW PROCESS FROM NODE 12.00 TO NODE 12.00 IS CODE = 81

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

=====

MAINLINE Tc(MIN.) = 9.25
 * 25 YEAR RAINFALL INTENSITY(INCH/HR) = 3.405
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	5.80	0.30	0.100	56

 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
 SUBAREA AREA(ACRES) = 5.80 SUBAREA RUNOFF(CFS) = 17.62
 EFFECTIVE AREA(ACRES) = 31.29 AREA-AVERAGED Fm(INCH/HR) = 0.05
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.17
 TOTAL AREA(ACRES) = 45.8 PEAK FLOW RATE(CFS) = 94.41

FLOW PROCESS FROM NODE 12.00 TO NODE 16.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 171.84 DOWNSTREAM(FEET) = 168.44
 FLOW LENGTH(FEET) = 460.00 MANNING'S N = 0.013
 DEPTH OF FLOW IN 45.0 INCH PIPE IS 34.4 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 10.42
 ESTIMATED PIPE DIAMETER(INCH) = 45.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 94.41
 PIPE TRAVEL TIME(MIN.) = 0.74 Tc(MIN.) = 9.99
 LONGEST FLOWPATH FROM NODE 1.00 TO NODE 16.00 = 2767.60 FEET.

FLOW PROCESS FROM NODE 16.00 TO NODE 16.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
 TIME OF CONCENTRATION(MIN.) = 9.99
 RAINFALL INTENSITY(INCH/HR) = 3.26
 AREA-AVERAGED Fm(INCH/HR) = 0.05
 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.17
 EFFECTIVE STREAM AREA(ACRES) = 31.29
 TOTAL STREAM AREA(ACRES) = 45.84
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 94.41

FLOW PROCESS FROM NODE 14.00 TO NODE 16.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 300.00
 ELEVATION DATA: UPSTREAM(FEET) = 186.25 DOWNSTREAM(FEET) = 180.25

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

SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 6.509

* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.155

SUBAREA T_c AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	F_p (INCH/HR)	A_p (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	B	5.30	0.30	0.100	56	6.51

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

SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100

SUBAREA RUNOFF(CFS) = 19.68

TOTAL AREA(ACRES) = 5.30 PEAK FLOW RATE(CFS) = 19.68

FLOW PROCESS FROM NODE 16.00 TO NODE 16.00 IS CODE = 1

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

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

=====

TOTAL NUMBER OF STREAMS = 2

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:

TIME OF CONCENTRATION(MIN.) = 6.51

RAINFALL INTENSITY(INCH/HR) = 4.15

AREA-AVERAGED F_m (INCH/HR) = 0.03

AREA-AVERAGED F_p (INCH/HR) = 0.30

AREA-AVERAGED A_p = 0.10

EFFECTIVE STREAM AREA(ACRES) = 5.30

TOTAL STREAM AREA(ACRES) = 5.30

PEAK FLOW RATE(CFS) AT CONFLUENCE = 19.68

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	T_c (MIN.)	Intensity (INCH/HR)	F_p (F_m) (INCH/HR)	A_p	A_e (ACRES)	HEADWATER NODE
1	94.39	9.87	3.282	0.30(0.05)	0.17	31.0	11.00
1	94.41	9.99	3.261	0.30(0.05)	0.17	31.3	9.00
1	79.30	24.58	1.958	0.30(0.07)	0.24	45.8	1.00
2	19.68	6.51	4.155	0.30(0.03)	0.10	5.3	14.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO

CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	T_c (MIN.)	Intensity (INCH/HR)	F_p (F_m) (INCH/HR)	A_p	A_e (ACRES)	HEADWATER NODE
1	98.72	6.51	4.155	0.30(0.05)	0.16	25.8	14.00
2	109.90	9.87	3.282	0.30(0.05)	0.16	36.3	11.00
3	109.82	9.99	3.261	0.30(0.05)	0.16	36.6	9.00
4	88.50	24.58	1.958	0.30(0.07)	0.23	51.1	1.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 109.90 Tc(MIN.) = 9.87
EFFECTIVE AREA(ACRES) = 36.35 AREA-AVERAGED Fm(INCH/HR) = 0.05
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.16
TOTAL AREA(ACRES) = 51.1
LONGEST FLOWPATH FROM NODE 1.00 TO NODE 16.00 = 2767.60 FEET.

FLOW PROCESS FROM NODE 16.00 TO NODE 18.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 168.44 DOWNSTREAM(FEET) = 167.60
FLOW LENGTH(FEET) = 85.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 45.0 INCH PIPE IS 34.6 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 12.06
ESTIMATED PIPE DIAMETER(INCH) = 45.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 109.90
PIPE TRAVEL TIME(MIN.) = 0.12 Tc(MIN.) = 9.99
LONGEST FLOWPATH FROM NODE 1.00 TO NODE 18.00 = 2852.60 FEET.

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 51.1 TC(MIN.) = 9.99
EFFECTIVE AREA(ACRES) = 36.35 AREA-AVERAGED Fm(INCH/HR)= 0.05
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.162
PEAK FLOW RATE(CFS) = 109.90

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	98.72	6.63	4.112	0.30(0.05)	0.16	25.8	14.00
2	109.90	9.99	3.261	0.30(0.05)	0.16	36.3	11.00
3	109.82	10.11	3.239	0.30(0.05)	0.16	36.6	9.00
4	88.50	24.71	1.953	0.30(0.07)	0.23	51.1	1.00

END OF RATIONAL METHOD ANALYSIS

↑

RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
(c) Copyright 1983-2016 Advanced Engineering Software (aes)
Ver. 23.0 Release Date: 07/01/2016 License ID 1334

Analysis prepared by:

***** DESCRIPTION OF STUDY *****
* KIMBERLY CLARK - FULLERTON *
* RATIONAL METHOD EXISTING CONDITION HYDROLOGY 24-INCH AREA B *
* 25-YEAR STORM EVENT MD *

FILE NAME: GRMX25B.DAT
TIME/DATE OF STUDY: 16:44 03/11/2020

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--*TIME-OF-CONCENTRATION MODEL*--

USER SPECIFIED STORM EVENT(YEAR) = 25.00
SPECIFIED MINIMUM PIPE SIZE(INCH) = 4.00
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
DATA BANK RAINFALL USED
ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD

USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL								
	HALF- WIDTH	CROWN TO CROSSFALL	STREET-CROSSFALL: IN- / OUT-/PARK- SIDE / SIDE/ WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH (FT)	LIP (FT)	HIKE (FT)	MANNING FACTOR (n)
NO.	(FT)	(FT)						
===	=====	=====	=====	=====	=====	=====	=====	=====
1	32.0	20.0	0.200/0.200/0.020	0.67	2.00	0.0313	0.167	0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

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

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

*USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

FLOW PROCESS FROM NODE 20.00 TO NODE 30.00 IS CODE = 21

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

INITIAL SUBAREA FLOW-LENGTH(FEET) = 331.00
 ELEVATION DATA: UPSTREAM(FEET) = 180.00 DOWNSTREAM(FEET) = 179.00

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

SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 9.880

* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 3.281

SUBAREA T_c AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	B	1.17	0.30	0.100	56	9.88

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

SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100

SUBAREA RUNOFF(CFS) = 3.42

TOTAL AREA(ACRES) = 1.17 PEAK FLOW RATE(CFS) = 3.42

FLOW PROCESS FROM NODE 30.00 TO NODE 40.00 IS CODE = 51

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

ELEVATION DATA: UPSTREAM(FEET) = 179.00 DOWNSTREAM(FEET) = 177.00

CHANNEL LENGTH THRU SUBAREA(FEET) = 665.00 CHANNEL SLOPE = 0.0030

CHANNEL BASE(FEET) = 30.00 "Z" FACTOR = 20.000

MANNING'S FACTOR = 0.015 MAXIMUM DEPTH(FEET) = 2.00

* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.350

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	2.58	0.30	0.100	56

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

SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 6.15

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 1.40

AVERAGE FLOW DEPTH(FEET) = 0.13 TRAVEL TIME(MIN.) = 7.93

T_c (MIN.) = 17.81

SUBAREA AREA(ACRES) = 2.58 SUBAREA RUNOFF(CFS) = 5.39

EFFECTIVE AREA(ACRES) = 3.75 AREA-AVERAGED F_m (INCH/HR) = 0.03

AREA-AVERAGED F_p (INCH/HR) = 0.30 AREA-AVERAGED A_p = 0.10

TOTAL AREA(ACRES) = 3.8 PEAK FLOW RATE(CFS) = 7.83

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.16 FLOW VELOCITY(FEET/SEC.) = 1.50

LONGEST FLOWPATH FROM NODE 20.00 TO NODE 40.00 = 996.00 FEET.

FLOW PROCESS FROM NODE 40.00 TO NODE 50.00 IS CODE = 51

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

ELEVATION DATA: UPSTREAM(FEET) = 177.00 DOWNSTREAM(FEET) = 175.66
CHANNEL LENGTH THRU SUBAREA(FEET) = 372.00 CHANNEL SLOPE = 0.0036
CHANNEL BASE(FEET) = 30.00 "Z" FACTOR = 20.000
MANNING'S FACTOR = 0.015 MAXIMUM DEPTH(FEET) = 2.00
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.127

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	3.30	0.30	0.100	56

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

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 10.94

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 1.81

AVERAGE FLOW DEPTH(FEET) = 0.18 TRAVEL TIME(MIN.) = 3.43

Tc(MIN.) = 21.24

SUBAREA AREA(ACRES) = 3.30 SUBAREA RUNOFF(CFS) = 6.23

EFFECTIVE AREA(ACRES) = 7.05 AREA-AVERAGED Fm(INCH/HR) = 0.03

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10

TOTAL AREA(ACRES) = 7.1 PEAK FLOW RATE(CFS) = 13.31

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.20 FLOW VELOCITY(FEET/SEC.) = 1.92

LONGEST FLOWPATH FROM NODE 20.00 TO NODE 50.00 = 1368.00 FEET.

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 7.1 TC(MIN.) = 21.24

EFFECTIVE AREA(ACRES) = 7.05 AREA-AVERAGED Fm(INCH/HR) = 0.03

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.100

PEAK FLOW RATE(CFS) = 13.31

END OF RATIONAL METHOD ANALYSIS



RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
(c) Copyright 1983-2016 Advanced Engineering Software (aes)
Ver. 23.0 Release Date: 07/01/2016 License ID 1334

Analysis prepared by:

***** DESCRIPTION OF STUDY *****
* KIMBERLY CLARK - FULLERTON *
* RATIONAL METHOD EXISTING CONDITION HYDROLOGY 24-INCH AREA C *
* 25-YEAR STORM EVENT MD *

FILE NAME: GRMX25C.DAT
TIME/DATE OF STUDY: 18:42 03/11/2020

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--*TIME-OF-CONCENTRATION MODEL*--

USER SPECIFIED STORM EVENT(YEAR) = 25.00
SPECIFIED MINIMUM PIPE SIZE(INCH) = 4.00
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
DATA BANK RAINFALL USED
ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD

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

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL: IN- / OUT-/PARK- SIDE / SIDE/ WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH LIP HIKE (FT) (FT) (FT)	MANNING FACTOR (n)
1	32.0	20.0	0.200/0.200/0.020	0.67	2.00 0.0313 0.167	0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

1. Relative Flow-Depth = 0.00 FEET
as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
 2. (Depth)*(Velocity) Constraint = 6.0 (FT*FT/S)
- *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
*USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

FLOW PROCESS FROM NODE 60.00 TO NODE 70.00 IS CODE = 21

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

INITIAL SUBAREA FLOW-LENGTH(FEET) = 237.00
 ELEVATION DATA: UPSTREAM(FEET) = 185.00 DOWNSTREAM(FEET) = 184.38

$T_c = K * [(LENGTH^{**} 3.00) / (ELEVATION\ CHANGE)]^{**0.20}$
 SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 8.897
 * 25 YEAR RAINFALL INTENSITY(INCH/HR) = 3.481

SUBAREA T_c AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	B	1.07	0.30	0.100	56	8.90

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

SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100

SUBAREA RUNOFF(CFS) = 3.32

TOTAL AREA(ACRES) = 1.07 PEAK FLOW RATE(CFS) = 3.32

FLOW PROCESS FROM NODE 80.00 TO NODE 90.00 IS CODE = 51

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

ELEVATION DATA: UPSTREAM(FEET) = 183.49 DOWNSTREAM(FEET) = 182.28
 CHANNEL LENGTH THRU SUBAREA(FEET) = 258.00 CHANNEL SLOPE = 0.0047
 CHANNEL BASE(FEET) = 30.00 "Z" FACTOR = 20.000
 MANNING'S FACTOR = 0.015 MAXIMUM DEPTH(FEET) = 2.00
 * 25 YEAR RAINFALL INTENSITY(INCH/HR) = 3.028

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	3.50	0.30	0.100	56

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

SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 8.07

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 1.73

AVERAGE FLOW DEPTH(FEET) = 0.14 TRAVEL TIME(MIN.) = 2.49

T_c (MIN.) = 11.38

SUBAREA AREA(ACRES) = 3.50 SUBAREA RUNOFF(CFS) = 9.44

EFFECTIVE AREA(ACRES) = 4.57 AREA-AVERAGED F_m (INCH/HR) = 0.03

AREA-AVERAGED F_p (INCH/HR) = 0.30 AREA-AVERAGED A_p = 0.10

TOTAL AREA(ACRES) = 4.6 PEAK FLOW RATE(CFS) = 12.33

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.18 FLOW VELOCITY(FEET/SEC.) = 2.04

LONGEST FLOWPATH FROM NODE 60.00 TO NODE 90.00 = 495.00 FEET.

FLOW PROCESS FROM NODE 100.00 TO NODE 110.00 IS CODE = 51

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

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

ELEVATION DATA: UPSTREAM(FEET) = 182.10 DOWNSTREAM(FEET) = 180.41

CHANNEL LENGTH THRU SUBAREA(FEET) = 442.00 CHANNEL SLOPE = 0.0038

CHANNEL BASE(FEET) = 30.00 "Z" FACTOR = 20.000

MANNING'S FACTOR = 0.015 MAXIMUM DEPTH(FEET) = 2.00

* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.583

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	1.79	0.30	0.100	56

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

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 14.39

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 2.00

AVERAGE FLOW DEPTH(FEET) = 0.21 TRAVEL TIME(MIN.) = 3.69

Tc(MIN.) = 15.08

SUBAREA AREA(ACRES) = 1.79 SUBAREA RUNOFF(CFS) = 4.11

EFFECTIVE AREA(ACRES) = 6.36 AREA-AVERAGED Fm(INCH/HR) = 0.03

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10

TOTAL AREA(ACRES) = 6.4 PEAK FLOW RATE(CFS) = 14.61

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.21 FLOW VELOCITY(FEET/SEC.) = 2.03

LONGEST FLOWPATH FROM NODE 60.00 TO NODE 110.00 = 937.00 FEET.

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 6.4 TC(MIN.) = 15.08

EFFECTIVE AREA(ACRES) = 6.36 AREA-AVERAGED Fm(INCH/HR) = 0.03

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.100

PEAK FLOW RATE(CFS) = 14.61

END OF RATIONAL METHOD ANALYSIS



RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
(c) Copyright 1983-2016 Advanced Engineering Software (aes)
Ver. 23.0 Release Date: 07/01/2016 License ID 1334

Analysis prepared by:

***** DESCRIPTION OF STUDY *****
* KIMBERLY CLARK - FULLERTON *
* RATIONAL METHOD EXISTING CONDITION HYDROLOGY 48-INCH RCP AREA A *
* 100-YEAR STORM EVENT SR *

FILE NAME: GRMX00A.DAT
TIME/DATE OF STUDY: 21:28 03/16/2020

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--*TIME-OF-CONCENTRATION MODEL*--

USER SPECIFIED STORM EVENT(YEAR) = 100.00
SPECIFIED MINIMUM PIPE SIZE(INCH) = 4.00
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
DATA BANK RAINFALL USED
ANTECEDENT MOISTURE CONDITION (AMC) III ASSUMED FOR RATIONAL METHOD

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

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL: IN- / OUT- / PARK- SIDE / SIDE/ WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH LIP HIKE (FT) (FT) (FT)	MANNING FACTOR (n)
1	32.0	20.0	0.200/0.200/0.020	0.67	2.00 0.0312 0.167	0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

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

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

*USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

FLOW PROCESS FROM NODE 1.00 TO NODE 2.00 IS CODE = 21

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

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 326.80
ELEVATION DATA: UPSTREAM(FEET) = 184.18 DOWNSTREAM(FEET) = 182.23

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

SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 13.630

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.483

SUBAREA T_c AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	T_c (MIN.)
PUBLIC PARK	B	3.66	0.30	0.850	76	13.63

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

SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.850

SUBAREA RUNOFF(CFS) = 10.63

TOTAL AREA(ACRES) = 3.66 PEAK FLOW RATE(CFS) = 10.63

FLOW PROCESS FROM NODE 2.00 TO NODE 5.00 IS CODE = 51

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

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 182.23 DOWNSTREAM(FEET) = 181.53

CHANNEL LENGTH THRU SUBAREA(FEET) = 553.70 CHANNEL SLOPE = 0.0013

CHANNEL BASE(FEET) = 30.00 "Z" FACTOR = 20.000

MANNING'S FACTOR = 0.014 MAXIMUM DEPTH(FEET) = 2.00

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.816

SUBAREA LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
PUBLIC PARK	B	4.87	0.30	0.850	76

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

SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.850

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 16.29

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 1.51

AVERAGE FLOW DEPTH(FEET) = 0.30 TRAVEL TIME(MIN.) = 6.13

T_c (MIN.) = 19.76

SUBAREA AREA(ACRES) = 4.87 SUBAREA RUNOFF(CFS) = 11.22

EFFECTIVE AREA(ACRES) = 8.53 AREA-AVERAGED F_m (INCH/HR) = 0.25

AREA-AVERAGED F_p (INCH/HR) = 0.30 AREA-AVERAGED A_p = 0.85

TOTAL AREA(ACRES) = 8.5 PEAK FLOW RATE(CFS) = 19.66

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.33 FLOW VELOCITY(FEET/SEC.) = 1.62

LONGEST FLOWPATH FROM NODE 1.00 TO NODE 5.00 = 880.50 FEET.

FLOW PROCESS FROM NODE 5.00 TO NODE 8.00 IS CODE = 51

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

ELEVATION DATA: UPSTREAM(FEET) = 181.53 DOWNSTREAM(FEET) = 180.50
CHANNEL LENGTH THRU SUBAREA(FEET) = 402.10 CHANNEL SLOPE = 0.0026
CHANNEL BASE(FEET) = 2.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.014 MAXIMUM DEPTH(FEET) = 2.00
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.700

SUBAREA LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	5.54	0.30	0.100	76

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

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 26.31

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.47

AVERAGE FLOW DEPTH(FEET) = 1.29 TRAVEL TIME(MIN.) = 1.50

Tc(MIN.) = 21.26

SUBAREA AREA(ACRES) = 5.54 SUBAREA RUNOFF(CFS) = 13.31

EFFECTIVE AREA(ACRES) = 14.07 AREA-AVERAGED Fm(INCH/HR) = 0.17

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.55

TOTAL AREA(ACRES) = 14.1 PEAK FLOW RATE(CFS) = 32.08

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.41 FLOW VELOCITY(FEET/SEC.) = 4.70

LONGEST FLOWPATH FROM NODE 1.00 TO NODE 8.00 = 1282.60 FEET.

FLOW PROCESS FROM NODE 8.00 TO NODE 8.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 21.26

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.700

SUBAREA LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	3.88	0.30	0.100	76

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

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100

SUBAREA AREA(ACRES) = 3.88 SUBAREA RUNOFF(CFS) = 9.32

EFFECTIVE AREA(ACRES) = 17.95 AREA-AVERAGED Fm(INCH/HR) = 0.14

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.46

TOTAL AREA(ACRES) = 18.0 PEAK FLOW RATE(CFS) = 41.41

FLOW PROCESS FROM NODE 8.00 TO NODE 8.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 21.26

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.700

SUBAREA LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	4.59	0.30	0.100	76

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA AREA(ACRES) = 4.59 SUBAREA RUNOFF(CFS) = 11.03
EFFECTIVE AREA(ACRES) = 22.54 AREA-AVERAGED Fm(INCH/HR) = 0.12
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.38
TOTAL AREA(ACRES) = 22.5 PEAK FLOW RATE(CFS) = 52.44

FLOW PROCESS FROM NODE 8.00 TO NODE 10.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 179.00 DOWNSTREAM(FEET) = 176.73
FLOW LENGTH(FEET) = 325.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 36.0 INCH PIPE IS 28.4 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 8.76
ESTIMATED PIPE DIAMETER(INCH) = 36.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 52.44
PIPE TRAVEL TIME(MIN.) = 0.62 Tc(MIN.) = 21.87
LONGEST FLOWPATH FROM NODE 1.00 TO NODE 10.00 = 1607.60 FEET.

FLOW PROCESS FROM NODE 10.00 TO NODE 10.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 21.87
RAINFALL INTENSITY(INCH/HR) = 2.66
AREA-AVERAGED Fm(INCH/HR) = 0.12
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.38
EFFECTIVE STREAM AREA(ACRES) = 22.54
TOTAL STREAM AREA(ACRES) = 22.54
PEAK FLOW RATE(CFS) AT CONFLUENCE = 52.44

FLOW PROCESS FROM NODE 9.00 TO NODE 10.00 IS CODE = 21

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

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 500.00
ELEVATION DATA: UPSTREAM(FEET) = 190.25 DOWNSTREAM(FEET) = 180.25

$T_c = K * [(LENGTH^{**} 3.00) / (ELEVATION \text{ CHANGE})]^{**} 0.20$

SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 7.985

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 4.732

SUBAREA T_c AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	F_p (INCH/HR)	A_p (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	B	7.00	0.30	0.100	76	7.98

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

SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100

SUBAREA RUNOFF(CFS) = 29.62

TOTAL AREA(ACRES) = 7.00 PEAK FLOW RATE(CFS) = 29.62

FLOW PROCESS FROM NODE 10.00 TO NODE 10.00 IS CODE = 1

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

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

=====

TOTAL NUMBER OF STREAMS = 2

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:

TIME OF CONCENTRATION(MIN.) = 7.98

RAINFALL INTENSITY(INCH/HR) = 4.73

AREA-AVERAGED F_m (INCH/HR) = 0.03

AREA-AVERAGED F_p (INCH/HR) = 0.30

AREA-AVERAGED A_p = 0.10

EFFECTIVE STREAM AREA(ACRES) = 7.00

TOTAL STREAM AREA(ACRES) = 7.00

PEAK FLOW RATE(CFS) AT CONFLUENCE = 29.62

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	T_c (MIN.)	Intensity (INCH/HR)	$F_p(F_m)$ (INCH/HR)	A_p	A_e (ACRES)	HEADWATER NODE
1	52.44	21.87	2.656	0.30(0.12)	0.38	22.5	1.00
2	29.62	7.98	4.732	0.30(0.03)	0.10	7.0	9.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO

CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	T_c (MIN.)	Intensity (INCH/HR)	$F_p(F_m)$ (INCH/HR)	A_p	A_e (ACRES)	HEADWATER NODE
1	64.40	7.98	4.732	0.30(0.08)	0.25	15.2	9.00
2	68.98	21.87	2.656	0.30(0.09)	0.32	29.5	1.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 68.98 Tc(MIN.) = 21.87
 EFFECTIVE AREA(ACRES) = 29.54 AREA-AVERAGED Fm(INCH/HR) = 0.09
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.32
 TOTAL AREA(ACRES) = 29.5
 LONGEST FLOWPATH FROM NODE 1.00 TO NODE 10.00 = 1607.60 FEET.

FLOW PROCESS FROM NODE 10.00 TO NODE 10.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 21.87
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.656
 SUBAREA LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	3.80	0.30	0.100	76

 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
 SUBAREA AREA(ACRES) = 3.80 SUBAREA RUNOFF(CFS) = 8.98
 EFFECTIVE AREA(ACRES) = 33.34 AREA-AVERAGED Fm(INCH/HR) = 0.09
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.29
 TOTAL AREA(ACRES) = 33.3 PEAK FLOW RATE(CFS) = 77.07

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	79.89	7.98	4.732	0.30(0.07)	0.22	19.0	9.00
2	77.07	21.87	2.656	0.30(0.09)	0.29	33.3	1.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 79.89 Tc(MIN.) = 7.98
 AREA-AVERAGED Fm(INCH/HR) = 0.07 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.22 EFFECTIVE AREA(ACRES) = 19.03

FLOW PROCESS FROM NODE 10.00 TO NODE 12.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 176.74 DOWNSTREAM(FEET) = 171.84
 FLOW LENGTH(FEET) = 700.00 MANNING'S N = 0.013
 DEPTH OF FLOW IN 42.0 INCH PIPE IS 33.5 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 9.72
 ESTIMATED PIPE DIAMETER(INCH) = 42.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 79.89
 PIPE TRAVEL TIME(MIN.) = 1.20 Tc(MIN.) = 9.19
 LONGEST FLOWPATH FROM NODE 1.00 TO NODE 12.00 = 2307.60 FEET.

FLOW PROCESS FROM NODE 12.00 TO NODE 12.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 9.19
RAINFALL INTENSITY(INCH/HR) = 4.37
AREA-AVERAGED Fm(INCH/HR) = 0.07
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.22
EFFECTIVE STREAM AREA(ACRES) = 19.03
TOTAL STREAM AREA(ACRES) = 33.34
PEAK FLOW RATE(CFS) AT CONFLUENCE = 79.89

FLOW PROCESS FROM NODE 11.00 TO NODE 12.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 700.00
ELEVATION DATA: UPSTREAM(FEET) = 194.25 DOWNSTREAM(FEET) = 180.25

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$
SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 9.135
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 4.381
SUBAREA T_c AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	B	2.80	0.30	0.100	76	9.13

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 10.96
TOTAL AREA(ACRES) = 2.80 PEAK FLOW RATE(CFS) = 10.96

FLOW PROCESS FROM NODE 12.00 TO NODE 12.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 9.13
RAINFALL INTENSITY(INCH/HR) = 4.38
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 2.80

TOTAL STREAM AREA(ACRES) = 2.80
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 10.96

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	79.89	9.19	4.367	0.30(0.07)	0.22	19.0	9.00
1	77.07	23.08	2.576	0.30(0.09)	0.29	33.3	1.00
2	10.96	9.13	4.381	0.30(0.03)	0.10	2.8	11.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	90.67	9.13	4.381	0.30(0.06)	0.21	21.7	11.00
2	90.82	9.19	4.367	0.30(0.06)	0.21	21.8	9.00
3	83.49	23.08	2.576	0.30(0.08)	0.28	36.1	1.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 90.82 Tc(MIN.) = 9.19
 EFFECTIVE AREA(ACRES) = 21.83 AREA-AVERAGED Fm(INCH/HR) = 0.06
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.21
 TOTAL AREA(ACRES) = 36.1
 LONGEST FLOWPATH FROM NODE 1.00 TO NODE 12.00 = 2307.60 FEET.

FLOW PROCESS FROM NODE 12.00 TO NODE 12.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 9.19

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 4.367

SUBAREA LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	3.90	0.30	0.100	76

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

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100

SUBAREA AREA(ACRES) = 3.90 SUBAREA RUNOFF(CFS) = 15.22

EFFECTIVE AREA(ACRES) = 25.73 AREA-AVERAGED Fm(INCH/HR) = 0.06

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.19

TOTAL AREA(ACRES) = 40.0 PEAK FLOW RATE(CFS) = 99.79

FLOW PROCESS FROM NODE 12.00 TO NODE 12.00 IS CODE = 81

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

=====

MAINLINE Tc(MIN.) = 9.19
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 4.367
 SUBAREA LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	5.80	0.30	0.100	76

 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
 SUBAREA AREA(ACRES) = 5.80 SUBAREA RUNOFF(CFS) = 22.64
 EFFECTIVE AREA(ACRES) = 31.53 AREA-AVERAGED Fm(INCH/HR) = 0.05
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.17
 TOTAL AREA(ACRES) = 45.8 PEAK FLOW RATE(CFS) = 122.43

FLOW PROCESS FROM NODE 12.00 TO NODE 16.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 171.84 DOWNSTREAM(FEET) = 168.44
 FLOW LENGTH(FEET) = 460.00 MANNING'S N = 0.013
 DEPTH OF FLOW IN 51.0 INCH PIPE IS 36.6 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 11.23
 ESTIMATED PIPE DIAMETER(INCH) = 51.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 122.43
 PIPE TRAVEL TIME(MIN.) = 0.68 Tc(MIN.) = 9.87
 LONGEST FLOWPATH FROM NODE 1.00 TO NODE 16.00 = 2767.60 FEET.

FLOW PROCESS FROM NODE 16.00 TO NODE 16.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
 TIME OF CONCENTRATION(MIN.) = 9.87
 RAINFALL INTENSITY(INCH/HR) = 4.19
 AREA-AVERAGED Fm(INCH/HR) = 0.05
 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.17
 EFFECTIVE STREAM AREA(ACRES) = 31.53
 TOTAL STREAM AREA(ACRES) = 45.84
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 122.43

FLOW PROCESS FROM NODE 14.00 TO NODE 16.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 300.00
 ELEVATION DATA: UPSTREAM(FEET) = 186.25 DOWNSTREAM(FEET) = 180.25

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION\ CHANGE)] ** 0.20$

SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 6.509

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 5.319

SUBAREA T_c AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	F_p (INCH/HR)	A_p (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	B	5.30	0.30	0.100	76	6.51

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

SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100

SUBAREA RUNOFF(CFS) = 25.23

TOTAL AREA(ACRES) = 5.30 PEAK FLOW RATE(CFS) = 25.23

FLOW PROCESS FROM NODE 16.00 TO NODE 16.00 IS CODE = 1

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

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

=====

TOTAL NUMBER OF STREAMS = 2

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:

TIME OF CONCENTRATION(MIN.) = 6.51

RAINFALL INTENSITY(INCH/HR) = 5.32

AREA-AVERAGED F_m (INCH/HR) = 0.03

AREA-AVERAGED F_p (INCH/HR) = 0.30

AREA-AVERAGED A_p = 0.10

EFFECTIVE STREAM AREA(ACRES) = 5.30

TOTAL STREAM AREA(ACRES) = 5.30

PEAK FLOW RATE(CFS) AT CONFLUENCE = 25.23

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	T_c (MIN.)	Intensity (INCH/HR)	F_p (F_m) (INCH/HR)	A_p	A_e (ACRES)	HEADWATER NODE
1	122.41	9.82	4.203	0.30(0.05)	0.17	31.4	11.00
1	122.43	9.87	4.191	0.30(0.05)	0.17	31.5	9.00
1	103.30	23.79	2.531	0.30(0.07)	0.24	45.8	1.00
2	25.23	6.51	5.319	0.30(0.03)	0.10	5.3	14.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO

CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	T_c (MIN.)	Intensity (INCH/HR)	F_p (F_m) (INCH/HR)	A_p	A_e (ACRES)	HEADWATER NODE
1	128.21	6.51	5.319	0.30(0.05)	0.16	26.1	14.00
2	142.32	9.82	4.203	0.30(0.05)	0.16	36.7	11.00
3	142.27	9.87	4.191	0.30(0.05)	0.16	36.8	9.00
4	115.23	23.79	2.531	0.30(0.07)	0.23	51.1	1.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 142.32 Tc(MIN.) = 9.82
EFFECTIVE AREA(ACRES) = 36.72 AREA-AVERAGED Fm(INCH/HR) = 0.05
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.16
TOTAL AREA(ACRES) = 51.1
LONGEST FLOWPATH FROM NODE 1.00 TO NODE 16.00 = 2767.60 FEET.

FLOW PROCESS FROM NODE 16.00 TO NODE 18.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 168.44 DOWNSTREAM(FEET) = 167.60
FLOW LENGTH(FEET) = 85.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 51.0 INCH PIPE IS 36.8 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 12.99
ESTIMATED PIPE DIAMETER(INCH) = 51.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 142.32
PIPE TRAVEL TIME(MIN.) = 0.11 Tc(MIN.) = 9.93
LONGEST FLOWPATH FROM NODE 1.00 TO NODE 18.00 = 2852.60 FEET.

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 51.1 TC(MIN.) = 9.93
EFFECTIVE AREA(ACRES) = 36.72 AREA-AVERAGED Fm(INCH/HR)= 0.05
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.163
PEAK FLOW RATE(CFS) = 142.32

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	128.21	6.62	5.267	0.30(0.05)	0.16	26.1	14.00
2	142.32	9.93	4.177	0.30(0.05)	0.16	36.7	11.00
3	142.27	9.98	4.165	0.30(0.05)	0.16	36.8	9.00
4	115.23	23.91	2.524	0.30(0.07)	0.23	51.1	1.00

END OF RATIONAL METHOD ANALYSIS

↑

GRMX100B.RES

RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
(c) Copyright 1983-2016 Advanced Engineering Software (aes)
Ver. 23.0 Release Date: 07/01/2016 License ID 1334

Analysis prepared by:

***** DESCRIPTION OF STUDY *****

* KIMBERLY CLARK - FULLERTON *
* RATIONAL METHOD EXISTING CONDITION HYDROLOGY 24-INCH AREA B *
* 100-YEAR STORM EVENT MD *

FILE NAME: GRMX100B.DAT
TIME/DATE OF STUDY: 16:52 03/11/2020

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--*TIME-OF-CONCENTRATION MODEL*--

USER SPECIFIED STORM EVENT(YEAR) = 100.00
SPECIFIED MINIMUM PIPE SIZE(INCH) = 4.00
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
DATA BANK RAINFALL USED
ANTECEDENT MOISTURE CONDITION (AMC) III ASSUMED FOR RATIONAL METHOD

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

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL: IN- / OUT- / PARK- SIDE / SIDE / WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH LIP HIKE (FT) (FT) (FT)	MANNING FACTOR (n)
1	32.0	20.0	0.200/0.200/0.020	0.67	2.00 0.0313 0.167	0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

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

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

*USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

GRMX100B.RES

FLOW PROCESS FROM NODE 20.00 TO NODE 30.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 331.00
ELEVATION DATA: UPSTREAM(FEET) = 180.00 DOWNSTREAM(FEET) = 179.00

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$
SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 9.880
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 4.188
SUBAREA T_c AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	B	1.17	0.30	0.100	76	9.88

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 4.38
TOTAL AREA(ACRES) = 1.17 PEAK FLOW RATE(CFS) = 4.38

FLOW PROCESS FROM NODE 30.00 TO NODE 40.00 IS CODE = 51

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 179.00 DOWNSTREAM(FEET) = 177.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 665.00 CHANNEL SLOPE = 0.0030
CHANNEL BASE(FEET) = 30.00 "Z" FACTOR = 20.000
MANNING'S FACTOR = 0.015 MAXIMUM DEPTH(FEET) = 2.00
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.051
SUBAREA LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	2.58	0.30	0.100	76

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 7.93
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 1.52
AVERAGE FLOW DEPTH(FEET) = 0.16 TRAVEL TIME(MIN.) = 7.29
 T_c (MIN.) = 17.17
SUBAREA AREA(ACRES) = 2.58 SUBAREA RUNOFF(CFS) = 7.01
EFFECTIVE AREA(ACRES) = 3.75 AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 3.8 PEAK FLOW RATE(CFS) = 10.20

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

GRMX100B.RES

DEPTH(FEET) = 0.19 FLOW VELOCITY(FEET/SEC.) = 1.63
LONGEST FLOWPATH FROM NODE 20.00 TO NODE 40.00 = 996.00 FEET.

FLOW PROCESS FROM NODE 40.00 TO NODE 50.00 IS CODE = 51

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

ELEVATION DATA: UPSTREAM(FEET) = 177.00 DOWNSTREAM(FEET) = 175.66
CHANNEL LENGTH THRU SUBAREA(FEET) = 372.00 CHANNEL SLOPE = 0.0036
CHANNEL BASE(FEET) = 30.00 "Z" FACTOR = 20.000
MANNING'S FACTOR = 0.015 MAXIMUM DEPTH(FEET) = 2.00
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.772

SUBAREA LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	3.30	0.30	0.100	76

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 14.27
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 1.98
AVERAGE FLOW DEPTH(FEET) = 0.21 TRAVEL TIME(MIN.) = 3.13
Tc(MIN.) = 20.31
SUBAREA AREA(ACRES) = 3.30 SUBAREA RUNOFF(CFS) = 8.14
EFFECTIVE AREA(ACRES) = 7.05 AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 7.1 PEAK FLOW RATE(CFS) = 17.40

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.24 FLOW VELOCITY(FEET/SEC.) = 2.09
LONGEST FLOWPATH FROM NODE 20.00 TO NODE 50.00 = 1368.00 FEET.

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 7.1 TC(MIN.) = 20.31
EFFECTIVE AREA(ACRES) = 7.05 AREA-AVERAGED Fm(INCH/HR)= 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.100
PEAK FLOW RATE(CFS) = 17.40

END OF RATIONAL METHOD ANALYSIS



GRMX100C.RES

RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
(c) Copyright 1983-2016 Advanced Engineering Software (aes)
Ver. 23.0 Release Date: 07/01/2016 License ID 1334

Analysis prepared by:

***** DESCRIPTION OF STUDY *****

* KIMBERLY CLARK - FULLERTON *
* RATIONAL METHOD EXISTING CONDITION HYDROLOGY 24-INCH AREA C *
* 100-YEAR STORM EVENT MD *

FILE NAME: GRMX100C.DAT
TIME/DATE OF STUDY: 18:25 03/11/2020

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--*TIME-OF-CONCENTRATION MODEL*--

USER SPECIFIED STORM EVENT(YEAR) = 100.00
SPECIFIED MINIMUM PIPE SIZE(INCH) = 4.00
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
DATA BANK RAINFALL USED
ANTECEDENT MOISTURE CONDITION (AMC) III ASSUMED FOR RATIONAL METHOD

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

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL: IN- / OUT- / PARK- SIDE / SIDE / WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH LIP HIKE (FT) (FT) (FT)	MANNING FACTOR (n)
1	32.0	20.0	0.200/0.200/0.020	0.67	2.00 0.0313 0.167	0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

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

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

*USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

GRMX100C.RES

FLOW PROCESS FROM NODE 60.00 TO NODE 70.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 237.00
ELEVATION DATA: UPSTREAM(FEET) = 185.00 DOWNSTREAM(FEET) = 184.38

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$
SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 8.897
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 4.447
SUBAREA T_c AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	B	1.07	0.30	0.100	76	8.90

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 4.25
TOTAL AREA(ACRES) = 1.07 PEAK FLOW RATE(CFS) = 4.25

FLOW PROCESS FROM NODE 80.00 TO NODE 90.00 IS CODE = 51

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 183.49 DOWNSTREAM(FEET) = 182.28
CHANNEL LENGTH THRU SUBAREA(FEET) = 258.00 CHANNEL SLOPE = 0.0047
CHANNEL BASE(FEET) = 30.00 "Z" FACTOR = 20.000
MANNING'S FACTOR = 0.015 MAXIMUM DEPTH(FEET) = 2.00
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.909
SUBAREA LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	3.50	0.30	0.100	76

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 10.38
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 1.91
AVERAGE FLOW DEPTH(FEET) = 0.16 TRAVEL TIME(MIN.) = 2.25
 T_c (MIN.) = 11.14
SUBAREA AREA(ACRES) = 3.50 SUBAREA RUNOFF(CFS) = 12.22
EFFECTIVE AREA(ACRES) = 4.57 AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 4.6 PEAK FLOW RATE(CFS) = 15.95

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

```

                                GRMX100C.RES
DEPTH(FEET) = 0.21   FLOW VELOCITY(FEET/SEC.) = 2.21
LONGEST FLOWPATH FROM NODE      60.00 TO NODE      90.00 =      495.00 FEET.

*****
FLOW PROCESS FROM NODE      100.00 TO NODE      110.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 182.10 DOWNSTREAM(FEET) = 180.41
CHANNEL LENGTH THRU SUBAREA(FEET) = 442.00 CHANNEL SLOPE = 0.0038
CHANNEL BASE(FEET) = 30.00 "Z" FACTOR = 20.000
MANNING'S FACTOR = 0.015 MAXIMUM DEPTH(FEET) = 2.00
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.366
SUBAREA LOSS RATE DATA(AMC III):
DEVELOPMENT TYPE/      SCS SOIL  AREA      Fp      Ap      SCS
LAND USE              GROUP  (ACRES)  (INCH/HR) (DECIMAL) CN
COMMERCIAL            B      1.79      0.30      0.100    76
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 18.64
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 2.22
AVERAGE FLOW DEPTH(FEET) = 0.24 TRAVEL TIME(MIN.) = 3.32
Tc(MIN.) = 14.46
SUBAREA AREA(ACRES) = 1.79 SUBAREA RUNOFF(CFS) = 5.37
EFFECTIVE AREA(ACRES) = 6.36 AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 6.4 PEAK FLOW RATE(CFS) = 19.10

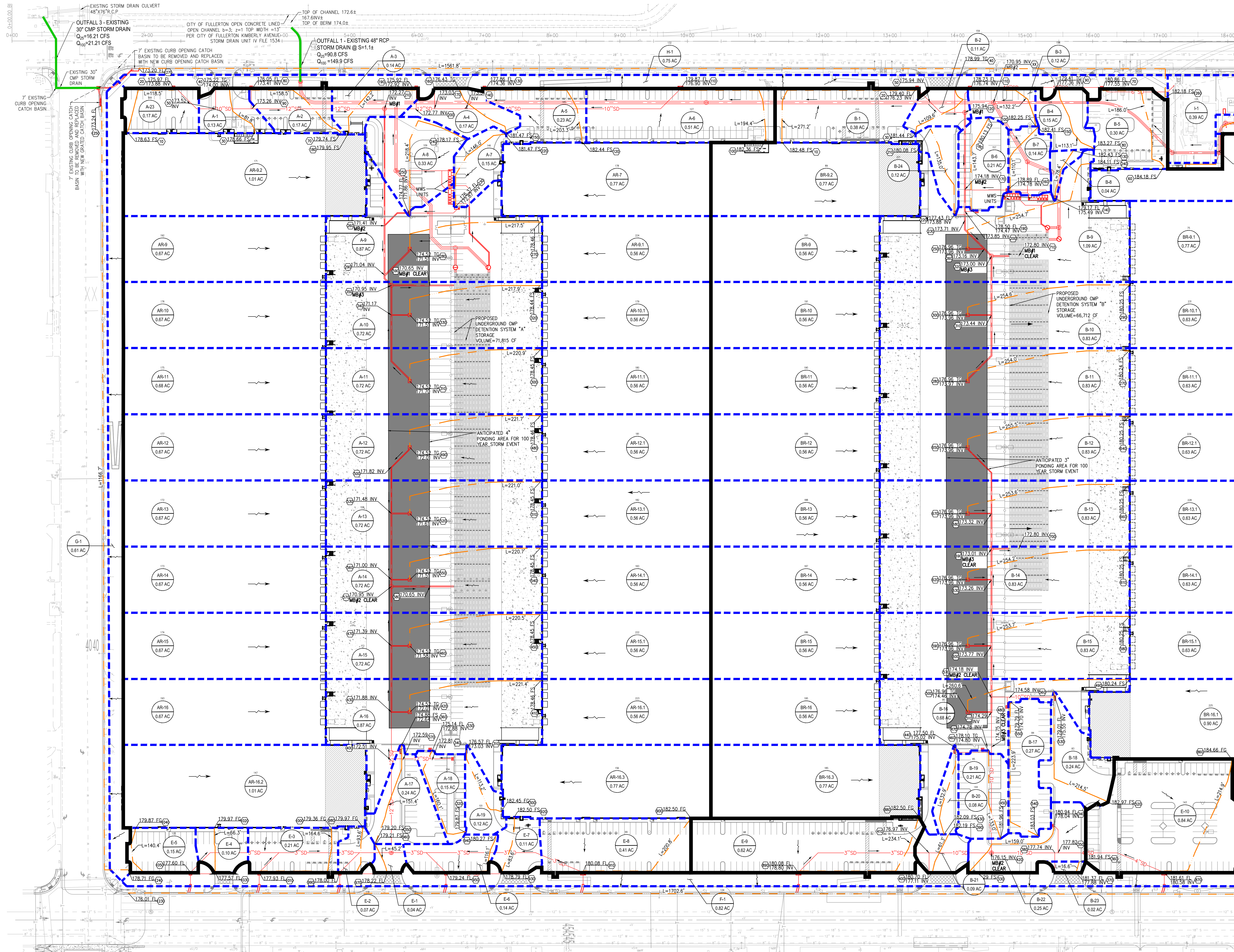
END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.25   FLOW VELOCITY(FEET/SEC.) = 2.21
LONGEST FLOWPATH FROM NODE      60.00 TO NODE      110.00 =      937.00 FEET.
=====
END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 6.4 TC(MIN.) = 14.46
EFFECTIVE AREA(ACRES) = 6.36 AREA-AVERAGED Fm(INCH/HR)= 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.100
PEAK FLOW RATE(CFS) = 19.10
=====
END OF RATIONAL METHOD ANALYSIS

```

↑

Appendix D – Proposed Hydrological Condition

Proposed Hydrological Condition



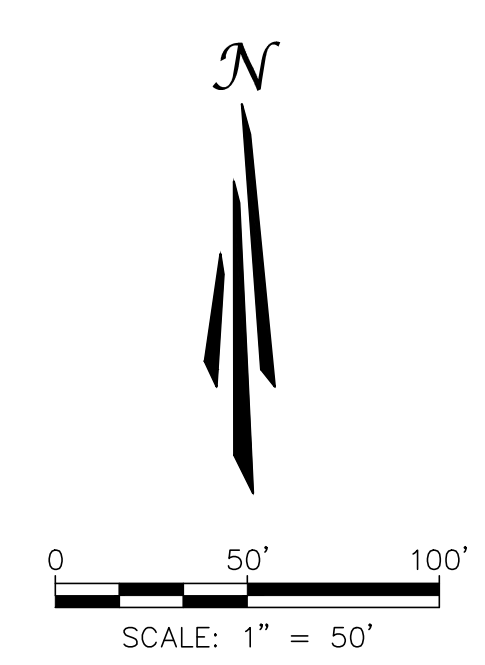
LEGEND

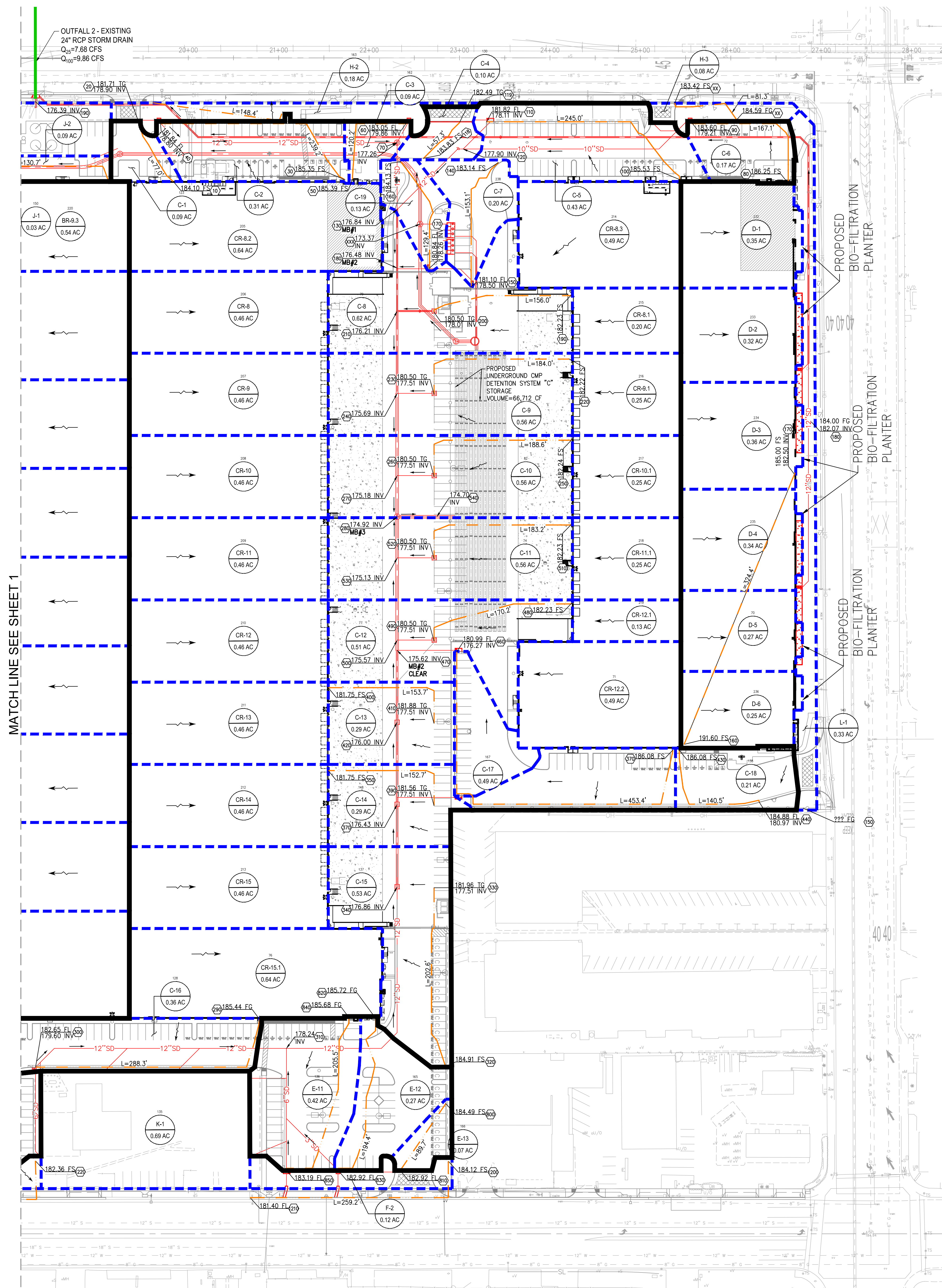
- 180
- PROPOSED CONTOUR
- FLOW LINE
- SURFACE DIRECTION OF FLOW
- EXISTING STORM DRAIN
- PROPOSED STORM DRAIN ≤ 12"
- PROPOSED STORM DRAIN > 12"
- STORM DRAIN PIPE FLOW
- AREA BOUNDARY
- SUB-AREA BOUNDARY
- NODE
- X-#
- AREA ID
- AREA (AC)

ABBREVIATIONS

FG	FINISHED GRADE
INV	INVERT
FFE	FINISHED FLOOR ELEVATION
PE	PAD ELEVATION
CF	CUBIC FEET
MWS	MODULAR WETLAND SYSTEM

MATCH LINE SEE SHEET 2





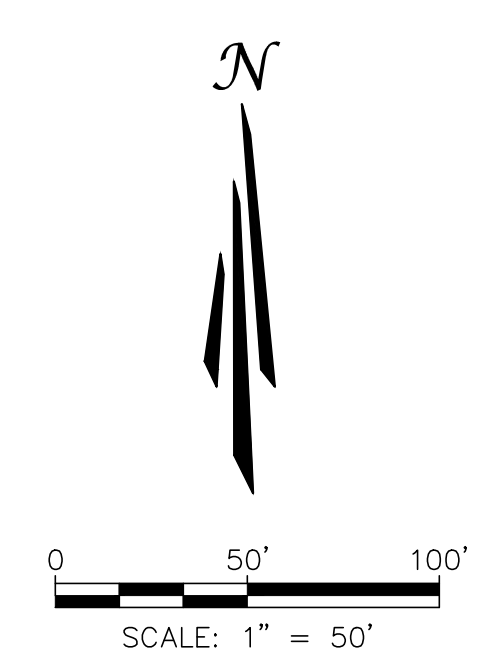
MATCH LINE SEE SHEET 1

LEGEND

- 180 PROPOSED CONTOUR
- FLOW LINE
- SURFACE DIRECTION OF FLOW
- EXISTING STORM DRAIN
- SD PROPOSED STORM DRAIN ≤ 12"
- SD PROPOSED STORM DRAIN > 12"
- STORM DRAIN PIPE FLOW
- AREA BOUNDARY
- SUB-AREA BOUNDARY
- NODE
- X-# AREA ID
- ###AC AREA (AC)

ABBREVIATIONS

- FG FINISHED GRADE
- INV INVERT
- FFE FINISHED FLOOR ELEVATION
- PE PAD ELEVATION
- CF CUBIC FEET
- MWS MODULAR WETLAND SYSTEM



Appendix E – Proposed 25 & 100 Year Storm AES Files

Proposed 25 & 100 year AES Files

RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
(c) Copyright 1983-2016 Advanced Engineering Software (aes)
Ver. 23.0 Release Date: 07/01/2016 License ID 1334

Analysis prepared by:

***** DESCRIPTION OF STUDY *****

* SP8454 - FULLERTON *
* GOODMAN LOGISTICS CENTER *
* BASIN A - 25 YEAR PEAK FLOW *

FILE NAME: GLC25A.DAT
TIME/DATE OF STUDY: 15:02 04/27/2021

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--*TIME-OF-CONCENTRATION MODEL*--

USER SPECIFIED STORM EVENT(YEAR) = 25.00
SPECIFIED MINIMUM PIPE SIZE(INCH) = 4.00
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
DATA BANK RAINFALL USED
ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD

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

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL: IN- / OUT- / PARK- SIDE / SIDE/ WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH LIP HIKE (FT) (FT) (FT)	MANNING FACTOR (n)
1	32.0	20.0	0.200/0.200/0.020	0.67	2.00 0.0313 0.167	0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

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

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

*USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

FLOW PROCESS FROM NODE 10.00 TO NODE 20.00 IS CODE = 21

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

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 118.50

ELEVATION DATA: UPSTREAM(FEET) = 178.23 DOWNSTREAM(FEET) = 176.00

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

SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 5.000

* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.824

SUBAREA T_c AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	F_p (INCH/HR)	A_p (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	A	0.17	0.40	0.100	32	5.00

SUBAREA AVERAGE PERVIOUS LOSS RATE, F_p (INCH/HR) = 0.40

SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100

SUBAREA RUNOFF(CFS) = 0.73

TOTAL AREA(ACRES) = 0.17 PEAK FLOW RATE(CFS) = 0.73

FLOW PROCESS FROM NODE 20.00 TO NODE 50.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 173.88 DOWNSTREAM(FEET) = 173.52

FLOW LENGTH(FEET) = 71.50 MANNING'S N = 0.009

DEPTH OF FLOW IN 9.0 INCH PIPE IS 4.2 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 3.62

ESTIMATED PIPE DIAMETER(INCH) = 9.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 0.73

PIPE TRAVEL TIME(MIN.) = 0.33 T_c (MIN.) = 5.33

LONGEST FLOWPATH FROM NODE 10.00 TO NODE 50.00 = 190.00 FEET.

FLOW PROCESS FROM NODE 50.00 TO NODE 50.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:

TIME OF CONCENTRATION(MIN.) = 5.33

RAINFALL INTENSITY(INCH/HR) = 4.65

AREA-AVERAGED F_m (INCH/HR) = 0.04

AREA-AVERAGED F_p (INCH/HR) = 0.40

AREA-AVERAGED A_p = 0.10

EFFECTIVE STREAM AREA(ACRES) = 0.17

TOTAL STREAM AREA(ACRES) = 0.17

PEAK FLOW RATE(CFS) AT CONFLUENCE = 0.73

FLOW PROCESS FROM NODE 30.00 TO NODE 40.00 IS CODE = 21

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

INITIAL SUBAREA FLOW-LENGTH(FEET) = 81.80
ELEVATION DATA: UPSTREAM(FEET) = 178.04 DOWNSTREAM(FEET) = 175.22

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

SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 5.000

* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.824

SUBAREA T_c AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	A	0.13	0.40	0.100	32	5.00

SUBAREA AVERAGE PERVIOUS LOSS RATE, F_p (INCH/HR) = 0.40

SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100

SUBAREA RUNOFF(CFS) = 0.56

TOTAL AREA(ACRES) = 0.13 PEAK FLOW RATE(CFS) = 0.56

FLOW PROCESS FROM NODE 40.00 TO NODE 50.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
=====

ELEVATION DATA: UPSTREAM(FEET) = 174.00 DOWNSTREAM(FEET) = 173.52
FLOW LENGTH(FEET) = 29.30 MANNING'S N = 0.009
DEPTH OF FLOW IN 6.0 INCH PIPE IS 3.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 5.26
ESTIMATED PIPE DIAMETER(INCH) = 6.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 0.56
PIPE TRAVEL TIME(MIN.) = 0.09 T_c (MIN.) = 5.09
LONGEST FLOWPATH FROM NODE 30.00 TO NODE 50.00 = 111.10 FEET.

FLOW PROCESS FROM NODE 50.00 TO NODE 50.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 5.09
RAINFALL INTENSITY(INCH/HR) = 4.77
AREA-AVERAGED F_m (INCH/HR) = 0.04
AREA-AVERAGED F_p (INCH/HR) = 0.40
AREA-AVERAGED A_p = 0.10
EFFECTIVE STREAM AREA(ACRES) = 0.13

TOTAL STREAM AREA(ACRES) = 0.13
PEAK FLOW RATE(CFS) AT CONFLUENCE = 0.56

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	0.73	5.33	4.653	0.40(0.04)	0.10	0.2	10.00
2	0.56	5.09	4.774	0.40(0.04)	0.10	0.1	30.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1.28	5.09	4.774	0.40(0.04)	0.10	0.3	30.00
2	1.28	5.33	4.653	0.40(0.04)	0.10	0.3	10.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 1.28 Tc(MIN.) = 5.09
EFFECTIVE AREA(ACRES) = 0.29 AREA-AVERAGED Fm(INCH/HR) = 0.04
AREA-AVERAGED Fp(INCH/HR) = 0.40 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 0.3
LONGEST FLOWPATH FROM NODE 10.00 TO NODE 50.00 = 190.00 FEET.

FLOW PROCESS FROM NODE 50.00 TO NODE 90.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 173.52 DOWNSTREAM(FEET) = 173.26
FLOW LENGTH(FEET) = 53.50 MANNING'S N = 0.009
DEPTH OF FLOW IN 9.0 INCH PIPE IS 6.0 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 4.08
ESTIMATED PIPE DIAMETER(INCH) = 9.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 1.28
PIPE TRAVEL TIME(MIN.) = 0.22 Tc(MIN.) = 5.31
LONGEST FLOWPATH FROM NODE 10.00 TO NODE 90.00 = 243.50 FEET.

FLOW PROCESS FROM NODE 90.00 TO NODE 90.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 5.31
RAINFALL INTENSITY(INCH/HR) = 4.66
AREA-AVERAGED Fm(INCH/HR) = 0.04

AREA-AVERAGED F_p (INCH/HR) = 0.40
AREA-AVERAGED A_p = 0.10
EFFECTIVE STREAM AREA(ACRES) = 0.29
TOTAL STREAM AREA(ACRES) = 0.30
PEAK FLOW RATE(CFS) AT CONFLUENCE = 1.28

FLOW PROCESS FROM NODE 70.00 TO NODE 80.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 158.50
ELEVATION DATA: UPSTREAM(FEET) = 179.78 DOWNSTREAM(FEET) = 176.29

$T_c = K * [(LENGTH^{**} 3.00) / (ELEVATION CHANGE)]^{**0.20}$
SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 5.000
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.824
SUBAREA T_c AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	F_p (INCH/HR)	A_p (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	A	0.17	0.40	0.100	32	5.00

SUBAREA AVERAGE PERVIOUS LOSS RATE, F_p (INCH/HR) = 0.40
SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100
SUBAREA RUNOFF(CFS) = 0.73
TOTAL AREA(ACRES) = 0.17 PEAK FLOW RATE(CFS) = 0.73

FLOW PROCESS FROM NODE 80.00 TO NODE 90.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 173.41 DOWNSTREAM(FEET) = 173.26
FLOW LENGTH(FEET) = 29.75 MANNING'S N = 0.009
DEPTH OF FLOW IN 9.0 INCH PIPE IS 4.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 3.62
ESTIMATED PIPE DIAMETER(INCH) = 9.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 0.73
PIPE TRAVEL TIME(MIN.) = 0.14 T_c (MIN.) = 5.14
LONGEST FLOWPATH FROM NODE 70.00 TO NODE 90.00 = 188.25 FEET.

FLOW PROCESS FROM NODE 90.00 TO NODE 90.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:

TIME OF CONCENTRATION(MIN.) = 5.14
 RAINFALL INTENSITY(INCH/HR) = 4.75
 AREA-AVERAGED Fm(INCH/HR) = 0.04
 AREA-AVERAGED Fp(INCH/HR) = 0.40
 AREA-AVERAGED Ap = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 0.17
 TOTAL STREAM AREA(ACRES) = 0.17
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 0.73

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1.28	5.31	4.662	0.40(0.04)	0.10	0.3	30.00
1	1.28	5.55	4.548	0.40(0.04)	0.10	0.3	10.00
2	0.73	5.14	4.751	0.40(0.04)	0.10	0.2	70.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1.99	5.14	4.751	0.40(0.04)	0.10	0.5	70.00
2	2.00	5.31	4.662	0.40(0.04)	0.10	0.5	30.00
3	1.98	5.55	4.548	0.40(0.04)	0.10	0.5	10.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 2.00 Tc(MIN.) = 5.31
 EFFECTIVE AREA(ACRES) = 0.46 AREA-AVERAGED Fm(INCH/HR) = 0.04
 AREA-AVERAGED Fp(INCH/HR) = 0.40 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 0.5
 LONGEST FLOWPATH FROM NODE 10.00 TO NODE 90.00 = 243.50 FEET.

FLOW PROCESS FROM NODE 90.00 TO NODE 210.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 173.26 DOWNSTREAM(FEET) = 172.27
 FLOW LENGTH(FEET) = 196.60 MANNING'S N = 0.009
 DEPTH OF FLOW IN 12.0 INCH PIPE IS 6.4 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 4.67
 ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 2.00
 PIPE TRAVEL TIME(MIN.) = 0.70 Tc(MIN.) = 6.01
 LONGEST FLOWPATH FROM NODE 10.00 TO NODE 210.00 = 440.10 FEET.

FLOW PROCESS FROM NODE 210.00 TO NODE 210.00 IS CODE = 10

```

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

*****
FLOW PROCESS FROM NODE      100.00 TO NODE      110.00 IS CODE =   21
-----

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

INITIAL SUBAREA FLOW-LENGTH(FEET) =   194.40
ELEVATION DATA: UPSTREAM(FEET) =   182.45  DOWNSTREAM(FEET) =   180.40

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.219
* 25 YEAR RAINFALL INTENSITY(INCH/HR) =   4.263
SUBAREA Tc AND LOSS RATE DATA(AMC II):
  DEVELOPMENT TYPE/      SCS SOIL  AREA      Fp      Ap      SCS      Tc
      LAND USE          GROUP  (ACRES) (INCH/HR) (DECIMAL) CN  (MIN.)
COMMERCIAL              A       0.51    0.40    0.100    32    6.22
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.40
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
SUBAREA RUNOFF(CFS) =      1.94
TOTAL AREA(ACRES) =      0.51  PEAK FLOW RATE(CFS) =      1.94

*****
FLOW PROCESS FROM NODE      110.00 TO NODE      140.00 IS CODE =   31
-----

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<
=====

ELEVATION DATA: UPSTREAM(FEET) =   176.90  DOWNSTREAM(FEET) =   173.51
FLOW LENGTH(FEET) =   288.70  MANNING'S N =  0.009
DEPTH OF FLOW IN   9.0 INCH PIPE IS   5.9 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =    6.31
ESTIMATED PIPE DIAMETER(INCH) =   9.00  NUMBER OF PIPES =    1
PIPE-FLOW(CFS) =      1.94
PIPE TRAVEL TIME(MIN.) =   0.76  Tc(MIN.) =    6.98
LONGEST FLOWPATH FROM NODE      100.00 TO NODE      140.00 =   483.10 FEET.

*****
FLOW PROCESS FROM NODE      140.00 TO NODE      140.00 IS CODE =    1
-----

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

TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =    6.98
RAINFALL INTENSITY(INCH/HR) =    3.99
AREA-AVERAGED Fm(INCH/HR) =    0.04

```

AREA-AVERAGED F_p (INCH/HR) = 0.40
AREA-AVERAGED A_p = 0.10
EFFECTIVE STREAM AREA(ACRES) = 0.51
TOTAL STREAM AREA(ACRES) = 0.51
PEAK FLOW RATE(CFS) AT CONFLUENCE = 1.94

FLOW PROCESS FROM NODE 120.00 TO NODE 130.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 203.30
ELEVATION DATA: UPSTREAM(FEET) = 182.48 DOWNSTREAM(FEET) = 178.01

$T_c = K * [(LENGTH^{**} 3.00) / (ELEVATION\ CHANGE)]^{**0.20}$
SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 5.466
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.586
SUBAREA T_c AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	F_p (INCH/HR)	A_p (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	A	0.23	0.40	0.100	32	5.47

SUBAREA AVERAGE PERVIOUS LOSS RATE, F_p (INCH/HR) = 0.40
SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100
SUBAREA RUNOFF(CFS) = 0.94
TOTAL AREA(ACRES) = 0.23 PEAK FLOW RATE(CFS) = 0.94

FLOW PROCESS FROM NODE 130.00 TO NODE 140.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 174.36 DOWNSTREAM(FEET) = 173.51
FLOW LENGTH(FEET) = 37.50 MANNING'S N = 0.009
DEPTH OF FLOW IN 6.0 INCH PIPE IS 4.0 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 6.72
ESTIMATED PIPE DIAMETER(INCH) = 6.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 0.94
PIPE TRAVEL TIME(MIN.) = 0.09 T_c (MIN.) = 5.56
LONGEST FLOWPATH FROM NODE 120.00 TO NODE 140.00 = 240.80 FEET.

FLOW PROCESS FROM NODE 140.00 TO NODE 140.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:

TIME OF CONCENTRATION(MIN.) = 5.56
 RAINFALL INTENSITY(INCH/HR) = 4.54
 AREA-AVERAGED Fm(INCH/HR) = 0.04
 AREA-AVERAGED Fp(INCH/HR) = 0.40
 AREA-AVERAGED Ap = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 0.23
 TOTAL STREAM AREA(ACRES) = 0.23
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 0.94

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1.94	6.98	3.993	0.40(0.04)	0.10	0.5	100.00
2	0.94	5.56	4.543	0.40(0.04)	0.10	0.2	120.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2.70	5.56	4.543	0.40(0.04)	0.10	0.6	120.00
2	2.76	6.98	3.993	0.40(0.04)	0.10	0.7	100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 2.76 Tc(MIN.) = 6.98
 EFFECTIVE AREA(ACRES) = 0.74 AREA-AVERAGED Fm(INCH/HR) = 0.04
 AREA-AVERAGED Fp(INCH/HR) = 0.40 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 0.7
 LONGEST FLOWPATH FROM NODE 100.00 TO NODE 140.00 = 483.10 FEET.

FLOW PROCESS FROM NODE 140.00 TO NODE 170.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(Feet) = 173.51 DOWNSTREAM(Feet) = 173.03

FLOW LENGTH(Feet) = 45.90 MANNING'S N = 0.009

DEPTH OF FLOW IN 12.0 INCH PIPE IS 6.3 INCHES

PIPE-FLOW VELOCITY(Feet/Sec.) = 6.65

ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 2.76

PIPE TRAVEL TIME(MIN.) = 0.11 Tc(MIN.) = 7.10

LONGEST FLOWPATH FROM NODE 100.00 TO NODE 170.00 = 529.00 FEET.

FLOW PROCESS FROM NODE 170.00 TO NODE 170.00 IS CODE = 1

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

```

=====
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 7.10
RAINFALL INTENSITY(INCH/HR) = 3.96
AREA-AVERAGED Fm(INCH/HR) = 0.04
AREA-AVERAGED Fp(INCH/HR) = 0.40
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 0.74
TOTAL STREAM AREA(ACRES) = 0.74
PEAK FLOW RATE(CFS) AT CONFLUENCE = 2.76

*****
FLOW PROCESS FROM NODE 150.00 TO NODE 160.00 IS CODE = 21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
=====
INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.50
ELEVATION DATA: UPSTREAM(FEET) = 181.84 DOWNSTREAM(FEET) = 176.43

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.000
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.824
SUBAREA Tc AND LOSS RATE DATA(AMC II):
  DEVELOPMENT TYPE/      SCS SOIL  AREA      Fp      Ap      SCS  Tc
    LAND USE          GROUP  (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
COMMERCIAL            A      0.17    0.40    0.100    32    5.00
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.40
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 0.73
TOTAL AREA(ACRES) = 0.17 PEAK FLOW RATE(CFS) = 0.73

*****
FLOW PROCESS FROM NODE 160.00 TO NODE 170.00 IS CODE = 31
-----
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 175.43 DOWNSTREAM(FEET) = 173.03
FLOW LENGTH(FEET) = 30.50 MANNING'S N = 0.009
DEPTH OF FLOW IN 6.0 INCH PIPE IS 2.4 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 10.10
ESTIMATED PIPE DIAMETER(INCH) = 6.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 0.73
PIPE TRAVEL TIME(MIN.) = 0.05 Tc(MIN.) = 5.05
LONGEST FLOWPATH FROM NODE 150.00 TO NODE 170.00 = 131.00 FEET.

*****
FLOW PROCESS FROM NODE 170.00 TO NODE 170.00 IS CODE = 1

```

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

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 5.05
 RAINFALL INTENSITY(INCH/HR) = 4.80
 AREA-AVERAGED Fm(INCH/HR) = 0.04
 AREA-AVERAGED Fp(INCH/HR) = 0.40
 AREA-AVERAGED Ap = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 0.17
 TOTAL STREAM AREA(ACRES) = 0.17
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 0.73

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2.70	5.67	4.490	0.40(0.04)	0.10	0.6	120.00
1	2.76	7.10	3.956	0.40(0.04)	0.10	0.7	100.00
2	0.73	5.05	4.796	0.40(0.04)	0.10	0.2	150.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	3.30	5.05	4.796	0.40(0.04)	0.10	0.7	150.00
2	3.38	5.67	4.490	0.40(0.04)	0.10	0.8	120.00
3	3.37	7.10	3.956	0.40(0.04)	0.10	0.9	100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 3.38 Tc(MIN.) = 5.67
 EFFECTIVE AREA(ACRES) = 0.81 AREA-AVERAGED Fm(INCH/HR) = 0.04
 AREA-AVERAGED Fp(INCH/HR) = 0.40 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 0.9
 LONGEST FLOWPATH FROM NODE 100.00 TO NODE 170.00 = 529.00 FEET.

FLOW PROCESS FROM NODE 170.00 TO NODE 200.00 IS CODE = 31

 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
 =====

ELEVATION DATA: UPSTREAM(FEET) = 173.03 DOWNSTREAM(FEET) = 172.77
 FLOW LENGTH(FEET) = 25.60 MANNING'S N = 0.009
 DEPTH OF FLOW IN 12.0 INCH PIPE IS 7.2 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 6.90
 ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 3.38
PIPE TRAVEL TIME(MIN.) = 0.06 Tc(MIN.) = 5.74
LONGEST FLOWPATH FROM NODE 100.00 TO NODE 200.00 = 554.60 FEET.

FLOW PROCESS FROM NODE 200.00 TO NODE 200.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 5.74
RAINFALL INTENSITY(INCH/HR) = 4.46
AREA-AVERAGED Fm(INCH/HR) = 0.04
AREA-AVERAGED Fp(INCH/HR) = 0.40
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 0.81
TOTAL STREAM AREA(ACRES) = 0.91
PEAK FLOW RATE(CFS) AT CONFLUENCE = 3.38

FLOW PROCESS FROM NODE 180.00 TO NODE 190.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 142.20
ELEVATION DATA: UPSTREAM(FEET) = 179.95 DOWNSTREAM(FEET) = 175.94

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.000
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.824
SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	A	0.14	0.40	0.100	32	5.00

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.40
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 0.60
TOTAL AREA(ACRES) = 0.14 PEAK FLOW RATE(CFS) = 0.60

FLOW PROCESS FROM NODE 190.00 TO NODE 200.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 172.92 DOWNSTREAM(FEET) = 172.77
FLOW LENGTH(FEET) = 29.80 MANNING'S N = 0.009
DEPTH OF FLOW IN 9.0 INCH PIPE IS 3.8 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 3.44
 ESTIMATED PIPE DIAMETER(INCH) = 9.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 0.60
 PIPE TRAVEL TIME(MIN.) = 0.14 Tc(MIN.) = 5.14
 LONGEST FLOWPATH FROM NODE 180.00 TO NODE 200.00 = 172.00 FEET.

FLOW PROCESS FROM NODE 200.00 TO NODE 200.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 5.14
 RAINFALL INTENSITY(INCH/HR) = 4.75
 AREA-AVERAGED Fm(INCH/HR) = 0.04
 AREA-AVERAGED Fp(INCH/HR) = 0.40
 AREA-AVERAGED Ap = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 0.14
 TOTAL STREAM AREA(ACRES) = 0.14
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 0.60

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	3.30	5.11	4.763	0.40(0.04)	0.10	0.7	150.00
1	3.38	5.74	4.463	0.40(0.04)	0.10	0.8	120.00
1	3.37	7.16	3.937	0.40(0.04)	0.10	0.9	100.00
2	0.60	5.14	4.747	0.40(0.04)	0.10	0.1	180.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	3.90	5.11	4.763	0.40(0.04)	0.10	0.9	150.00
2	3.91	5.14	4.747	0.40(0.04)	0.10	0.9	180.00
3	3.95	5.74	4.463	0.40(0.04)	0.10	0.9	120.00
4	3.87	7.16	3.937	0.40(0.04)	0.10	1.1	100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 3.95 Tc(MIN.) = 5.74
 EFFECTIVE AREA(ACRES) = 0.95 AREA-AVERAGED Fm(INCH/HR) = 0.04
 AREA-AVERAGED Fp(INCH/HR) = 0.40 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 1.1
 LONGEST FLOWPATH FROM NODE 100.00 TO NODE 200.00 = 554.60 FEET.

FLOW PROCESS FROM NODE 200.00 TO NODE 210.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 173.03 DOWNSTREAM(FEET) = 172.27
FLOW LENGTH(FEET) = 48.40 MANNING'S N = 0.009
DEPTH OF FLOW IN 12.0 INCH PIPE IS 6.9 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 8.46
ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 3.95
PIPE TRAVEL TIME(MIN.) = 0.10 Tc(MIN.) = 5.83
LONGEST FLOWPATH FROM NODE 100.00 TO NODE 210.00 = 603.00 FEET.

FLOW PROCESS FROM NODE 210.00 TO NODE 210.00 IS CODE = 11

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

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	3.90	5.21	4.714	0.40(0.04)	0.10	0.9	150.00
2	3.91	5.24	4.697	0.40(0.04)	0.10	0.9	180.00
3	3.95	5.83	4.421	0.40(0.04)	0.10	0.9	120.00
4	3.87	7.25	3.907	0.40(0.04)	0.10	1.1	100.00

LONGEST FLOWPATH FROM NODE 100.00 TO NODE 210.00 = 603.00 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1.99	5.84	4.418	0.40(0.04)	0.10	0.5	70.00
2	2.00	6.01	4.345	0.40(0.04)	0.10	0.5	30.00
3	1.98	6.25	4.251	0.40(0.04)	0.10	0.5	10.00

LONGEST FLOWPATH FROM NODE 10.00 TO NODE 210.00 = 440.10 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	5.80	5.21	4.714	0.40(0.04)	0.10	1.3	150.00
2	5.81	5.24	4.697	0.40(0.04)	0.10	1.3	180.00
3	5.94	5.83	4.421	0.40(0.04)	0.10	1.4	120.00
4	5.94	5.84	4.418	0.40(0.04)	0.10	1.4	70.00
5	5.94	6.01	4.345	0.40(0.04)	0.10	1.4	30.00
6	5.90	6.25	4.251	0.40(0.04)	0.10	1.4	10.00
7	5.68	7.25	3.907	0.40(0.04)	0.10	1.5	100.00

TOTAL AREA(ACRES) = 1.5

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 5.94 Tc(MIN.) = 5.841
 EFFECTIVE AREA(ACRES) = 1.40 AREA-AVERAGED Fm(INCH/HR) = 0.04
 AREA-AVERAGED Fp(INCH/HR) = 0.40 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 1.5
 LONGEST FLOWPATH FROM NODE 100.00 TO NODE 210.00 = 603.00 FEET.

 FLOW PROCESS FROM NODE 210.00 TO NODE 260.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

=====
 ELEVATION DATA: UPSTREAM(FEET) = 172.27 DOWNSTREAM(FEET) = 171.41
 FLOW LENGTH(FEET) = 173.30 MANNING'S N = 0.013
 DEPTH OF FLOW IN 18.0 INCH PIPE IS 12.4 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 4.56
 ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 5.94
 PIPE TRAVEL TIME(MIN.) = 0.63 Tc(MIN.) = 6.47
 LONGEST FLOWPATH FROM NODE 100.00 TO NODE 260.00 = 776.30 FEET.

 FLOW PROCESS FROM NODE 260.00 TO NODE 260.00 IS CODE = 10

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

 FLOW PROCESS FROM NODE 220.00 TO NODE 230.00 IS CODE = 21

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

=====
 INITIAL SUBAREA FLOW-LENGTH(FEET) = 146.00
 ELEVATION DATA: UPSTREAM(FEET) = 181.89 DOWNSTREAM(FEET) = 176.40

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

SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.000

* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.824

SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	A	0.92	0.40	0.100	32	5.00

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.40

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100

SUBAREA RUNOFF(CFS) = 3.96

TOTAL AREA(ACRES) = 0.92 PEAK FLOW RATE(CFS) = 3.96

 FLOW PROCESS FROM NODE 230.00 TO NODE 250.00 IS CODE = 31

```

-----
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
=====

```

```

ELEVATION DATA: UPSTREAM(FEET) = 172.87 DOWNSTREAM(FEET) = 171.86
FLOW LENGTH(FEET) = 72.20 MANNING'S N = 0.013
DEPTH OF FLOW IN 12.0 INCH PIPE IS 9.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 5.95
ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 3.96
PIPE TRAVEL TIME(MIN.) = 0.20 Tc(MIN.) = 5.20
LONGEST FLOWPATH FROM NODE 220.00 TO NODE 250.00 = 218.20 FEET.

```

```

*****
FLOW PROCESS FROM NODE 250.00 TO NODE 250.00 IS CODE = 1
-----

```

```

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

```

```

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 5.20
RAINFALL INTENSITY(INCH/HR) = 4.72
AREA-AVERAGED Fm(INCH/HR) = 0.04
AREA-AVERAGED Fp(INCH/HR) = 0.40
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 0.92
TOTAL STREAM AREA(ACRES) = 0.92
PEAK FLOW RATE(CFS) AT CONFLUENCE = 3.96

```

```

*****
FLOW PROCESS FROM NODE 240.00 TO NODE 250.00 IS CODE = 21
-----

```

```

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

```

```

INITIAL SUBAREA FLOW-LENGTH(FEET) = 218.40
ELEVATION DATA: UPSTREAM(FEET) = 178.16 DOWNSTREAM(FEET) = 174.77

```

```

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 6.031
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.338
SUBAREA Tc AND LOSS RATE DATA(AMC II):
  DEVELOPMENT TYPE/      SCS SOIL  AREA      Fp      Ap      SCS      Tc
    LAND USE          GROUP  (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
COMMERCIAL              A      0.33      0.40     0.100    32     6.03
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.40
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 1.28
TOTAL AREA(ACRES) = 0.33 PEAK FLOW RATE(CFS) = 1.28

```

FLOW PROCESS FROM NODE 250.00 TO NODE 250.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 6.03
RAINFALL INTENSITY(INCH/HR) = 4.34
AREA-AVERAGED Fm(INCH/HR) = 0.04
AREA-AVERAGED Fp(INCH/HR) = 0.40
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 0.33
TOTAL STREAM AREA(ACRES) = 0.33
PEAK FLOW RATE(CFS) AT CONFLUENCE = 1.28

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	3.96	5.20	4.717	0.40(0.04)	0.10	0.9	220.00
2	1.28	6.03	4.338	0.40(0.04)	0.10	0.3	240.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	5.16	5.20	4.717	0.40(0.04)	0.10	1.2	220.00
2	4.92	6.03	4.338	0.40(0.04)	0.10	1.2	240.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 5.16 Tc(MIN.) = 5.20
EFFECTIVE AREA(ACRES) = 1.20 AREA-AVERAGED Fm(INCH/HR) = 0.04
AREA-AVERAGED Fp(INCH/HR) = 0.40 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 1.2
LONGEST FLOWPATH FROM NODE 240.00 TO NODE 250.00 = 218.40 FEET.

FLOW PROCESS FROM NODE 250.00 TO NODE 260.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
=====

ELEVATION DATA: UPSTREAM(FEET) = 171.86 DOWNSTREAM(FEET) = 171.41
FLOW LENGTH(FEET) = 44.90 MANNING'S N = 0.013
DEPTH OF FLOW IN 15.0 INCH PIPE IS 10.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 5.73
ESTIMATED PIPE DIAMETER(INCH) = 15.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 5.16
 PIPE TRAVEL TIME(MIN.) = 0.13 Tc(MIN.) = 5.33
 LONGEST FLOWPATH FROM NODE 240.00 TO NODE 260.00 = 263.30 FEET.

FLOW PROCESS FROM NODE 260.00 TO NODE 260.00 IS CODE = 11

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

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	5.16	5.33	4.651	0.40(0.04)	0.10	1.2	220.00
2	4.92	6.16	4.285	0.40(0.04)	0.10	1.2	240.00

LONGEST FLOWPATH FROM NODE 240.00 TO NODE 260.00 = 263.30 FEET.

** MEMORY BANK # 2 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	5.80	5.84	4.416	0.40(0.04)	0.10	1.3	150.00
2	5.81	5.88	4.402	0.40(0.04)	0.10	1.3	180.00
3	5.94	6.47	4.170	0.40(0.04)	0.10	1.4	120.00
4	5.94	6.47	4.167	0.40(0.04)	0.10	1.4	70.00
5	5.94	6.65	4.106	0.40(0.04)	0.10	1.4	30.00
6	5.90	6.89	4.024	0.40(0.04)	0.10	1.4	10.00
7	5.68	7.89	3.725	0.40(0.04)	0.10	1.5	100.00

LONGEST FLOWPATH FROM NODE 100.00 TO NODE 260.00 = 776.30 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	10.73	5.33	4.651	0.40(0.04)	0.10	2.4	220.00
2	10.81	5.84	4.416	0.40(0.04)	0.10	2.5	150.00
3	10.81	5.88	4.402	0.40(0.04)	0.10	2.5	180.00
4	10.79	6.16	4.285	0.40(0.04)	0.10	2.6	240.00
5	10.72	6.47	4.170	0.40(0.04)	0.10	2.6	120.00
6	10.72	6.47	4.167	0.40(0.04)	0.10	2.6	70.00
7	10.64	6.65	4.106	0.40(0.04)	0.10	2.7	30.00
8	10.52	6.89	4.024	0.40(0.04)	0.10	2.7	10.00
9	9.95	7.89	3.725	0.40(0.04)	0.10	2.8	100.00

TOTAL AREA(ACRES) = 2.8

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 10.81 Tc(MIN.) = 5.876
 EFFECTIVE AREA(ACRES) = 2.52 AREA-AVERAGED Fm(INCH/HR) = 0.04
 AREA-AVERAGED Fp(INCH/HR) = 0.40 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 2.8
 LONGEST FLOWPATH FROM NODE 100.00 TO NODE 260.00 = 776.30 FEET.

FLOW PROCESS FROM NODE 260.00 TO NODE 290.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

ELEVATION DATA: UPSTREAM(Feet) = 171.41 DOWNSTREAM(Feet) = 171.04
FLOW LENGTH(Feet) = 73.10 MANNING'S N = 0.013
DEPTH OF FLOW IN 21.0 INCH PIPE IS 16.9 INCHES
PIPE-FLOW VELOCITY(Feet/Sec.) = 5.21
ESTIMATED PIPE DIAMETER(Inch) = 21.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 10.81
PIPE TRAVEL TIME(Min.) = 0.23 Tc(Min.) = 6.11
LONGEST FLOWPATH FROM NODE 100.00 TO NODE 290.00 = 849.40 Feet.

FLOW PROCESS FROM NODE 290.00 TO NODE 290.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(Min.) = 6.11
RAINFALL INTENSITY(Inch/Hr) = 4.31
AREA-AVERAGED Fm(Inch/Hr) = 0.04
AREA-AVERAGED Fp(Inch/Hr) = 0.40
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(Acres) = 2.52
TOTAL STREAM AREA(Acres) = 2.77
PEAK FLOW RATE(CFS) AT CONFLUENCE = 10.81

FLOW PROCESS FROM NODE 270.00 TO NODE 280.00 IS CODE = 21

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

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

INITIAL SUBAREA FLOW-LENGTH(Feet) = 217.50
ELEVATION DATA: UPSTREAM(Feet) = 178.48 DOWNSTREAM(Feet) = 174.52

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

SUBAREA ANALYSIS USED MINIMUM Tc(Min.) = 5.832

* 25 YEAR RAINFALL INTENSITY(Inch/Hr) = 4.421

SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (Min.)
COMMERCIAL	A	3.11	0.40	0.100	32	5.83

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(Inch/Hr) = 0.40

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100

SUBAREA RUNOFF(CFS) = 12.26

TOTAL AREA(ACRES) = 3.11 PEAK FLOW RATE(CFS) = 12.26

FLOW PROCESS FROM NODE 280.00 TO NODE 290.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 171.51 DOWNSTREAM(FEET) = 171.04
FLOW LENGTH(FEET) = 52.80 MANNING'S N = 0.013
DEPTH OF FLOW IN 21.0 INCH PIPE IS 14.8 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 6.79
ESTIMATED PIPE DIAMETER(INCH) = 21.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 12.26
PIPE TRAVEL TIME(MIN.) = 0.13 Tc(MIN.) = 5.96
LONGEST FLOWPATH FROM NODE 270.00 TO NODE 290.00 = 270.30 FEET.

FLOW PROCESS FROM NODE 290.00 TO NODE 290.00 IS CODE = 1

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

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 5.96
RAINFALL INTENSITY(INCH/HR) = 4.37
AREA-AVERAGED Fm(INCH/HR) = 0.04
AREA-AVERAGED Fp(INCH/HR) = 0.40
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 3.11
TOTAL STREAM AREA(ACRES) = 3.11
PEAK FLOW RATE(CFS) AT CONFLUENCE = 12.26

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	10.73	5.57	4.539	0.40(0.04)	0.10	2.4	220.00
1	10.81	6.08	4.319	0.40(0.04)	0.10	2.5	150.00
1	10.81	6.11	4.306	0.40(0.04)	0.10	2.5	180.00
1	10.79	6.40	4.196	0.40(0.04)	0.10	2.6	240.00
1	10.72	6.70	4.087	0.40(0.04)	0.10	2.6	120.00
1	10.72	6.71	4.084	0.40(0.04)	0.10	2.6	70.00
1	10.64	6.88	4.026	0.40(0.04)	0.10	2.7	30.00
1	10.52	7.12	3.949	0.40(0.04)	0.10	2.7	10.00
1	9.95	8.13	3.664	0.40(0.04)	0.10	2.8	100.00
2	12.26	5.96	4.367	0.40(0.04)	0.10	3.1	270.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22.64	5.57	4.539	0.40(0.04)	0.10	5.3	220.00
2	23.05	5.96	4.367	0.40(0.04)	0.10	5.6	270.00
3	22.93	6.08	4.319	0.40(0.04)	0.10	5.6	150.00
4	22.90	6.11	4.306	0.40(0.04)	0.10	5.6	180.00
5	22.57	6.40	4.196	0.40(0.04)	0.10	5.7	240.00
6	22.20	6.70	4.087	0.40(0.04)	0.10	5.8	120.00
7	22.18	6.71	4.084	0.40(0.04)	0.10	5.8	70.00
8	21.94	6.88	4.026	0.40(0.04)	0.10	5.8	30.00
9	21.60	7.12	3.949	0.40(0.04)	0.10	5.8	10.00
10	20.22	8.13	3.664	0.40(0.04)	0.10	5.9	100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 23.05 Tc(MIN.) = 5.96
 EFFECTIVE AREA(ACRES) = 5.59 AREA-AVERAGED Fm(INCH/HR) = 0.04
 AREA-AVERAGED Fp(INCH/HR) = 0.40 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 5.9
 LONGEST FLOWPATH FROM NODE 100.00 TO NODE 290.00 = 849.40 FEET.

FLOW PROCESS FROM NODE 290.00 TO NODE 350.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 171.04 DOWNSTREAM(FEET) = 170.95
 FLOW LENGTH(FEET) = 19.30 MANNING'S N = 0.013
 DEPTH OF FLOW IN 30.0 INCH PIPE IS 21.1 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 6.24
 ESTIMATED PIPE DIAMETER(INCH) = 30.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 23.05
 PIPE TRAVEL TIME(MIN.) = 0.05 Tc(MIN.) = 6.01
 LONGEST FLOWPATH FROM NODE 100.00 TO NODE 350.00 = 868.70 FEET.

FLOW PROCESS FROM NODE 350.00 TO NODE 350.00 IS CODE = 10

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

FLOW PROCESS FROM NODE 300.00 TO NODE 310.00 IS CODE = 21

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

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

INITIAL SUBAREA FLOW-LENGTH(FEET) = 220.90

ELEVATION DATA: UPSTREAM(FEET) = 178.45 DOWNSTREAM(FEET) = 174.52

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

SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 5.895

* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.394

SUBAREA T_c AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	F_p (INCH/HR)	A_p (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	A	1.96	0.40	0.100	32	5.90

SUBAREA AVERAGE PERVIOUS LOSS RATE, F_p (INCH/HR) = 0.40

SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100

SUBAREA RUNOFF(CFS) = 7.68

TOTAL AREA(ACRES) = 1.96 PEAK FLOW RATE(CFS) = 7.68

FLOW PROCESS FROM NODE 310.00 TO NODE 340.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 171.70 DOWNSTREAM(FEET) = 171.17

FLOW LENGTH(FEET) = 107.80 MANNING'S N = 0.013

DEPTH OF FLOW IN 21.0 INCH PIPE IS 13.1 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 4.88

ESTIMATED PIPE DIAMETER(INCH) = 21.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 7.68

PIPE TRAVEL TIME(MIN.) = 0.37 T_c (MIN.) = 6.26

LONGEST FLOWPATH FROM NODE 300.00 TO NODE 340.00 = 328.70 FEET.

FLOW PROCESS FROM NODE 340.00 TO NODE 340.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 2

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:

TIME OF CONCENTRATION(MIN.) = 6.26

RAINFALL INTENSITY(INCH/HR) = 4.25

AREA-AVERAGED F_m (INCH/HR) = 0.04

AREA-AVERAGED F_p (INCH/HR) = 0.40

AREA-AVERAGED A_p = 0.10

EFFECTIVE STREAM AREA(ACRES) = 1.96

TOTAL STREAM AREA(ACRES) = 1.96

PEAK FLOW RATE(CFS) AT CONFLUENCE = 7.68

FLOW PROCESS FROM NODE 320.00 TO NODE 330.00 IS CODE = 21

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

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

```

=====
INITIAL SUBAREA FLOW-LENGTH(FEET) = 217.90
ELEVATION DATA: UPSTREAM(FEET) = 178.44 DOWNSTREAM(FEET) = 174.52

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.850
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.413
SUBAREA Tc AND LOSS RATE DATA(AMC II):
  DEVELOPMENT TYPE/      SCS SOIL  AREA      Fp          Ap      SCS      Tc
    LAND USE          GROUP  (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
COMMERCIAL              A      1.95      0.40      0.100    32    5.85
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.40
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 7.68
TOTAL AREA(ACRES) = 1.95 PEAK FLOW RATE(CFS) = 7.68

*****
FLOW PROCESS FROM NODE 330.00 TO NODE 340.00 IS CODE = 31
-----
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 171.51 DOWNSTREAM(FEET) = 171.17
FLOW LENGTH(FEET) = 25.70 MANNING'S N = 0.013
DEPTH OF FLOW IN 18.0 INCH PIPE IS 10.6 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 7.10
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 7.68
PIPE TRAVEL TIME(MIN.) = 0.06 Tc(MIN.) = 5.91
LONGEST FLOWPATH FROM NODE 320.00 TO NODE 340.00 = 243.60 FEET.

*****
FLOW PROCESS FROM NODE 340.00 TO NODE 340.00 IS CODE = 1
-----
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
=====
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 5.91
RAINFALL INTENSITY(INCH/HR) = 4.39
AREA-AVERAGED Fm(INCH/HR) = 0.04
AREA-AVERAGED Fp(INCH/HR) = 0.40
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 1.95
TOTAL STREAM AREA(ACRES) = 1.95
PEAK FLOW RATE(CFS) AT CONFLUENCE = 7.68

```

** CONFLUENCE DATA **

STREAM	Q	Tc	Intensity	Fp(Fm)	Ap	Ae	HEADWATER
--------	---	----	-----------	--------	----	----	-----------

NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)		(ACRES)	NODE
1	7.68	6.26	4.246	0.40(0.04)	0.10	2.0	300.00
2	7.68	5.91	4.388	0.40(0.04)	0.10	2.0	320.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	15.17	5.91	4.388	0.40(0.04)	0.10	3.8	320.00
2	15.11	6.26	4.246	0.40(0.04)	0.10	3.9	300.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 15.17 Tc(MIN.) = 5.91
EFFECTIVE AREA(ACRES) = 3.80 AREA-AVERAGED Fm(INCH/HR) = 0.04
AREA-AVERAGED Fp(INCH/HR) = 0.40 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 3.9
LONGEST FLOWPATH FROM NODE 300.00 TO NODE 340.00 = 328.70 FEET.

FLOW PROCESS FROM NODE 340.00 TO NODE 350.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 171.17 DOWNSTREAM(FEET) = 170.95
FLOW LENGTH(FEET) = 44.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 24.0 INCH PIPE IS 19.1 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 5.66
ESTIMATED PIPE DIAMETER(INCH) = 24.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 15.17
PIPE TRAVEL TIME(MIN.) = 0.13 Tc(MIN.) = 6.04
LONGEST FLOWPATH FROM NODE 300.00 TO NODE 350.00 = 372.70 FEET.

FLOW PROCESS FROM NODE 350.00 TO NODE 350.00 IS CODE = 11

>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	15.17	6.04	4.334	0.40(0.04)	0.10	3.8	320.00
2	15.11	6.39	4.197	0.40(0.04)	0.10	3.9	300.00

LONGEST FLOWPATH FROM NODE 300.00 TO NODE 350.00 = 372.70 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

STREAM	Q	Tc	Intensity	Fp(Fm)	Ap	Ae	HEADWATER
--------	---	----	-----------	--------	----	----	-----------

NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)		(ACRES)	NODE
1	22.64	5.62	4.516	0.40(0.04)	0.10	5.3	220.00
2	23.05	6.01	4.345	0.40(0.04)	0.10	5.6	270.00
3	22.93	6.13	4.298	0.40(0.04)	0.10	5.6	150.00
4	22.90	6.16	4.286	0.40(0.04)	0.10	5.6	180.00
5	22.57	6.45	4.177	0.40(0.04)	0.10	5.7	240.00
6	22.20	6.75	4.070	0.40(0.04)	0.10	5.8	120.00
7	22.18	6.76	4.067	0.40(0.04)	0.10	5.8	70.00
8	21.94	6.93	4.009	0.40(0.04)	0.10	5.8	30.00
9	21.60	7.17	3.932	0.40(0.04)	0.10	5.8	10.00
10	20.22	8.18	3.650	0.40(0.04)	0.10	5.9	100.00

LONGEST FLOWPATH FROM NODE 100.00 TO NODE 350.00 = 868.70 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	37.34	5.62	4.516	0.40(0.04)	0.10	8.8	220.00
2	38.19	6.01	4.345	0.40(0.04)	0.10	9.4	270.00
3	38.19	6.04	4.334	0.40(0.04)	0.10	9.4	320.00
4	38.09	6.13	4.298	0.40(0.04)	0.10	9.4	150.00
5	38.05	6.16	4.286	0.40(0.04)	0.10	9.5	180.00
6	37.74	6.39	4.197	0.40(0.04)	0.10	9.6	300.00
7	37.60	6.45	4.177	0.40(0.04)	0.10	9.6	240.00
8	36.84	6.75	4.070	0.40(0.04)	0.10	9.7	120.00
9	36.82	6.76	4.067	0.40(0.04)	0.10	9.7	70.00
10	36.36	6.93	4.009	0.40(0.04)	0.10	9.7	30.00
11	35.74	7.17	3.932	0.40(0.04)	0.10	9.7	10.00
12	33.34	8.18	3.650	0.40(0.04)	0.10	9.8	100.00

TOTAL AREA(ACRES) = 9.8

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 38.19 Tc(MIN.) = 6.040
EFFECTIVE AREA(ACRES) = 9.40 AREA-AVERAGED Fm(INCH/HR) = 0.04
AREA-AVERAGED Fp(INCH/HR) = 0.40 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 9.8
LONGEST FLOWPATH FROM NODE 100.00 TO NODE 350.00 = 868.70 FEET.

FLOW PROCESS FROM NODE 350.00 TO NODE 590.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 170.95 DOWNSTREAM(FEET) = 170.65

FLOW LENGTH(FEET) = 56.10 MANNING'S N = 0.013

DEPTH OF FLOW IN 36.0 INCH PIPE IS 24.4 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 7.48

ESTIMATED PIPE DIAMETER(INCH) = 36.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 38.19

PIPE TRAVEL TIME(MIN.) = 0.13 Tc(MIN.) = 6.17

LONGEST FLOWPATH FROM NODE 100.00 TO NODE 590.00 = 924.80 FEET.

FLOW PROCESS FROM NODE 590.00 TO NODE 590.00 IS CODE = 12

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

FLOW PROCESS FROM NODE 590.00 TO NODE 590.00 IS CODE = 10

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

FLOW PROCESS FROM NODE 300.00 TO NODE 310.00 IS CODE = 21

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

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

INITIAL SUBAREA FLOW-LENGTH(FEET) = 113.20

ELEVATION DATA: UPSTREAM(FEET) = 181.87 DOWNSTREAM(FEET) = 176.57

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

SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 5.000

* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.824

SUBAREA T_c AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	A	0.12	0.40	0.100	32	5.00

SUBAREA AVERAGE PERVIOUS LOSS RATE, F_p (INCH/HR) = 0.40

SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100

SUBAREA RUNOFF(CFS) = 0.52

TOTAL AREA(ACRES) = 0.12 PEAK FLOW RATE(CFS) = 0.52

FLOW PROCESS FROM NODE 310.00 TO NODE 340.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 173.03 DOWNSTREAM(FEET) = 172.81

FLOW LENGTH(FEET) = 52.80 MANNING'S N = 0.013

DEPTH OF FLOW IN 9.0 INCH PIPE IS 4.5 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 2.35

ESTIMATED PIPE DIAMETER(INCH) = 9.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 0.52

PIPE TRAVEL TIME(MIN.) = 0.37 T_c (MIN.) = 5.37

LONGEST FLOWPATH FROM NODE 300.00 TO NODE 340.00 = 166.00 FEET.

FLOW PROCESS FROM NODE 340.00 TO NODE 340.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 5.37
RAINFALL INTENSITY(INCH/HR) = 4.63
AREA-AVERAGED Fm(INCH/HR) = 0.04
AREA-AVERAGED Fp(INCH/HR) = 0.40
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 0.12
TOTAL STREAM AREA(ACRES) = 0.12
PEAK FLOW RATE(CFS) AT CONFLUENCE = 0.52

FLOW PROCESS FROM NODE 320.00 TO NODE 330.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 160.10
ELEVATION DATA: UPSTREAM(FEET) = 179.87 DOWNSTREAM(FEET) = 175.36

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$
SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 5.000
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.824
SUBAREA T_c AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	A	0.15	0.40	0.100	32	5.00

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.40
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 0.65
TOTAL AREA(ACRES) = 0.15 PEAK FLOW RATE(CFS) = 0.65

FLOW PROCESS FROM NODE 330.00 TO NODE 340.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 172.88 DOWNSTREAM(FEET) = 172.81
FLOW LENGTH(FEET) = 13.70 MANNING'S N = 0.013
DEPTH OF FLOW IN 9.0 INCH PIPE IS 4.8 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 2.67
ESTIMATED PIPE DIAMETER(INCH) = 9.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 0.65
PIPE TRAVEL TIME(MIN.) = 0.09 T_c (MIN.) = 5.09

LONGEST FLOWPATH FROM NODE 320.00 TO NODE 340.00 = 173.80 FEET.

FLOW PROCESS FROM NODE 340.00 TO NODE 340.00 IS CODE = 1

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

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

=====

TOTAL NUMBER OF STREAMS = 2

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:

TIME OF CONCENTRATION(MIN.) = 5.09

RAINFALL INTENSITY(INCH/HR) = 4.78

AREA-AVERAGED Fm(INCH/HR) = 0.04

AREA-AVERAGED Fp(INCH/HR) = 0.40

AREA-AVERAGED Ap = 0.10

EFFECTIVE STREAM AREA(ACRES) = 0.15

TOTAL STREAM AREA(ACRES) = 0.15

PEAK FLOW RATE(CFS) AT CONFLUENCE = 0.65

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	0.52	5.37	4.631	0.40(0.04)	0.10	0.1	300.00
2	0.65	5.09	4.778	0.40(0.04)	0.10	0.2	320.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO

CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1.15	5.09	4.778	0.40(0.04)	0.10	0.3	320.00
2	1.14	5.37	4.631	0.40(0.04)	0.10	0.3	300.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 1.15 Tc(MIN.) = 5.09

EFFECTIVE AREA(ACRES) = 0.26 AREA-AVERAGED Fm(INCH/HR) = 0.04

AREA-AVERAGED Fp(INCH/HR) = 0.40 AREA-AVERAGED Ap = 0.10

TOTAL AREA(ACRES) = 0.3

LONGEST FLOWPATH FROM NODE 320.00 TO NODE 340.00 = 173.80 FEET.

FLOW PROCESS FROM NODE 340.00 TO NODE 370.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 172.81 DOWNSTREAM(FEET) = 172.59

FLOW LENGTH(FEET) = 43.50 MANNING'S N = 0.013

DEPTH OF FLOW IN 12.0 INCH PIPE IS 5.8 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 3.09
ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 1.15
PIPE TRAVEL TIME(MIN.) = 0.23 Tc(MIN.) = 5.32
LONGEST FLOWPATH FROM NODE 320.00 TO NODE 370.00 = 217.30 FEET.

FLOW PROCESS FROM NODE 370.00 TO NODE 370.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 5.32
RAINFALL INTENSITY(INCH/HR) = 4.66
AREA-AVERAGED Fm(INCH/HR) = 0.04
AREA-AVERAGED Fp(INCH/HR) = 0.40
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 0.26
TOTAL STREAM AREA(ACRES) = 0.27
PEAK FLOW RATE(CFS) AT CONFLUENCE = 1.15

FLOW PROCESS FROM NODE 350.00 TO NODE 370.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 151.40
ELEVATION DATA: UPSTREAM(FEET) = 179.16 DOWNSTREAM(FEET) = 174.88

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.000
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.824
SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	A	0.24	0.40	0.100	32	5.00

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.40
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 1.03
TOTAL AREA(ACRES) = 0.24 PEAK FLOW RATE(CFS) = 1.03

FLOW PROCESS FROM NODE 360.00 TO NODE 370.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 172.64 DOWNSTREAM(FEET) = 172.59

FLOW LENGTH(FEET) = 9.70 MANNING'S N = 0.013
 DEPTH OF FLOW IN 9.0 INCH PIPE IS 6.7 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 2.95
 ESTIMATED PIPE DIAMETER(INCH) = 9.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 1.03
 PIPE TRAVEL TIME(MIN.) = 0.05 Tc(MIN.) = 5.05
 LONGEST FLOWPATH FROM NODE 350.00 TO NODE 370.00 = 161.10 FEET.

FLOW PROCESS FROM NODE 370.00 TO NODE 370.00 IS CODE = 1

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

=====
 TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 5.05
 RAINFALL INTENSITY(INCH/HR) = 4.79
 AREA-AVERAGED Fm(INCH/HR) = 0.04
 AREA-AVERAGED Fp(INCH/HR) = 0.40
 AREA-AVERAGED Ap = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 0.24
 TOTAL STREAM AREA(ACRES) = 0.24
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 1.03

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1.15	5.32	4.657	0.40(0.04)	0.10	0.3	320.00
1	1.14	5.62	4.516	0.40(0.04)	0.10	0.3	300.00
2	1.03	5.05	4.794	0.40(0.04)	0.10	0.2	350.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2.16	5.05	4.794	0.40(0.04)	0.10	0.5	350.00
2	2.15	5.32	4.657	0.40(0.04)	0.10	0.5	320.00
3	2.12	5.62	4.516	0.40(0.04)	0.10	0.5	300.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 2.16 Tc(MIN.) = 5.05
 EFFECTIVE AREA(ACRES) = 0.49 AREA-AVERAGED Fm(INCH/HR) = 0.04
 AREA-AVERAGED Fp(INCH/HR) = 0.40 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 0.5
 LONGEST FLOWPATH FROM NODE 320.00 TO NODE 370.00 = 217.30 FEET.

FLOW PROCESS FROM NODE 370.00 TO NODE 400.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 172.59 DOWNSTREAM(FEET) = 172.51
FLOW LENGTH(FEET) = 16.80 MANNING'S N = 0.013
DEPTH OF FLOW IN 12.0 INCH PIPE IS 8.9 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 3.45
ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 2.16
PIPE TRAVEL TIME(MIN.) = 0.08 Tc(MIN.) = 5.14
LONGEST FLOWPATH FROM NODE 320.00 TO NODE 400.00 = 234.10 FEET.

FLOW PROCESS FROM NODE 400.00 TO NODE 430.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 172.51 DOWNSTREAM(FEET) = 171.88
FLOW LENGTH(FEET) = 71.20 MANNING'S N = 0.013
DEPTH OF FLOW IN 12.0 INCH PIPE IS 7.1 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 4.44
ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 2.16
PIPE TRAVEL TIME(MIN.) = 0.27 Tc(MIN.) = 5.40
LONGEST FLOWPATH FROM NODE 320.00 TO NODE 430.00 = 305.30 FEET.

FLOW PROCESS FROM NODE 430.00 TO NODE 430.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 5.40
RAINFALL INTENSITY(INCH/HR) = 4.62
AREA-AVERAGED Fm(INCH/HR) = 0.04
AREA-AVERAGED Fp(INCH/HR) = 0.40
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 0.49
TOTAL STREAM AREA(ACRES) = 0.51
PEAK FLOW RATE(CFS) AT CONFLUENCE = 2.16

FLOW PROCESS FROM NODE 410.00 TO NODE 420.00 IS CODE = 21

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

```

=====
INITIAL SUBAREA FLOW-LENGTH(FEET) = 221.40
ELEVATION DATA: UPSTREAM(FEET) = 178.46 DOWNSTREAM(FEET) = 174.52

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.900
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.392
SUBAREA Tc AND LOSS RATE DATA(AMC II):
  DEVELOPMENT TYPE/      SCS SOIL  AREA      Fp          Ap      SCS      Tc
    LAND USE          GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
COMMERCIAL              A      3.88      0.40      0.100    32      5.90
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.40
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 15.20
TOTAL AREA(ACRES) = 3.88 PEAK FLOW RATE(CFS) = 15.20

*****
FLOW PROCESS FROM NODE 420.00 TO NODE 430.00 IS CODE = 31
-----
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 172.01 DOWNSTREAM(FEET) = 171.88
FLOW LENGTH(FEET) = 25.70 MANNING'S N = 0.013
DEPTH OF FLOW IN 24.0 INCH PIPE IS 19.0 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 5.69
ESTIMATED PIPE DIAMETER(INCH) = 24.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 15.20
PIPE TRAVEL TIME(MIN.) = 0.08 Tc(MIN.) = 5.98
LONGEST FLOWPATH FROM NODE 410.00 TO NODE 430.00 = 247.10 FEET.

*****
FLOW PROCESS FROM NODE 430.00 TO NODE 430.00 IS CODE = 1
-----
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
=====
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 5.98
RAINFALL INTENSITY(INCH/HR) = 4.36
AREA-AVERAGED Fm(INCH/HR) = 0.04
AREA-AVERAGED Fp(INCH/HR) = 0.40
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 3.88
TOTAL STREAM AREA(ACRES) = 3.88
PEAK FLOW RATE(CFS) AT CONFLUENCE = 15.20

```

** CONFLUENCE DATA **

STREAM	Q	Tc	Intensity	Fp(Fm)	Ap	Ae	HEADWATER
--------	---	----	-----------	--------	----	----	-----------

NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)		(ACRES)	NODE
1	2.16	5.40	4.617	0.40(0.04)	0.10	0.5	350.00
1	2.15	5.67	4.493	0.40(0.04)	0.10	0.5	320.00
1	2.12	5.97	4.364	0.40(0.04)	0.10	0.5	300.00
2	15.20	5.98	4.361	0.40(0.04)	0.10	3.9	410.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	16.71	5.40	4.617	0.40(0.04)	0.10	4.0	350.00
2	17.01	5.67	4.493	0.40(0.04)	0.10	4.2	320.00
3	17.30	5.97	4.364	0.40(0.04)	0.10	4.4	300.00
4	17.31	5.98	4.361	0.40(0.04)	0.10	4.4	410.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 17.31 Tc(MIN.) = 5.98
EFFECTIVE AREA(ACRES) = 4.39 AREA-AVERAGED Fm(INCH/HR) = 0.04
AREA-AVERAGED Fp(INCH/HR) = 0.40 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 4.4
LONGEST FLOWPATH FROM NODE 320.00 TO NODE 430.00 = 305.30 FEET.

FLOW PROCESS FROM NODE 430.00 TO NODE 470.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 171.88 DOWNSTREAM(FEET) = 171.39
FLOW LENGTH(FEET) = 98.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 27.0 INCH PIPE IS 18.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 5.98
ESTIMATED PIPE DIAMETER(INCH) = 27.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 17.31
PIPE TRAVEL TIME(MIN.) = 0.27 Tc(MIN.) = 6.25
LONGEST FLOWPATH FROM NODE 320.00 TO NODE 470.00 = 403.30 FEET.

FLOW PROCESS FROM NODE 470.00 TO NODE 470.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 6.25
RAINFALL INTENSITY(INCH/HR) = 4.25
AREA-AVERAGED Fm(INCH/HR) = 0.04
AREA-AVERAGED Fp(INCH/HR) = 0.40

AREA-AVERAGED $A_p = 0.10$
EFFECTIVE STREAM AREA(ACRES) = 4.39
TOTAL STREAM AREA(ACRES) = 4.39
PEAK FLOW RATE(CFS) AT CONFLUENCE = 17.31

FLOW PROCESS FROM NODE 450.00 TO NODE 460.00 IS CODE = 21

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

INITIAL SUBAREA FLOW-LENGTH(FEET) = 220.50
ELEVATION DATA: UPSTREAM(FEET) = 178.45 DOWNSTREAM(FEET) = 174.52

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

SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 5.889

* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.397

SUBAREA T_c AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	F_p (INCH/HR)	A_p (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	A	1.95	0.40	0.100	32	5.89

SUBAREA AVERAGE PERVIOUS LOSS RATE, F_p (INCH/HR) = 0.40

SUBAREA AVERAGE PERVIOUS AREA FRACTION, $A_p = 0.100$

SUBAREA RUNOFF(CFS) = 7.65

TOTAL AREA(ACRES) = 1.95 PEAK FLOW RATE(CFS) = 7.65

FLOW PROCESS FROM NODE 460.00 TO NODE 470.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
=====

ELEVATION DATA: UPSTREAM(FEET) = 171.58 DOWNSTREAM(FEET) = 171.39
FLOW LENGTH(FEET) = 25.70 MANNING'S N = 0.013
DEPTH OF FLOW IN 18.0 INCH PIPE IS 13.0 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 5.61
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 7.65
PIPE TRAVEL TIME(MIN.) = 0.08 T_c (MIN.) = 5.97
LONGEST FLOWPATH FROM NODE 450.00 TO NODE 470.00 = 246.20 FEET.

FLOW PROCESS FROM NODE 470.00 TO NODE 470.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 5.97

RAINFALL INTENSITY(INCH/HR) = 4.37
 AREA-AVERAGED Fm(INCH/HR) = 0.04
 AREA-AVERAGED Fp(INCH/HR) = 0.40
 AREA-AVERAGED Ap = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 1.95
 TOTAL STREAM AREA(ACRES) = 1.95
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 7.65

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	16.71	5.68	4.489	0.40(0.04)	0.10	4.0	350.00
1	17.01	5.94	4.375	0.40(0.04)	0.10	4.2	320.00
1	17.30	6.24	4.255	0.40(0.04)	0.10	4.4	300.00
1	17.31	6.25	4.252	0.40(0.04)	0.10	4.4	410.00
2	7.65	5.97	4.365	0.40(0.04)	0.10	2.0	450.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24.20	5.68	4.489	0.40(0.04)	0.10	5.9	350.00
2	24.64	5.94	4.375	0.40(0.04)	0.10	6.1	320.00
3	24.68	5.97	4.365	0.40(0.04)	0.10	6.1	450.00
4	24.76	6.24	4.255	0.40(0.04)	0.10	6.3	300.00
5	24.76	6.25	4.252	0.40(0.04)	0.10	6.3	410.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 24.76 Tc(MIN.) = 6.25
 EFFECTIVE AREA(ACRES) = 6.34 AREA-AVERAGED Fm(INCH/HR) = 0.04
 AREA-AVERAGED Fp(INCH/HR) = 0.40 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 6.3
 LONGEST FLOWPATH FROM NODE 320.00 TO NODE 470.00 = 403.30 FEET.

FLOW PROCESS FROM NODE 470.00 TO NODE 570.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 171.39 DOWNSTREAM(FEET) = 170.95
 FLOW LENGTH(FEET) = 88.00 MANNING'S N = 0.013
 DEPTH OF FLOW IN 30.0 INCH PIPE IS 21.8 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 6.49
 ESTIMATED PIPE DIAMETER(INCH) = 30.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 24.76
 PIPE TRAVEL TIME(MIN.) = 0.23 Tc(MIN.) = 6.47
 LONGEST FLOWPATH FROM NODE 320.00 TO NODE 570.00 = 491.30 FEET.

```

*****
FLOW PROCESS FROM NODE      570.00 TO NODE      570.00 IS CODE =  12
-----
>>>>>CLEAR MEMORY BANK # 2 <<<<<
=====

*****
FLOW PROCESS FROM NODE      570.00 TO NODE      570.00 IS CODE =  10
-----
>>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
=====

*****
FLOW PROCESS FROM NODE      480.00 TO NODE      490.00 IS CODE =  21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
=====
INITIAL SUBAREA FLOW-LENGTH(FEET) =   221.70
ELEVATION DATA: UPSTREAM(FEET) =   178.46  DOWNSTREAM(FEET) =   174.52

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   5.905
* 25 YEAR RAINFALL INTENSITY(INCH/HR) =  4.390
SUBAREA Tc AND LOSS RATE DATA(AMC II):
  DEVELOPMENT TYPE/      SCS SOIL  AREA      Fp      Ap      SCS  Tc
    LAND USE          GROUP  (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
COMMERCIAL              A      1.95    0.40    0.100    32   5.91
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.40
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
SUBAREA RUNOFF(CFS) =      7.63
TOTAL AREA(ACRES) =      1.95  PEAK FLOW RATE(CFS) =      7.63

*****
FLOW PROCESS FROM NODE      490.00 TO NODE      500.00 IS CODE =  31
-----
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) =   172.01  DOWNSTREAM(FEET) =   171.82
FLOW LENGTH(FEET) =   38.50  MANNING'S N =  0.013
DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.0 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   4.89
ESTIMATED PIPE DIAMETER(INCH) =  21.00  NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      7.63
PIPE TRAVEL TIME(MIN.) =   0.13  Tc(MIN.) =   6.04
LONGEST FLOWPATH FROM NODE      480.00 TO NODE      500.00 =   260.20 FEET.

*****

```


FLOW PROCESS FROM NODE 500.00 TO NODE 530.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 171.82 DOWNSTREAM(FEET) = 171.48
FLOW LENGTH(FEET) = 69.30 MANNING'S N = 0.013
DEPTH OF FLOW IN 21.0 INCH PIPE IS 13.0 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 4.87
ESTIMATED PIPE DIAMETER(INCH) = 21.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 7.63
PIPE TRAVEL TIME(MIN.) = 0.24 Tc(MIN.) = 6.27
LONGEST FLOWPATH FROM NODE 480.00 TO NODE 530.00 = 329.50 FEET.

FLOW PROCESS FROM NODE 530.00 TO NODE 530.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 6.27
RAINFALL INTENSITY(INCH/HR) = 4.24
AREA-AVERAGED Fm(INCH/HR) = 0.04
AREA-AVERAGED Fp(INCH/HR) = 0.40
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 1.95
TOTAL STREAM AREA(ACRES) = 1.95
PEAK FLOW RATE(CFS) AT CONFLUENCE = 7.63

FLOW PROCESS FROM NODE 510.00 TO NODE 520.00 IS CODE = 21

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

INITIAL SUBAREA FLOW-LENGTH(FEET) = 221.00
ELEVATION DATA: UPSTREAM(FEET) = 178.45 DOWNSTREAM(FEET) = 174.52

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

SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.897

* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.394

SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	A	1.95	0.40	0.100	32	5.90

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.40

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100

SUBAREA RUNOFF(CFS) = 7.64

TOTAL AREA(ACRES) = 1.95 PEAK FLOW RATE(CFS) = 7.64

FLOW PROCESS FROM NODE 520.00 TO NODE 530.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 171.61 DOWNSTREAM(FEET) = 171.48
FLOW LENGTH(FEET) = 25.70 MANNING'S N = 0.013
DEPTH OF FLOW IN 21.0 INCH PIPE IS 12.9 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 4.93
ESTIMATED PIPE DIAMETER(INCH) = 21.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 7.64
PIPE TRAVEL TIME(MIN.) = 0.09 Tc(MIN.) = 5.98
LONGEST FLOWPATH FROM NODE 510.00 TO NODE 530.00 = 246.70 FEET.

FLOW PROCESS FROM NODE 530.00 TO NODE 530.00 IS CODE = 1

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

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

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 5.98
RAINFALL INTENSITY(INCH/HR) = 4.36
AREA-AVERAGED Fm(INCH/HR) = 0.04
AREA-AVERAGED Fp(INCH/HR) = 0.40
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 1.95
TOTAL STREAM AREA(ACRES) = 1.95
PEAK FLOW RATE(CFS) AT CONFLUENCE = 7.64

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	7.63	6.27	4.242	0.40(0.04)	0.10	2.0	480.00
2	7.64	5.98	4.357	0.40(0.04)	0.10	2.0	510.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	15.12	5.98	4.357	0.40(0.04)	0.10	3.8	510.00
2	15.07	6.27	4.242	0.40(0.04)	0.10	3.9	480.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 15.12 Tc(MIN.) = 5.98

EFFECTIVE AREA(ACRES) = 3.81 AREA-AVERAGED Fm(INCH/HR) = 0.04
AREA-AVERAGED Fp(INCH/HR) = 0.40 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 3.9
LONGEST FLOWPATH FROM NODE 480.00 TO NODE 530.00 = 329.50 FEET.

FLOW PROCESS FROM NODE 530.00 TO NODE 560.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 171.48 DOWNSTREAM(FEET) = 171.00
FLOW LENGTH(FEET) = 98.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 24.0 INCH PIPE IS 19.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 5.60
ESTIMATED PIPE DIAMETER(INCH) = 24.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 15.12
PIPE TRAVEL TIME(MIN.) = 0.29 Tc(MIN.) = 6.28
LONGEST FLOWPATH FROM NODE 480.00 TO NODE 560.00 = 427.50 FEET.

FLOW PROCESS FROM NODE 560.00 TO NODE 560.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 6.28
RAINFALL INTENSITY(INCH/HR) = 4.24
AREA-AVERAGED Fm(INCH/HR) = 0.04
AREA-AVERAGED Fp(INCH/HR) = 0.40
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 3.81
TOTAL STREAM AREA(ACRES) = 3.90
PEAK FLOW RATE(CFS) AT CONFLUENCE = 15.12

FLOW PROCESS FROM NODE 540.00 TO NODE 550.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 220.70
ELEVATION DATA: UPSTREAM(FEET) = 178.45 DOWNSTREAM(FEET) = 174.52

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

SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.892

* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.396

SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/	SCS SOIL	AREA	Fp	Ap	SCS	Tc
-------------------	----------	------	----	----	-----	----

LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
 COMMERCIAL A 1.95 0.40 0.100 32 5.89
 SUBAREA AVERAGE PERVIOUS LOSS RATE, F_p (INCH/HR) = 0.40
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100
 SUBAREA RUNOFF(CFS) = 7.64
 TOTAL AREA(ACRES) = 1.95 PEAK FLOW RATE(CFS) = 7.64

FLOW PROCESS FROM NODE 550.00 TO NODE 560.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(Feet) = 171.51 DOWNSTREAM(Feet) = 171.00
 FLOW LENGTH(Feet) = 25.70 MANNING'S N = 0.013
 DEPTH OF FLOW IN 15.0 INCH PIPE IS 10.7 INCHES
 PIPE-FLOW VELOCITY(Feet/Sec.) = 8.13
 ESTIMATED PIPE DIAMETER(INCH) = 15.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 7.64
 PIPE TRAVEL TIME(MIN.) = 0.05 T_c (MIN.) = 5.94
 LONGEST FLOWPATH FROM NODE 540.00 TO NODE 560.00 = 246.40 FEET.

FLOW PROCESS FROM NODE 560.00 TO NODE 560.00 IS CODE = 1

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

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

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 5.94
 RAINFALL INTENSITY(INCH/HR) = 4.37
 AREA-AVERAGED F_m (INCH/HR) = 0.04
 AREA-AVERAGED F_p (INCH/HR) = 0.40
 AREA-AVERAGED A_p = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 1.95
 TOTAL STREAM AREA(ACRES) = 1.95
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 7.64

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	T_c (MIN.)	Intensity (INCH/HR)	$F_p(F_m)$ (INCH/HR)	A_p	A_e (ACRES)	HEADWATER NODE
1	15.12	6.28	4.242	0.40(0.04)	0.10	3.8	510.00
1	15.07	6.57	4.135	0.40(0.04)	0.10	3.9	480.00
2	7.64	5.94	4.374	0.40(0.04)	0.10	2.0	540.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22.42	5.94	4.374	0.40(0.04)	0.10	5.6	540.00
2	22.53	6.28	4.242	0.40(0.04)	0.10	5.8	510.00
3	22.29	6.57	4.135	0.40(0.04)	0.10	5.9	480.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 22.53 Tc(MIN.) = 6.28
EFFECTIVE AREA(ACRES) = 5.76 AREA-AVERAGED Fm(INCH/HR) = 0.04
AREA-AVERAGED Fp(INCH/HR) = 0.40 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 5.9
LONGEST FLOWPATH FROM NODE 480.00 TO NODE 560.00 = 427.50 FEET.

FLOW PROCESS FROM NODE 560.00 TO NODE 570.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 171.00 DOWNSTREAM(FEET) = 170.95
FLOW LENGTH(FEET) = 10.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 30.0 INCH PIPE IS 20.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 6.40
ESTIMATED PIPE DIAMETER(INCH) = 30.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 22.53
PIPE TRAVEL TIME(MIN.) = 0.03 Tc(MIN.) = 6.30
LONGEST FLOWPATH FROM NODE 480.00 TO NODE 570.00 = 437.50 FEET.

FLOW PROCESS FROM NODE 570.00 TO NODE 570.00 IS CODE = 11

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

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22.42	5.97	4.363	0.40(0.04)	0.10	5.6	540.00
2	22.53	6.30	4.232	0.40(0.04)	0.10	5.8	510.00
3	22.29	6.59	4.125	0.40(0.04)	0.10	5.9	480.00

LONGEST FLOWPATH FROM NODE 480.00 TO NODE 570.00 = 437.50 FEET.

** MEMORY BANK # 2 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24.20	5.90	4.390	0.40(0.04)	0.10	5.9	350.00
2	24.64	6.17	4.283	0.40(0.04)	0.10	6.1	320.00
3	24.68	6.19	4.274	0.40(0.04)	0.10	6.1	450.00
4	24.76	6.47	4.170	0.40(0.04)	0.10	6.3	300.00
5	24.76	6.47	4.167	0.40(0.04)	0.10	6.3	410.00

LONGEST FLOWPATH FROM NODE 320.00 TO NODE 570.00 = 491.30 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	46.51	5.90	4.390	0.40(0.04)	0.10	11.4	350.00
2	46.73	5.97	4.363	0.40(0.04)	0.10	11.5	540.00
3	47.13	6.17	4.283	0.40(0.04)	0.10	11.8	320.00
4	47.18	6.19	4.274	0.40(0.04)	0.10	11.8	450.00
5	47.24	6.30	4.232	0.40(0.04)	0.10	12.0	510.00
6	47.15	6.47	4.170	0.40(0.04)	0.10	12.1	300.00
7	47.15	6.47	4.167	0.40(0.04)	0.10	12.2	410.00
8	46.80	6.59	4.125	0.40(0.04)	0.10	12.2	480.00
TOTAL AREA(ACRES) =			12.2				

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 47.24 Tc(MIN.) = 6.302
EFFECTIVE AREA(ACRES) = 11.98 AREA-AVERAGED Fm(INCH/HR) = 0.04
AREA-AVERAGED Fp(INCH/HR) = 0.40 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 12.2
LONGEST FLOWPATH FROM NODE 320.00 TO NODE 570.00 = 491.30 FEET.

FLOW PROCESS FROM NODE 570.00 TO NODE 580.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(Feet) = 170.95 DOWNSTREAM(Feet) = 170.65
FLOW LENGTH(Feet) = 56.10 MANNING'S N = 0.013
DEPTH OF FLOW IN 36.0 INCH PIPE IS 29.3 INCHES
PIPE-FLOW VELOCITY(Feet/Sec.) = 7.67
ESTIMATED PIPE DIAMETER(INCH) = 36.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 47.24
PIPE TRAVEL TIME(MIN.) = 0.12 Tc(MIN.) = 6.42
LONGEST FLOWPATH FROM NODE 320.00 TO NODE 580.00 = 547.40 FEET.

FLOW PROCESS FROM NODE 580.00 TO NODE 580.00 IS CODE = 11

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

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	46.51	6.03	4.340	0.40(0.04)	0.10	11.4	350.00
2	46.73	6.09	4.313	0.40(0.04)	0.10	11.5	540.00
3	47.13	6.29	4.236	0.40(0.04)	0.10	11.8	320.00
4	47.18	6.31	4.227	0.40(0.04)	0.10	11.8	450.00

5	47.24	6.42	4.186	0.40(0.04)	0.10	12.0	510.00
6	47.15	6.59	4.127	0.40(0.04)	0.10	12.1	300.00
7	47.15	6.60	4.123	0.40(0.04)	0.10	12.2	410.00
8	46.80	6.71	4.083	0.40(0.04)	0.10	12.2	480.00

LONGEST FLOWPATH FROM NODE 320.00 TO NODE 580.00 = 547.40 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	37.34	5.75	4.458	0.40(0.04)	0.10	8.8	220.00
2	38.19	6.14	4.295	0.40(0.04)	0.10	9.4	270.00
3	38.19	6.17	4.284	0.40(0.04)	0.10	9.4	320.00
4	38.09	6.26	4.249	0.40(0.04)	0.10	9.4	150.00
5	38.05	6.29	4.237	0.40(0.04)	0.10	9.5	180.00
6	37.74	6.52	4.151	0.40(0.04)	0.10	9.6	300.00
7	37.60	6.58	4.130	0.40(0.04)	0.10	9.6	240.00
8	36.84	6.88	4.026	0.40(0.04)	0.10	9.7	120.00
9	36.82	6.89	4.023	0.40(0.04)	0.10	9.7	70.00
10	36.36	7.06	3.967	0.40(0.04)	0.10	9.7	30.00
11	35.74	7.30	3.893	0.40(0.04)	0.10	9.7	10.00
12	33.34	8.31	3.617	0.40(0.04)	0.10	9.8	100.00

LONGEST FLOWPATH FROM NODE 100.00 TO NODE 580.00 = 924.80 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	82.92	5.75	4.458	0.40(0.04)	0.10	19.6	220.00
2	84.46	6.03	4.340	0.40(0.04)	0.10	20.6	350.00
3	84.82	6.09	4.313	0.40(0.04)	0.10	20.8	540.00
4	85.01	6.14	4.295	0.40(0.04)	0.10	20.9	270.00
5	85.07	6.17	4.284	0.40(0.04)	0.10	21.0	320.00
6	85.15	6.26	4.249	0.40(0.04)	0.10	21.2	150.00
7	85.17	6.29	4.237	0.40(0.04)	0.10	21.3	180.00
8	85.17	6.29	4.236	0.40(0.04)	0.10	21.3	320.00
9	85.19	6.31	4.227	0.40(0.04)	0.10	21.3	450.00
10	85.11	6.42	4.186	0.40(0.04)	0.10	21.5	510.00
11	84.93	6.52	4.151	0.40(0.04)	0.10	21.7	300.00
12	84.76	6.58	4.130	0.40(0.04)	0.10	21.7	240.00
13	84.73	6.59	4.127	0.40(0.04)	0.10	21.8	300.00
14	84.70	6.60	4.123	0.40(0.04)	0.10	21.8	410.00
15	84.06	6.71	4.083	0.40(0.04)	0.10	21.8	480.00
16	82.98	6.88	4.026	0.40(0.04)	0.10	21.9	120.00
17	82.93	6.89	4.023	0.40(0.04)	0.10	21.9	70.00
18	81.83	7.06	3.967	0.40(0.04)	0.10	21.9	30.00
19	80.34	7.30	3.893	0.40(0.04)	0.10	21.9	10.00
20	74.75	8.31	3.617	0.40(0.04)	0.10	22.0	100.00

TOTAL AREA(ACRES) = 22.0

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 85.19 Tc(MIN.) = 6.313

EFFECTIVE AREA(ACRES) = 21.32 AREA-AVERAGED Fm(INCH/HR) = 0.04
 AREA-AVERAGED Fp(INCH/HR) = 0.40 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 22.0
 LONGEST FLOWPATH FROM NODE 100.00 TO NODE 580.00 = 924.80 FEET.

=====

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 22.0 TC(MIN.) = 6.31
 EFFECTIVE AREA(ACRES) = 21.32 AREA-AVERAGED Fm(INCH/HR)= 0.04
 AREA-AVERAGED Fp(INCH/HR) = 0.40 AREA-AVERAGED Ap = 0.100
 PEAK FLOW RATE(CFS) = 85.19

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	82.92	5.75	4.458	0.40(0.04)	0.10	19.6	220.00
2	84.46	6.03	4.340	0.40(0.04)	0.10	20.6	350.00
3	84.82	6.09	4.313	0.40(0.04)	0.10	20.8	540.00
4	85.01	6.14	4.295	0.40(0.04)	0.10	20.9	270.00
5	85.07	6.17	4.284	0.40(0.04)	0.10	21.0	320.00
6	85.15	6.26	4.249	0.40(0.04)	0.10	21.2	150.00
7	85.17	6.29	4.237	0.40(0.04)	0.10	21.3	180.00
8	85.17	6.29	4.236	0.40(0.04)	0.10	21.3	320.00
9	85.19	6.31	4.227	0.40(0.04)	0.10	21.3	450.00
10	85.11	6.42	4.186	0.40(0.04)	0.10	21.5	510.00
11	84.93	6.52	4.151	0.40(0.04)	0.10	21.7	300.00
12	84.76	6.58	4.130	0.40(0.04)	0.10	21.7	240.00
13	84.73	6.59	4.127	0.40(0.04)	0.10	21.8	300.00
14	84.70	6.60	4.123	0.40(0.04)	0.10	21.8	410.00
15	84.06	6.71	4.083	0.40(0.04)	0.10	21.8	480.00
16	82.98	6.88	4.026	0.40(0.04)	0.10	21.9	120.00
17	82.93	6.89	4.023	0.40(0.04)	0.10	21.9	70.00
18	81.83	7.06	3.967	0.40(0.04)	0.10	21.9	30.00
19	80.34	7.30	3.893	0.40(0.04)	0.10	21.9	10.00
20	74.75	8.31	3.617	0.40(0.04)	0.10	22.0	100.00

=====

END OF RATIONAL METHOD ANALYSIS



RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
(c) Copyright 1983-2016 Advanced Engineering Software (aes)
Ver. 23.0 Release Date: 07/01/2016 License ID 1334

Analysis prepared by:

***** DESCRIPTION OF STUDY *****

* SP8454 - FULLERTON *
* GOODMAN LOGISTICS CENTER *
* BASIN A - 100 YEAR PEAK FLOW *

FILE NAME: GLC100A.DAT
TIME/DATE OF STUDY: 10:09 04/28/2021

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--*TIME-OF-CONCENTRATION MODEL*--

USER SPECIFIED STORM EVENT(YEAR) = 100.00
SPECIFIED MINIMUM PIPE SIZE(INCH) = 4.00
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
DATA BANK RAINFALL USED
ANTECEDENT MOISTURE CONDITION (AMC) III ASSUMED FOR RATIONAL METHOD

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

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL: IN- / OUT-/PARK- SIDE / SIDE/ WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH LIP HIKE (FT) (FT) (FT)	MANNING FACTOR (n)
1	32.0	20.0	0.200/0.200/0.020	0.67	2.00 0.0313 0.167	0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

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

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

*USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

FLOW PROCESS FROM NODE 10.00 TO NODE 20.00 IS CODE = 21

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

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 118.50

ELEVATION DATA: UPSTREAM(FEET) = 178.23 DOWNSTREAM(FEET) = 176.00

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

SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 5.000

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 6.187

SUBAREA T_c AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	F_p (INCH/HR)	A_p (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	A	0.17	0.40	0.100	52	5.00

SUBAREA AVERAGE PERVIOUS LOSS RATE, F_p (INCH/HR) = 0.40

SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100

SUBAREA RUNOFF(CFS) = 0.94

TOTAL AREA(ACRES) = 0.17 PEAK FLOW RATE(CFS) = 0.94

FLOW PROCESS FROM NODE 20.00 TO NODE 50.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 173.88 DOWNSTREAM(FEET) = 173.52

FLOW LENGTH(FEET) = 71.50 MANNING'S N = 0.009

DEPTH OF FLOW IN 9.0 INCH PIPE IS 4.9 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 3.85

ESTIMATED PIPE DIAMETER(INCH) = 9.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 0.94

PIPE TRAVEL TIME(MIN.) = 0.31 T_c (MIN.) = 5.31

LONGEST FLOWPATH FROM NODE 10.00 TO NODE 50.00 = 190.00 FEET.

FLOW PROCESS FROM NODE 50.00 TO NODE 50.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:

TIME OF CONCENTRATION(MIN.) = 5.31

RAINFALL INTENSITY(INCH/HR) = 5.98

AREA-AVERAGED F_m (INCH/HR) = 0.04

AREA-AVERAGED F_p (INCH/HR) = 0.40

AREA-AVERAGED A_p = 0.10

EFFECTIVE STREAM AREA(ACRES) = 0.17

TOTAL STREAM AREA(ACRES) = 0.17

PEAK FLOW RATE(CFS) AT CONFLUENCE = 0.94

FLOW PROCESS FROM NODE 30.00 TO NODE 40.00 IS CODE = 21

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

INITIAL SUBAREA FLOW-LENGTH(FEET) = 81.80
ELEVATION DATA: UPSTREAM(FEET) = 178.04 DOWNSTREAM(FEET) = 175.22

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

SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 5.000

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 6.187

SUBAREA T_c AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	A	0.13	0.40	0.100	52	5.00

SUBAREA AVERAGE PERVIOUS LOSS RATE, F_p (INCH/HR) = 0.40

SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100

SUBAREA RUNOFF(CFS) = 0.72

TOTAL AREA(ACRES) = 0.13 PEAK FLOW RATE(CFS) = 0.72

FLOW PROCESS FROM NODE 40.00 TO NODE 50.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
=====

ELEVATION DATA: UPSTREAM(FEET) = 174.00 DOWNSTREAM(FEET) = 173.52

FLOW LENGTH(FEET) = 29.30 MANNING'S N = 0.009

DEPTH OF FLOW IN 6.0 INCH PIPE IS 3.7 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 5.58

ESTIMATED PIPE DIAMETER(INCH) = 6.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 0.72

PIPE TRAVEL TIME(MIN.) = 0.09 T_c (MIN.) = 5.09

LONGEST FLOWPATH FROM NODE 30.00 TO NODE 50.00 = 111.10 FEET.

FLOW PROCESS FROM NODE 50.00 TO NODE 50.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 2

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:

TIME OF CONCENTRATION(MIN.) = 5.09

RAINFALL INTENSITY(INCH/HR) = 6.13

AREA-AVERAGED F_m (INCH/HR) = 0.04

AREA-AVERAGED F_p (INCH/HR) = 0.40

AREA-AVERAGED A_p = 0.10

EFFECTIVE STREAM AREA(ACRES) = 0.13

TOTAL STREAM AREA(ACRES) = 0.13
PEAK FLOW RATE(CFS) AT CONFLUENCE = 0.72

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	0.94	5.31	5.978	0.40(0.04)	0.10	0.2	10.00
2	0.72	5.09	6.126	0.40(0.04)	0.10	0.1	30.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1.64	5.09	6.126	0.40(0.04)	0.10	0.3	30.00
2	1.64	5.31	5.978	0.40(0.04)	0.10	0.3	10.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 1.64 Tc(MIN.) = 5.09
EFFECTIVE AREA(ACRES) = 0.29 AREA-AVERAGED Fm(INCH/HR) = 0.04
AREA-AVERAGED Fp(INCH/HR) = 0.40 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 0.3
LONGEST FLOWPATH FROM NODE 10.00 TO NODE 50.00 = 190.00 FEET.

FLOW PROCESS FROM NODE 50.00 TO NODE 90.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 173.52 DOWNSTREAM(FEET) = 173.26
FLOW LENGTH(FEET) = 53.50 MANNING'S N = 0.009
DEPTH OF FLOW IN 12.0 INCH PIPE IS 5.8 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 4.39
ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 1.64
PIPE TRAVEL TIME(MIN.) = 0.20 Tc(MIN.) = 5.29
LONGEST FLOWPATH FROM NODE 10.00 TO NODE 90.00 = 243.50 FEET.

FLOW PROCESS FROM NODE 90.00 TO NODE 90.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 5.29
RAINFALL INTENSITY(INCH/HR) = 5.99
AREA-AVERAGED Fm(INCH/HR) = 0.04

AREA-AVERAGED F_p (INCH/HR) = 0.40
AREA-AVERAGED A_p = 0.10
EFFECTIVE STREAM AREA(ACRES) = 0.29
TOTAL STREAM AREA(ACRES) = 0.30
PEAK FLOW RATE(CFS) AT CONFLUENCE = 1.64

FLOW PROCESS FROM NODE 70.00 TO NODE 80.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 158.50
ELEVATION DATA: UPSTREAM(FEET) = 179.78 DOWNSTREAM(FEET) = 176.29

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$
SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 5.000
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 6.187
SUBAREA T_c AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	F_p (INCH/HR)	A_p (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	A	0.17	0.40	0.100	52	5.00

SUBAREA AVERAGE PERVIOUS LOSS RATE, F_p (INCH/HR) = 0.40
SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100
SUBAREA RUNOFF(CFS) = 0.94
TOTAL AREA(ACRES) = 0.17 PEAK FLOW RATE(CFS) = 0.94

FLOW PROCESS FROM NODE 80.00 TO NODE 90.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 173.41 DOWNSTREAM(FEET) = 173.26
FLOW LENGTH(FEET) = 29.75 MANNING'S N = 0.009
DEPTH OF FLOW IN 9.0 INCH PIPE IS 4.9 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 3.85
ESTIMATED PIPE DIAMETER(INCH) = 9.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 0.94
PIPE TRAVEL TIME(MIN.) = 0.13 T_c (MIN.) = 5.13
LONGEST FLOWPATH FROM NODE 70.00 TO NODE 90.00 = 188.25 FEET.

FLOW PROCESS FROM NODE 90.00 TO NODE 90.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:

TIME OF CONCENTRATION(MIN.) = 5.13
 RAINFALL INTENSITY(INCH/HR) = 6.10
 AREA-AVERAGED Fm(INCH/HR) = 0.04
 AREA-AVERAGED Fp(INCH/HR) = 0.40
 AREA-AVERAGED Ap = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 0.17
 TOTAL STREAM AREA(ACRES) = 0.17
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 0.94

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1.64	5.29	5.990	0.40(0.04)	0.10	0.3	30.00
1	1.64	5.51	5.851	0.40(0.04)	0.10	0.3	10.00
2	0.94	5.13	6.098	0.40(0.04)	0.10	0.2	70.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2.56	5.13	6.098	0.40(0.04)	0.10	0.5	70.00
2	2.57	5.29	5.990	0.40(0.04)	0.10	0.5	30.00
3	2.54	5.51	5.851	0.40(0.04)	0.10	0.5	10.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 2.57 Tc(MIN.) = 5.29
 EFFECTIVE AREA(ACRES) = 0.46 AREA-AVERAGED Fm(INCH/HR) = 0.04
 AREA-AVERAGED Fp(INCH/HR) = 0.40 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 0.5
 LONGEST FLOWPATH FROM NODE 10.00 TO NODE 90.00 = 243.50 FEET.

FLOW PROCESS FROM NODE 90.00 TO NODE 210.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 173.26 DOWNSTREAM(FEET) = 172.27
 FLOW LENGTH(FEET) = 196.60 MANNING'S N = 0.009
 DEPTH OF FLOW IN 12.0 INCH PIPE IS 7.5 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 4.94
 ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 2.57
 PIPE TRAVEL TIME(MIN.) = 0.66 Tc(MIN.) = 5.95
 LONGEST FLOWPATH FROM NODE 10.00 TO NODE 210.00 = 440.10 FEET.

FLOW PROCESS FROM NODE 210.00 TO NODE 210.00 IS CODE = 10

```

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

*****
FLOW PROCESS FROM NODE      100.00 TO NODE      110.00 IS CODE =   21
-----

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

INITIAL SUBAREA FLOW-LENGTH(FEET) =   194.40
ELEVATION DATA: UPSTREAM(FEET) =   182.45  DOWNSTREAM(FEET) =   180.40

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.219
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =   5.460
SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL  AREA      Fp      Ap      SCS  Tc
      LAND USE          GROUP  (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
COMMERCIAL              A       0.51    0.40    0.100    52    6.22
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.40
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
SUBAREA RUNOFF(CFS) =      2.49
TOTAL AREA(ACRES) =      0.51  PEAK FLOW RATE(CFS) =      2.49

*****
FLOW PROCESS FROM NODE      110.00 TO NODE      140.00 IS CODE =   31
-----

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<
=====

ELEVATION DATA: UPSTREAM(FEET) =   176.90  DOWNSTREAM(FEET) =   173.51
FLOW LENGTH(FEET) =   288.70  MANNING'S N =  0.009
DEPTH OF FLOW IN   9.0 INCH PIPE IS   7.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =    6.52
ESTIMATED PIPE DIAMETER(INCH) =   9.00  NUMBER OF PIPES =    1
PIPE-FLOW(CFS) =      2.49
PIPE TRAVEL TIME(MIN.) =   0.74  Tc(MIN.) =    6.96
LONGEST FLOWPATH FROM NODE      100.00 TO NODE      140.00 =   483.10 FEET.

*****
FLOW PROCESS FROM NODE      140.00 TO NODE      140.00 IS CODE =    1
-----

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

TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =    6.96
RAINFALL INTENSITY(INCH/HR) =    5.12
AREA-AVERAGED Fm(INCH/HR) =   0.04

```

AREA-AVERAGED F_p (INCH/HR) = 0.40
 AREA-AVERAGED A_p = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 0.51
 TOTAL STREAM AREA(ACRES) = 0.51
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 2.49

FLOW PROCESS FROM NODE 120.00 TO NODE 130.00 IS CODE = 21

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

INITIAL SUBAREA FLOW-LENGTH(FEET) = 203.30
 ELEVATION DATA: UPSTREAM(FEET) = 182.48 DOWNSTREAM(FEET) = 178.01

$T_c = K * [(LENGTH^{**} 3.00) / (ELEVATION CHANGE)]^{**0.20}$
 SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 5.466
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 5.879
 SUBAREA T_c AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	F_p (INCH/HR)	A_p (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	A	0.23	0.40	0.100	52	5.47

SUBAREA AVERAGE PERVIOUS LOSS RATE, F_p (INCH/HR) = 0.40
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100
 SUBAREA RUNOFF(CFS) = 1.21
 TOTAL AREA(ACRES) = 0.23 PEAK FLOW RATE(CFS) = 1.21

FLOW PROCESS FROM NODE 130.00 TO NODE 140.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 174.36 DOWNSTREAM(FEET) = 173.51
 FLOW LENGTH(FEET) = 37.50 MANNING'S N = 0.009
 DEPTH OF FLOW IN 9.0 INCH PIPE IS 3.6 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 7.20
 ESTIMATED PIPE DIAMETER(INCH) = 9.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 1.21
 PIPE TRAVEL TIME(MIN.) = 0.09 T_c (MIN.) = 5.55
 LONGEST FLOWPATH FROM NODE 120.00 TO NODE 140.00 = 240.80 FEET.

FLOW PROCESS FROM NODE 140.00 TO NODE 140.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:

TIME OF CONCENTRATION(MIN.) = 5.55
 RAINFALL INTENSITY(INCH/HR) = 5.83
 AREA-AVERAGED Fm(INCH/HR) = 0.04
 AREA-AVERAGED Fp(INCH/HR) = 0.40
 AREA-AVERAGED Ap = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 0.23
 TOTAL STREAM AREA(ACRES) = 0.23
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 1.21

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2.49	6.96	5.120	0.40(0.04)	0.10	0.5	100.00
2	1.21	5.55	5.826	0.40(0.04)	0.10	0.2	120.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	3.47	5.55	5.826	0.40(0.04)	0.10	0.6	120.00
2	3.55	6.96	5.120	0.40(0.04)	0.10	0.7	100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 3.55 Tc(MIN.) = 6.96
 EFFECTIVE AREA(ACRES) = 0.74 AREA-AVERAGED Fm(INCH/HR) = 0.04
 AREA-AVERAGED Fp(INCH/HR) = 0.40 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 0.7
 LONGEST FLOWPATH FROM NODE 100.00 TO NODE 140.00 = 483.10 FEET.

FLOW PROCESS FROM NODE 140.00 TO NODE 170.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 173.51 DOWNSTREAM(FEET) = 173.03

FLOW LENGTH(FEET) = 45.90 MANNING'S N = 0.009

DEPTH OF FLOW IN 12.0 INCH PIPE IS 7.3 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 7.05

ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 3.55

PIPE TRAVEL TIME(MIN.) = 0.11 Tc(MIN.) = 7.07

LONGEST FLOWPATH FROM NODE 100.00 TO NODE 170.00 = 529.00 FEET.

FLOW PROCESS FROM NODE 170.00 TO NODE 170.00 IS CODE = 1

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

```

=====
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 7.07
RAINFALL INTENSITY(INCH/HR) = 5.08
AREA-AVERAGED Fm(INCH/HR) = 0.04
AREA-AVERAGED Fp(INCH/HR) = 0.40
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 0.74
TOTAL STREAM AREA(ACRES) = 0.74
PEAK FLOW RATE(CFS) AT CONFLUENCE = 3.55

*****
FLOW PROCESS FROM NODE 150.00 TO NODE 160.00 IS CODE = 21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
=====
INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.50
ELEVATION DATA: UPSTREAM(FEET) = 181.84 DOWNSTREAM(FEET) = 176.43

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.000
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 6.187
SUBAREA Tc AND LOSS RATE DATA(AMC III):
DEVELOPMENT TYPE/      SCS SOIL  AREA      Fp      Ap      SCS  Tc
LAND USE              GROUP  (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
COMMERCIAL            A      0.17    0.40    0.100    52    5.00
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.40
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 0.94
TOTAL AREA(ACRES) = 0.17 PEAK FLOW RATE(CFS) = 0.94

*****
FLOW PROCESS FROM NODE 160.00 TO NODE 170.00 IS CODE = 31
-----
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 175.43 DOWNSTREAM(FEET) = 173.03
FLOW LENGTH(FEET) = 30.50 MANNING'S N = 0.009
DEPTH OF FLOW IN 6.0 INCH PIPE IS 2.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 10.80
ESTIMATED PIPE DIAMETER(INCH) = 6.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 0.94
PIPE TRAVEL TIME(MIN.) = 0.05 Tc(MIN.) = 5.05
LONGEST FLOWPATH FROM NODE 150.00 TO NODE 170.00 = 131.00 FEET.

*****
FLOW PROCESS FROM NODE 170.00 TO NODE 170.00 IS CODE = 1

```

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

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 5.05
 RAINFALL INTENSITY(INCH/HR) = 6.15
 AREA-AVERAGED Fm(INCH/HR) = 0.04
 AREA-AVERAGED Fp(INCH/HR) = 0.40
 AREA-AVERAGED Ap = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 0.17
 TOTAL STREAM AREA(ACRES) = 0.17
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 0.94

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	3.47	5.66	5.762	0.40(0.04)	0.10	0.6	120.00
1	3.55	7.07	5.075	0.40(0.04)	0.10	0.7	100.00
2	0.94	5.05	6.154	0.40(0.04)	0.10	0.2	150.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	4.25	5.05	6.154	0.40(0.04)	0.10	0.7	150.00
2	4.35	5.66	5.762	0.40(0.04)	0.10	0.8	120.00
3	4.32	7.07	5.075	0.40(0.04)	0.10	0.9	100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 4.35 Tc(MIN.) = 5.66
 EFFECTIVE AREA(ACRES) = 0.81 AREA-AVERAGED Fm(INCH/HR) = 0.04
 AREA-AVERAGED Fp(INCH/HR) = 0.40 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 0.9
 LONGEST FLOWPATH FROM NODE 100.00 TO NODE 170.00 = 529.00 FEET.

FLOW PROCESS FROM NODE 170.00 TO NODE 200.00 IS CODE = 31

 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
 =====

ELEVATION DATA: UPSTREAM(FEET) = 173.03 DOWNSTREAM(FEET) = 172.77
 FLOW LENGTH(FEET) = 25.60 MANNING'S N = 0.009
 DEPTH OF FLOW IN 12.0 INCH PIPE IS 8.6 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 7.23
 ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 4.35
PIPE TRAVEL TIME(MIN.) = 0.06 Tc(MIN.) = 5.72
LONGEST FLOWPATH FROM NODE 100.00 TO NODE 200.00 = 554.60 FEET.

FLOW PROCESS FROM NODE 200.00 TO NODE 200.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 5.72
RAINFALL INTENSITY(INCH/HR) = 5.73
AREA-AVERAGED Fm(INCH/HR) = 0.04
AREA-AVERAGED Fp(INCH/HR) = 0.40
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 0.81
TOTAL STREAM AREA(ACRES) = 0.91
PEAK FLOW RATE(CFS) AT CONFLUENCE = 4.35

FLOW PROCESS FROM NODE 180.00 TO NODE 190.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 142.20
ELEVATION DATA: UPSTREAM(FEET) = 179.95 DOWNSTREAM(FEET) = 175.94

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.000
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 6.187
SUBAREA Tc AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	A	0.14	0.40	0.100	52	5.00

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.40
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 0.77
TOTAL AREA(ACRES) = 0.14 PEAK FLOW RATE(CFS) = 0.77

FLOW PROCESS FROM NODE 190.00 TO NODE 200.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 172.92 DOWNSTREAM(FEET) = 172.77
FLOW LENGTH(FEET) = 29.80 MANNING'S N = 0.009
DEPTH OF FLOW IN 9.0 INCH PIPE IS 4.3 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 3.70
 ESTIMATED PIPE DIAMETER(INCH) = 9.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 0.77
 PIPE TRAVEL TIME(MIN.) = 0.13 Tc(MIN.) = 5.13
 LONGEST FLOWPATH FROM NODE 180.00 TO NODE 200.00 = 172.00 FEET.

FLOW PROCESS FROM NODE 200.00 TO NODE 200.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 5.13
 RAINFALL INTENSITY(INCH/HR) = 6.09
 AREA-AVERAGED Fm(INCH/HR) = 0.04
 AREA-AVERAGED Fp(INCH/HR) = 0.40
 AREA-AVERAGED Ap = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 0.14
 TOTAL STREAM AREA(ACRES) = 0.14
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 0.77

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	4.25	5.11	6.113	0.40(0.04)	0.10	0.7	150.00
1	4.35	5.72	5.728	0.40(0.04)	0.10	0.8	120.00
1	4.32	7.12	5.051	0.40(0.04)	0.10	0.9	100.00
2	0.77	5.13	6.094	0.40(0.04)	0.10	0.1	180.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	5.02	5.11	6.113	0.40(0.04)	0.10	0.9	150.00
2	5.03	5.13	6.094	0.40(0.04)	0.10	0.9	180.00
3	5.08	5.72	5.728	0.40(0.04)	0.10	0.9	120.00
4	4.96	7.12	5.051	0.40(0.04)	0.10	1.1	100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 5.08 Tc(MIN.) = 5.72
 EFFECTIVE AREA(ACRES) = 0.95 AREA-AVERAGED Fm(INCH/HR) = 0.04
 AREA-AVERAGED Fp(INCH/HR) = 0.40 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 1.1
 LONGEST FLOWPATH FROM NODE 100.00 TO NODE 200.00 = 554.60 FEET.

FLOW PROCESS FROM NODE 200.00 TO NODE 210.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 173.03 DOWNSTREAM(FEET) = 172.27
FLOW LENGTH(FEET) = 48.40 MANNING'S N = 0.009
DEPTH OF FLOW IN 12.0 INCH PIPE IS 8.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 8.91
ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 5.08
PIPE TRAVEL TIME(MIN.) = 0.09 Tc(MIN.) = 5.81
LONGEST FLOWPATH FROM NODE 100.00 TO NODE 210.00 = 603.00 FEET.

FLOW PROCESS FROM NODE 210.00 TO NODE 210.00 IS CODE = 11

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

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	5.02	5.20	6.052	0.40(0.04)	0.10	0.9	150.00
2	5.03	5.23	6.033	0.40(0.04)	0.10	0.9	180.00
3	5.08	5.81	5.676	0.40(0.04)	0.10	0.9	120.00
4	4.96	7.22	5.014	0.40(0.04)	0.10	1.1	100.00

LONGEST FLOWPATH FROM NODE 100.00 TO NODE 210.00 = 603.00 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2.56	5.79	5.686	0.40(0.04)	0.10	0.5	70.00
2	2.57	5.95	5.598	0.40(0.04)	0.10	0.5	30.00
3	2.54	6.18	5.481	0.40(0.04)	0.10	0.5	10.00

LONGEST FLOWPATH FROM NODE 10.00 TO NODE 210.00 = 440.10 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	7.47	5.20	6.052	0.40(0.04)	0.10	1.3	150.00
2	7.48	5.23	6.033	0.40(0.04)	0.10	1.3	180.00
3	7.64	5.79	5.686	0.40(0.04)	0.10	1.4	70.00
4	7.64	5.81	5.676	0.40(0.04)	0.10	1.4	120.00
5	7.63	5.95	5.598	0.40(0.04)	0.10	1.4	30.00
6	7.59	6.18	5.481	0.40(0.04)	0.10	1.4	10.00
7	7.29	7.22	5.014	0.40(0.04)	0.10	1.5	100.00

TOTAL AREA(ACRES) = 1.5

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 7.64 Tc(MIN.) = 5.812
 EFFECTIVE AREA(ACRES) = 1.40 AREA-AVERAGED Fm(INCH/HR) = 0.04
 AREA-AVERAGED Fp(INCH/HR) = 0.40 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 1.5
 LONGEST FLOWPATH FROM NODE 100.00 TO NODE 210.00 = 603.00 FEET.

 FLOW PROCESS FROM NODE 210.00 TO NODE 260.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

=====
 ELEVATION DATA: UPSTREAM(Feet) = 172.27 DOWNSTREAM(Feet) = 171.41
 FLOW LENGTH(Feet) = 173.30 MANNING'S N = 0.013
 DEPTH OF FLOW IN 21.0 INCH PIPE IS 13.0 INCHES
 PIPE-FLOW VELOCITY(Feet/Sec.) = 4.90
 ESTIMATED PIPE DIAMETER(INCH) = 21.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 7.64
 PIPE TRAVEL TIME(MIN.) = 0.59 Tc(MIN.) = 6.40
 LONGEST FLOWPATH FROM NODE 100.00 TO NODE 260.00 = 776.30 FEET.

 FLOW PROCESS FROM NODE 260.00 TO NODE 260.00 IS CODE = 10

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

 FLOW PROCESS FROM NODE 220.00 TO NODE 230.00 IS CODE = 21

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

=====
 INITIAL SUBAREA FLOW-LENGTH(Feet) = 146.00
 ELEVATION DATA: UPSTREAM(Feet) = 181.89 DOWNSTREAM(Feet) = 176.40

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.000
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 6.187
 SUBAREA Tc AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	A	0.92	0.40	0.100	52	5.00

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.40
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
 SUBAREA RUNOFF(CFS) = 5.09
 TOTAL AREA(ACRES) = 0.92 PEAK FLOW RATE(CFS) = 5.09

 FLOW PROCESS FROM NODE 230.00 TO NODE 250.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 172.87 DOWNSTREAM(FEET) = 171.86
FLOW LENGTH(FEET) = 72.20 MANNING'S N = 0.013
DEPTH OF FLOW IN 15.0 INCH PIPE IS 9.1 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 6.53
ESTIMATED PIPE DIAMETER(INCH) = 15.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 5.09
PIPE TRAVEL TIME(MIN.) = 0.18 Tc(MIN.) = 5.18
LONGEST FLOWPATH FROM NODE 220.00 TO NODE 250.00 = 218.20 FEET.

FLOW PROCESS FROM NODE 250.00 TO NODE 250.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 5.18
RAINFALL INTENSITY(INCH/HR) = 6.06
AREA-AVERAGED Fm(INCH/HR) = 0.04
AREA-AVERAGED Fp(INCH/HR) = 0.40
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 0.92
TOTAL STREAM AREA(ACRES) = 0.92
PEAK FLOW RATE(CFS) AT CONFLUENCE = 5.09

FLOW PROCESS FROM NODE 240.00 TO NODE 250.00 IS CODE = 21

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

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 218.40
ELEVATION DATA: UPSTREAM(FEET) = 178.16 DOWNSTREAM(FEET) = 174.77

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

SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 6.031

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 5.557

SUBAREA Tc AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	A	0.33	0.40	0.100	52	6.03

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.40

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100

SUBAREA RUNOFF(CFS) = 1.64

TOTAL AREA(ACRES) = 0.33 PEAK FLOW RATE(CFS) = 1.64

FLOW PROCESS FROM NODE 250.00 TO NODE 250.00 IS CODE = 1

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

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

=====

TOTAL NUMBER OF STREAMS = 2

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:

TIME OF CONCENTRATION(MIN.) = 6.03

RAINFALL INTENSITY(INCH/HR) = 5.56

AREA-AVERAGED Fm(INCH/HR) = 0.04

AREA-AVERAGED Fp(INCH/HR) = 0.40

AREA-AVERAGED Ap = 0.10

EFFECTIVE STREAM AREA(ACRES) = 0.33

TOTAL STREAM AREA(ACRES) = 0.33

PEAK FLOW RATE(CFS) AT CONFLUENCE = 1.64

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	5.09	5.18	6.060	0.40(0.04)	0.10	0.9	220.00
2	1.64	6.03	5.557	0.40(0.04)	0.10	0.3	240.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO

CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	6.63	5.18	6.060	0.40(0.04)	0.10	1.2	220.00
2	6.30	6.03	5.557	0.40(0.04)	0.10	1.2	240.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 6.63 Tc(MIN.) = 5.18

EFFECTIVE AREA(ACRES) = 1.20 AREA-AVERAGED Fm(INCH/HR) = 0.04

AREA-AVERAGED Fp(INCH/HR) = 0.40 AREA-AVERAGED Ap = 0.10

TOTAL AREA(ACRES) = 1.2

LONGEST FLOWPATH FROM NODE 240.00 TO NODE 250.00 = 218.40 FEET.

FLOW PROCESS FROM NODE 250.00 TO NODE 260.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 171.86 DOWNSTREAM(FEET) = 171.41

FLOW LENGTH(FEET) = 44.90 MANNING'S N = 0.013

DEPTH OF FLOW IN 18.0 INCH PIPE IS 10.5 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 6.17

ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 6.63
 PIPE TRAVEL TIME(MIN.) = 0.12 Tc(MIN.) = 5.31
 LONGEST FLOWPATH FROM NODE 240.00 TO NODE 260.00 = 263.30 FEET.

FLOW PROCESS FROM NODE 260.00 TO NODE 260.00 IS CODE = 11

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

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	6.63	5.31	5.980	0.40(0.04)	0.10	1.2	220.00
2	6.30	6.15	5.493	0.40(0.04)	0.10	1.2	240.00

LONGEST FLOWPATH FROM NODE 240.00 TO NODE 260.00 = 263.30 FEET.

** MEMORY BANK # 2 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	7.47	5.79	5.689	0.40(0.04)	0.10	1.3	150.00
2	7.48	5.82	5.673	0.40(0.04)	0.10	1.3	180.00
3	7.64	6.38	5.379	0.40(0.04)	0.10	1.4	70.00
4	7.64	6.40	5.370	0.40(0.04)	0.10	1.4	120.00
5	7.63	6.54	5.303	0.40(0.04)	0.10	1.4	30.00
6	7.59	6.77	5.201	0.40(0.04)	0.10	1.4	10.00
7	7.29	7.81	4.792	0.40(0.04)	0.10	1.5	100.00

LONGEST FLOWPATH FROM NODE 100.00 TO NODE 260.00 = 776.30 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13.82	5.31	5.980	0.40(0.04)	0.10	2.4	220.00
2	13.91	5.79	5.689	0.40(0.04)	0.10	2.5	150.00
3	13.91	5.82	5.673	0.40(0.04)	0.10	2.5	180.00
4	13.88	6.15	5.493	0.40(0.04)	0.10	2.6	240.00
5	13.81	6.38	5.379	0.40(0.04)	0.10	2.6	70.00
6	13.80	6.40	5.370	0.40(0.04)	0.10	2.7	120.00
7	13.72	6.54	5.303	0.40(0.04)	0.10	2.7	30.00
8	13.56	6.77	5.201	0.40(0.04)	0.10	2.7	10.00
9	12.78	7.81	4.792	0.40(0.04)	0.10	2.8	100.00

TOTAL AREA(ACRES) = 2.8

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 13.91 Tc(MIN.) = 5.818
 EFFECTIVE AREA(ACRES) = 2.52 AREA-AVERAGED Fm(INCH/HR) = 0.04
 AREA-AVERAGED Fp(INCH/HR) = 0.40 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 2.8
 LONGEST FLOWPATH FROM NODE 100.00 TO NODE 260.00 = 776.30 FEET.

FLOW PROCESS FROM NODE 260.00 TO NODE 290.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 171.41 DOWNSTREAM(FEET) = 171.04
FLOW LENGTH(FEET) = 73.10 MANNING'S N = 0.013
DEPTH OF FLOW IN 24.0 INCH PIPE IS 17.6 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 5.64
ESTIMATED PIPE DIAMETER(INCH) = 24.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 13.91
PIPE TRAVEL TIME(MIN.) = 0.22 Tc(MIN.) = 6.03
LONGEST FLOWPATH FROM NODE 100.00 TO NODE 290.00 = 849.40 FEET.

FLOW PROCESS FROM NODE 290.00 TO NODE 290.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 6.03
RAINFALL INTENSITY(INCH/HR) = 5.56
AREA-AVERAGED Fm(INCH/HR) = 0.04
AREA-AVERAGED Fp(INCH/HR) = 0.40
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 2.52
TOTAL STREAM AREA(ACRES) = 2.77
PEAK FLOW RATE(CFS) AT CONFLUENCE = 13.91

FLOW PROCESS FROM NODE 270.00 TO NODE 280.00 IS CODE = 21

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

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 217.50
ELEVATION DATA: UPSTREAM(FEET) = 178.48 DOWNSTREAM(FEET) = 174.52

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

SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.832

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 5.665

SUBAREA Tc AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	A	3.11	0.40	0.100	52	5.83

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.40

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100

SUBAREA RUNOFF(CFS) = 15.74

TOTAL AREA(ACRES) = 3.11 PEAK FLOW RATE(CFS) = 15.74

FLOW PROCESS FROM NODE 280.00 TO NODE 290.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 171.51 DOWNSTREAM(FEET) = 171.04
FLOW LENGTH(FEET) = 52.80 MANNING'S N = 0.013
DEPTH OF FLOW IN 24.0 INCH PIPE IS 15.6 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 7.28
ESTIMATED PIPE DIAMETER(INCH) = 24.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 15.74
PIPE TRAVEL TIME(MIN.) = 0.12 Tc(MIN.) = 5.95
LONGEST FLOWPATH FROM NODE 270.00 TO NODE 290.00 = 270.30 FEET.

FLOW PROCESS FROM NODE 290.00 TO NODE 290.00 IS CODE = 1

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

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 5.95
RAINFALL INTENSITY(INCH/HR) = 5.60
AREA-AVERAGED Fm(INCH/HR) = 0.04
AREA-AVERAGED Fp(INCH/HR) = 0.40
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 3.11
TOTAL STREAM AREA(ACRES) = 3.11
PEAK FLOW RATE(CFS) AT CONFLUENCE = 15.74

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13.82	5.52	5.845	0.40(0.04)	0.10	2.4	220.00
1	13.91	6.01	5.571	0.40(0.04)	0.10	2.5	150.00
1	13.91	6.03	5.556	0.40(0.04)	0.10	2.5	180.00
1	13.88	6.37	5.386	0.40(0.04)	0.10	2.6	240.00
1	13.81	6.60	5.277	0.40(0.04)	0.10	2.6	70.00
1	13.80	6.62	5.269	0.40(0.04)	0.10	2.7	120.00
1	13.72	6.76	5.205	0.40(0.04)	0.10	2.7	30.00
1	13.56	6.99	5.108	0.40(0.04)	0.10	2.7	10.00
1	12.78	8.03	4.716	0.40(0.04)	0.10	2.8	100.00
2	15.74	5.95	5.599	0.40(0.04)	0.10	3.1	270.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	29.07	5.52	5.845	0.40(0.04)	0.10	5.3	220.00
2	29.64	5.95	5.599	0.40(0.04)	0.10	5.6	270.00
3	29.57	6.01	5.571	0.40(0.04)	0.10	5.6	150.00
4	29.53	6.03	5.556	0.40(0.04)	0.10	5.6	180.00
5	29.02	6.37	5.386	0.40(0.04)	0.10	5.7	240.00
6	28.64	6.60	5.277	0.40(0.04)	0.10	5.8	70.00
7	28.61	6.62	5.269	0.40(0.04)	0.10	5.8	120.00
8	28.35	6.76	5.205	0.40(0.04)	0.10	5.8	30.00
9	27.91	6.99	5.108	0.40(0.04)	0.10	5.8	10.00
10	26.03	8.03	4.716	0.40(0.04)	0.10	5.9	100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 29.64 Tc(MIN.) = 5.95
 EFFECTIVE AREA(ACRES) = 5.61 AREA-AVERAGED Fm(INCH/HR) = 0.04
 AREA-AVERAGED Fp(INCH/HR) = 0.40 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 5.9
 LONGEST FLOWPATH FROM NODE 100.00 TO NODE 290.00 = 849.40 FEET.

FLOW PROCESS FROM NODE 290.00 TO NODE 350.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

ELEVATION DATA: UPSTREAM(Feet) = 171.04 DOWNSTREAM(Feet) = 170.95
 FLOW LENGTH(Feet) = 19.30 MANNING'S N = 0.013
 DEPTH OF FLOW IN 33.0 INCH PIPE IS 23.2 INCHES
 PIPE-FLOW VELOCITY(Feet/Sec.) = 6.64
 ESTIMATED PIPE DIAMETER(INCH) = 33.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 29.64
 PIPE TRAVEL TIME(MIN.) = 0.05 Tc(MIN.) = 6.00
 LONGEST FLOWPATH FROM NODE 100.00 TO NODE 350.00 = 868.70 FEET.

FLOW PROCESS FROM NODE 350.00 TO NODE 350.00 IS CODE = 10

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

FLOW PROCESS FROM NODE 300.00 TO NODE 310.00 IS CODE = 21

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

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

INITIAL SUBAREA FLOW-LENGTH(Feet) = 220.90

ELEVATION DATA: UPSTREAM(FEET) = 178.45 DOWNSTREAM(FEET) = 174.52

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

SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 5.895

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 5.630

SUBAREA T_c AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	F_p (INCH/HR)	A_p (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	A	1.96	0.40	0.100	52	5.90

SUBAREA AVERAGE PERVIOUS LOSS RATE, F_p (INCH/HR) = 0.40

SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100

SUBAREA RUNOFF(CFS) = 9.86

TOTAL AREA(ACRES) = 1.96 PEAK FLOW RATE(CFS) = 9.86

FLOW PROCESS FROM NODE 310.00 TO NODE 340.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 171.70 DOWNSTREAM(FEET) = 171.17

FLOW LENGTH(FEET) = 107.80 MANNING'S N = 0.013

DEPTH OF FLOW IN 21.0 INCH PIPE IS 15.7 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 5.10

ESTIMATED PIPE DIAMETER(INCH) = 21.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 9.86

PIPE TRAVEL TIME(MIN.) = 0.35 T_c (MIN.) = 6.25

LONGEST FLOWPATH FROM NODE 300.00 TO NODE 340.00 = 328.70 FEET.

FLOW PROCESS FROM NODE 340.00 TO NODE 340.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 2

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:

TIME OF CONCENTRATION(MIN.) = 6.25

RAINFALL INTENSITY(INCH/HR) = 5.45

AREA-AVERAGED F_m (INCH/HR) = 0.04

AREA-AVERAGED F_p (INCH/HR) = 0.40

AREA-AVERAGED A_p = 0.10

EFFECTIVE STREAM AREA(ACRES) = 1.96

TOTAL STREAM AREA(ACRES) = 1.96

PEAK FLOW RATE(CFS) AT CONFLUENCE = 9.86

FLOW PROCESS FROM NODE 320.00 TO NODE 330.00 IS CODE = 21

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

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

```

=====
INITIAL SUBAREA FLOW-LENGTH(FEET) = 217.90
ELEVATION DATA: UPSTREAM(FEET) = 178.44 DOWNSTREAM(FEET) = 174.52

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.850
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 5.655
SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL  AREA      Fp          Ap      SCS      Tc
    LAND USE          GROUP  (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
COMMERCIAL              A      1.95      0.40      0.100    52    5.85
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.40
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 9.85
TOTAL AREA(ACRES) = 1.95 PEAK FLOW RATE(CFS) = 9.85

*****
FLOW PROCESS FROM NODE 330.00 TO NODE 340.00 IS CODE = 31
-----
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 171.51 DOWNSTREAM(FEET) = 171.17
FLOW LENGTH(FEET) = 25.70 MANNING'S N = 0.013
DEPTH OF FLOW IN 18.0 INCH PIPE IS 12.6 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 7.46
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 9.85
PIPE TRAVEL TIME(MIN.) = 0.06 Tc(MIN.) = 5.91
LONGEST FLOWPATH FROM NODE 320.00 TO NODE 340.00 = 243.60 FEET.

*****
FLOW PROCESS FROM NODE 340.00 TO NODE 340.00 IS CODE = 1
-----
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
=====
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 5.91
RAINFALL INTENSITY(INCH/HR) = 5.62
AREA-AVERAGED Fm(INCH/HR) = 0.04
AREA-AVERAGED Fp(INCH/HR) = 0.40
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 1.95
TOTAL STREAM AREA(ACRES) = 1.95
PEAK FLOW RATE(CFS) AT CONFLUENCE = 9.85

```

** CONFLUENCE DATA **

STREAM	Q	Tc	Intensity	Fp(Fm)	Ap	Ae	HEADWATER
--------	---	----	-----------	--------	----	----	-----------

NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)		(ACRES)	NODE
1	9.86	6.25	5.446	0.40(0.04)	0.10	2.0	300.00
2	9.85	5.91	5.623	0.40(0.04)	0.10	2.0	320.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19.48	5.91	5.623	0.40(0.04)	0.10	3.8	320.00
2	19.40	6.25	5.446	0.40(0.04)	0.10	3.9	300.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 19.48 Tc(MIN.) = 5.91
EFFECTIVE AREA(ACRES) = 3.80 AREA-AVERAGED Fm(INCH/HR) = 0.04
AREA-AVERAGED Fp(INCH/HR) = 0.40 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 3.9
LONGEST FLOWPATH FROM NODE 300.00 TO NODE 340.00 = 328.70 FEET.

FLOW PROCESS FROM NODE 340.00 TO NODE 350.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 171.17 DOWNSTREAM(FEET) = 170.95
FLOW LENGTH(FEET) = 44.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 27.0 INCH PIPE IS 20.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 6.08
ESTIMATED PIPE DIAMETER(INCH) = 27.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 19.48
PIPE TRAVEL TIME(MIN.) = 0.12 Tc(MIN.) = 6.03
LONGEST FLOWPATH FROM NODE 300.00 TO NODE 350.00 = 372.70 FEET.

FLOW PROCESS FROM NODE 350.00 TO NODE 350.00 IS CODE = 11

>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19.48	6.03	5.559	0.40(0.04)	0.10	3.8	320.00
2	19.40	6.37	5.387	0.40(0.04)	0.10	3.9	300.00

LONGEST FLOWPATH FROM NODE 300.00 TO NODE 350.00 = 372.70 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

STREAM	Q	Tc	Intensity	Fp(Fm)	Ap	Ae	HEADWATER
--------	---	----	-----------	--------	----	----	-----------

NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)	(ACRES)	NODE
1	29.07	5.57	5.816	0.40(0.04)	0.10	220.00
2	29.64	6.00	5.573	0.40(0.04)	0.10	270.00
3	29.57	6.05	5.545	0.40(0.04)	0.10	150.00
4	29.53	6.08	5.530	0.40(0.04)	0.10	180.00
5	29.02	6.42	5.362	0.40(0.04)	0.10	240.00
6	28.64	6.65	5.255	0.40(0.04)	0.10	70.00
7	28.61	6.67	5.247	0.40(0.04)	0.10	120.00
8	28.35	6.81	5.184	0.40(0.04)	0.10	30.00
9	27.91	7.03	5.088	0.40(0.04)	0.10	10.00
10	26.03	8.08	4.699	0.40(0.04)	0.10	100.00

LONGEST FLOWPATH FROM NODE 100.00 TO NODE 350.00 = 868.70 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	47.92	5.57	5.816	0.40(0.04)	0.10	8.8	220.00
2	49.09	6.00	5.573	0.40(0.04)	0.10	9.4	270.00
3	49.09	6.03	5.559	0.40(0.04)	0.10	9.4	320.00
4	49.05	6.05	5.545	0.40(0.04)	0.10	9.4	150.00
5	49.00	6.08	5.530	0.40(0.04)	0.10	9.5	180.00
6	48.50	6.37	5.387	0.40(0.04)	0.10	9.6	300.00
7	48.33	6.42	5.362	0.40(0.04)	0.10	9.6	240.00
8	47.57	6.65	5.255	0.40(0.04)	0.10	9.7	70.00
9	47.51	6.67	5.247	0.40(0.04)	0.10	9.7	120.00
10	47.01	6.81	5.184	0.40(0.04)	0.10	9.7	30.00
11	46.23	7.03	5.088	0.40(0.04)	0.10	9.7	10.00
12	42.94	8.08	4.699	0.40(0.04)	0.10	9.8	100.00

TOTAL AREA(ACRES) = 9.8

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 49.09 Tc(MIN.) = 6.028
EFFECTIVE AREA(ACRES) = 9.42 AREA-AVERAGED Fm(INCH/HR) = 0.04
AREA-AVERAGED Fp(INCH/HR) = 0.40 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 9.8
LONGEST FLOWPATH FROM NODE 100.00 TO NODE 350.00 = 868.70 FEET.

FLOW PROCESS FROM NODE 350.00 TO NODE 590.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 170.95 DOWNSTREAM(FEET) = 170.65

FLOW LENGTH(FEET) = 56.10 MANNING'S N = 0.013

DEPTH OF FLOW IN 39.0 INCH PIPE IS 27.2 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 7.94

ESTIMATED PIPE DIAMETER(INCH) = 39.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 49.09

PIPE TRAVEL TIME(MIN.) = 0.12 Tc(MIN.) = 6.15

LONGEST FLOWPATH FROM NODE 100.00 TO NODE 590.00 = 924.80 FEET.

FLOW PROCESS FROM NODE 590.00 TO NODE 590.00 IS CODE = 12

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

FLOW PROCESS FROM NODE 590.00 TO NODE 590.00 IS CODE = 10

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

FLOW PROCESS FROM NODE 300.00 TO NODE 310.00 IS CODE = 21

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

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

INITIAL SUBAREA FLOW-LENGTH(FEET) = 113.20

ELEVATION DATA: UPSTREAM(FEET) = 181.87 DOWNSTREAM(FEET) = 176.57

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

SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 5.000

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 6.187

SUBAREA T_c AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	A	0.12	0.40	0.100	52	5.00

SUBAREA AVERAGE PERVIOUS LOSS RATE, F_p (INCH/HR) = 0.40

SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100

SUBAREA RUNOFF(CFS) = 0.66

TOTAL AREA(ACRES) = 0.12 PEAK FLOW RATE(CFS) = 0.66

FLOW PROCESS FROM NODE 310.00 TO NODE 340.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 173.03 DOWNSTREAM(FEET) = 172.81

FLOW LENGTH(FEET) = 52.80 MANNING'S N = 0.013

DEPTH OF FLOW IN 9.0 INCH PIPE IS 5.2 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 2.49

ESTIMATED PIPE DIAMETER(INCH) = 9.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 0.66

PIPE TRAVEL TIME(MIN.) = 0.35 T_c (MIN.) = 5.35

LONGEST FLOWPATH FROM NODE 300.00 TO NODE 340.00 = 166.00 FEET.

FLOW PROCESS FROM NODE 340.00 TO NODE 340.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 5.35
RAINFALL INTENSITY(INCH/HR) = 5.95
AREA-AVERAGED Fm(INCH/HR) = 0.04
AREA-AVERAGED Fp(INCH/HR) = 0.40
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 0.12
TOTAL STREAM AREA(ACRES) = 0.12
PEAK FLOW RATE(CFS) AT CONFLUENCE = 0.66

FLOW PROCESS FROM NODE 320.00 TO NODE 330.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 160.10
ELEVATION DATA: UPSTREAM(FEET) = 179.87 DOWNSTREAM(FEET) = 175.36

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$
SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 5.000
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 6.187
SUBAREA T_c AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	A	0.15	0.40	0.100	52	5.00

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.40
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 0.83
TOTAL AREA(ACRES) = 0.15 PEAK FLOW RATE(CFS) = 0.83

FLOW PROCESS FROM NODE 330.00 TO NODE 340.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 172.88 DOWNSTREAM(FEET) = 172.81
FLOW LENGTH(FEET) = 13.70 MANNING'S N = 0.013
DEPTH OF FLOW IN 9.0 INCH PIPE IS 5.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 2.84
ESTIMATED PIPE DIAMETER(INCH) = 9.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 0.83
PIPE TRAVEL TIME(MIN.) = 0.08 T_c (MIN.) = 5.08

LONGEST FLOWPATH FROM NODE 320.00 TO NODE 340.00 = 173.80 FEET.

FLOW PROCESS FROM NODE 340.00 TO NODE 340.00 IS CODE = 1

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

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

=====

TOTAL NUMBER OF STREAMS = 2

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:

TIME OF CONCENTRATION(MIN.) = 5.08

RAINFALL INTENSITY(INCH/HR) = 6.13

AREA-AVERAGED Fm(INCH/HR) = 0.04

AREA-AVERAGED Fp(INCH/HR) = 0.40

AREA-AVERAGED Ap = 0.10

EFFECTIVE STREAM AREA(ACRES) = 0.15

TOTAL STREAM AREA(ACRES) = 0.15

PEAK FLOW RATE(CFS) AT CONFLUENCE = 0.83

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	0.66	5.35	5.950	0.40(0.04)	0.10	0.1	300.00
2	0.83	5.08	6.131	0.40(0.04)	0.10	0.2	320.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO

CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1.48	5.08	6.131	0.40(0.04)	0.10	0.3	320.00
2	1.47	5.35	5.950	0.40(0.04)	0.10	0.3	300.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 1.48 Tc(MIN.) = 5.08

EFFECTIVE AREA(ACRES) = 0.26 AREA-AVERAGED Fm(INCH/HR) = 0.04

AREA-AVERAGED Fp(INCH/HR) = 0.40 AREA-AVERAGED Ap = 0.10

TOTAL AREA(ACRES) = 0.3

LONGEST FLOWPATH FROM NODE 320.00 TO NODE 340.00 = 173.80 FEET.

FLOW PROCESS FROM NODE 340.00 TO NODE 370.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 172.81 DOWNSTREAM(FEET) = 172.59

FLOW LENGTH(FEET) = 43.50 MANNING'S N = 0.013

DEPTH OF FLOW IN 12.0 INCH PIPE IS 6.7 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 3.29
ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 1.48
PIPE TRAVEL TIME(MIN.) = 0.22 Tc(MIN.) = 5.30
LONGEST FLOWPATH FROM NODE 320.00 TO NODE 370.00 = 217.30 FEET.

FLOW PROCESS FROM NODE 370.00 TO NODE 370.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 5.30
RAINFALL INTENSITY(INCH/HR) = 5.98
AREA-AVERAGED Fm(INCH/HR) = 0.04
AREA-AVERAGED Fp(INCH/HR) = 0.40
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 0.26
TOTAL STREAM AREA(ACRES) = 0.27
PEAK FLOW RATE(CFS) AT CONFLUENCE = 1.48

FLOW PROCESS FROM NODE 350.00 TO NODE 370.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 151.40
ELEVATION DATA: UPSTREAM(FEET) = 179.16 DOWNSTREAM(FEET) = 174.88

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.000
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 6.187
SUBAREA Tc AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	A	0.24	0.40	0.100	52	5.00

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.40
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 1.33
TOTAL AREA(ACRES) = 0.24 PEAK FLOW RATE(CFS) = 1.33

FLOW PROCESS FROM NODE 360.00 TO NODE 370.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 172.64 DOWNSTREAM(FEET) = 172.59

FLOW LENGTH(FEET) = 9.70 MANNING'S N = 0.013
 DEPTH OF FLOW IN 12.0 INCH PIPE IS 6.2 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 3.22
 ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 1.33
 PIPE TRAVEL TIME(MIN.) = 0.05 Tc(MIN.) = 5.05
 LONGEST FLOWPATH FROM NODE 350.00 TO NODE 370.00 = 161.10 FEET.

FLOW PROCESS FROM NODE 370.00 TO NODE 370.00 IS CODE = 1

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

=====
 TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 5.05
 RAINFALL INTENSITY(INCH/HR) = 6.15
 AREA-AVERAGED Fm(INCH/HR) = 0.04
 AREA-AVERAGED Fp(INCH/HR) = 0.40
 AREA-AVERAGED Ap = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 0.24
 TOTAL STREAM AREA(ACRES) = 0.24
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 1.33

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1.48	5.30	5.984	0.40(0.04)	0.10	0.3	320.00
1	1.47	5.57	5.814	0.40(0.04)	0.10	0.3	300.00
2	1.33	5.05	6.152	0.40(0.04)	0.10	0.2	350.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2.78	5.05	6.152	0.40(0.04)	0.10	0.5	350.00
2	2.77	5.30	5.984	0.40(0.04)	0.10	0.5	320.00
3	2.72	5.57	5.814	0.40(0.04)	0.10	0.5	300.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 2.78 Tc(MIN.) = 5.05
 EFFECTIVE AREA(ACRES) = 0.49 AREA-AVERAGED Fm(INCH/HR) = 0.04
 AREA-AVERAGED Fp(INCH/HR) = 0.40 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 0.5
 LONGEST FLOWPATH FROM NODE 320.00 TO NODE 370.00 = 217.30 FEET.

FLOW PROCESS FROM NODE 370.00 TO NODE 400.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
=====

ELEVATION DATA: UPSTREAM(FEET) = 172.59 DOWNSTREAM(FEET) = 172.51
FLOW LENGTH(FEET) = 16.80 MANNING'S N = 0.013
DEPTH OF FLOW IN 15.0 INCH PIPE IS 8.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 3.75
ESTIMATED PIPE DIAMETER(INCH) = 15.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 2.78
PIPE TRAVEL TIME(MIN.) = 0.07 Tc(MIN.) = 5.12
LONGEST FLOWPATH FROM NODE 320.00 TO NODE 400.00 = 234.10 FEET.

FLOW PROCESS FROM NODE 400.00 TO NODE 430.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
=====

ELEVATION DATA: UPSTREAM(FEET) = 172.51 DOWNSTREAM(FEET) = 171.88
FLOW LENGTH(FEET) = 71.20 MANNING'S N = 0.013
DEPTH OF FLOW IN 12.0 INCH PIPE IS 8.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 4.67
ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 2.78
PIPE TRAVEL TIME(MIN.) = 0.25 Tc(MIN.) = 5.38
LONGEST FLOWPATH FROM NODE 320.00 TO NODE 430.00 = 305.30 FEET.

FLOW PROCESS FROM NODE 430.00 TO NODE 430.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 5.38
RAINFALL INTENSITY(INCH/HR) = 5.93
AREA-AVERAGED Fm(INCH/HR) = 0.04
AREA-AVERAGED Fp(INCH/HR) = 0.40
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 0.49
TOTAL STREAM AREA(ACRES) = 0.51
PEAK FLOW RATE(CFS) AT CONFLUENCE = 2.78

FLOW PROCESS FROM NODE 410.00 TO NODE 420.00 IS CODE = 21

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

```

=====
INITIAL SUBAREA FLOW-LENGTH(FEET) = 221.40
ELEVATION DATA: UPSTREAM(FEET) = 178.46 DOWNSTREAM(FEET) = 174.52

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.900
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 5.627
SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL  AREA      Fp          Ap      SCS  Tc
    LAND USE          GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
COMMERCIAL              A      3.88      0.40      0.100    52   5.90
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.40
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 19.51
TOTAL AREA(ACRES) = 3.88 PEAK FLOW RATE(CFS) = 19.51

*****
FLOW PROCESS FROM NODE 420.00 TO NODE 430.00 IS CODE = 31
-----
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 172.01 DOWNSTREAM(FEET) = 171.88
FLOW LENGTH(FEET) = 25.70 MANNING'S N = 0.013
DEPTH OF FLOW IN 27.0 INCH PIPE IS 20.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 6.12
ESTIMATED PIPE DIAMETER(INCH) = 27.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 19.51
PIPE TRAVEL TIME(MIN.) = 0.07 Tc(MIN.) = 5.97
LONGEST FLOWPATH FROM NODE 410.00 TO NODE 430.00 = 247.10 FEET.

*****
FLOW PROCESS FROM NODE 430.00 TO NODE 430.00 IS CODE = 1
-----
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
=====
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 5.97
RAINFALL INTENSITY(INCH/HR) = 5.59
AREA-AVERAGED Fm(INCH/HR) = 0.04
AREA-AVERAGED Fp(INCH/HR) = 0.40
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 3.88
TOTAL STREAM AREA(ACRES) = 3.88
PEAK FLOW RATE(CFS) AT CONFLUENCE = 19.51

```

** CONFLUENCE DATA **

STREAM	Q	Tc	Intensity	Fp(Fm)	Ap	Ae	HEADWATER
--------	---	----	-----------	--------	----	----	-----------

NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)		(ACRES)	NODE
1	2.78	5.38	5.934	0.40(0.04)	0.10	0.5	350.00
1	2.77	5.63	5.781	0.40(0.04)	0.10	0.5	320.00
1	2.72	5.90	5.626	0.40(0.04)	0.10	0.5	300.00
2	19.51	5.97	5.589	0.40(0.04)	0.10	3.9	410.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21.45	5.38	5.934	0.40(0.04)	0.10	4.0	350.00
2	21.80	5.63	5.781	0.40(0.04)	0.10	4.2	320.00
3	22.14	5.90	5.626	0.40(0.04)	0.10	4.3	300.00
4	22.22	5.97	5.589	0.40(0.04)	0.10	4.4	410.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 22.22 Tc(MIN.) = 5.97
EFFECTIVE AREA(ACRES) = 4.39 AREA-AVERAGED Fm(INCH/HR) = 0.04
AREA-AVERAGED Fp(INCH/HR) = 0.40 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 4.4
LONGEST FLOWPATH FROM NODE 320.00 TO NODE 430.00 = 305.30 FEET.

FLOW PROCESS FROM NODE 430.00 TO NODE 470.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 171.88 DOWNSTREAM(FEET) = 171.39
FLOW LENGTH(FEET) = 98.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 30.0 INCH PIPE IS 20.0 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 6.38
ESTIMATED PIPE DIAMETER(INCH) = 30.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 22.22
PIPE TRAVEL TIME(MIN.) = 0.26 Tc(MIN.) = 6.23
LONGEST FLOWPATH FROM NODE 320.00 TO NODE 470.00 = 403.30 FEET.

FLOW PROCESS FROM NODE 470.00 TO NODE 470.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 6.23
RAINFALL INTENSITY(INCH/HR) = 5.46
AREA-AVERAGED Fm(INCH/HR) = 0.04
AREA-AVERAGED Fp(INCH/HR) = 0.40

AREA-AVERAGED $A_p = 0.10$
EFFECTIVE STREAM AREA(ACRES) = 4.39
TOTAL STREAM AREA(ACRES) = 4.39
PEAK FLOW RATE(CFS) AT CONFLUENCE = 22.22

FLOW PROCESS FROM NODE 450.00 TO NODE 460.00 IS CODE = 21

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

INITIAL SUBAREA FLOW-LENGTH(FEET) = 220.50
ELEVATION DATA: UPSTREAM(FEET) = 178.45 DOWNSTREAM(FEET) = 174.52

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

SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 5.889

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 5.633

SUBAREA T_c AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	F_p (INCH/HR)	A_p (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	A	1.95	0.40	0.100	52	5.89

SUBAREA AVERAGE PERVIOUS LOSS RATE, F_p (INCH/HR) = 0.40

SUBAREA AVERAGE PERVIOUS AREA FRACTION, $A_p = 0.100$

SUBAREA RUNOFF(CFS) = 9.82

TOTAL AREA(ACRES) = 1.95 PEAK FLOW RATE(CFS) = 9.82

FLOW PROCESS FROM NODE 460.00 TO NODE 470.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
=====

ELEVATION DATA: UPSTREAM(FEET) = 171.58 DOWNSTREAM(FEET) = 171.39
FLOW LENGTH(FEET) = 25.70 MANNING'S N = 0.013
DEPTH OF FLOW IN 21.0 INCH PIPE IS 13.4 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 6.04
ESTIMATED PIPE DIAMETER(INCH) = 21.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 9.82
PIPE TRAVEL TIME(MIN.) = 0.07 T_c (MIN.) = 5.96
LONGEST FLOWPATH FROM NODE 450.00 TO NODE 470.00 = 246.20 FEET.

FLOW PROCESS FROM NODE 470.00 TO NODE 470.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 5.96

RAINFALL INTENSITY(INCH/HR) = 5.59
 AREA-AVERAGED Fm(INCH/HR) = 0.04
 AREA-AVERAGED Fp(INCH/HR) = 0.40
 AREA-AVERAGED Ap = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 1.95
 TOTAL STREAM AREA(ACRES) = 1.95
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 9.82

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21.45	5.64	5.777	0.40(0.04)	0.10	4.0	350.00
1	21.80	5.89	5.635	0.40(0.04)	0.10	4.2	320.00
1	22.14	6.16	5.490	0.40(0.04)	0.10	4.3	300.00
1	22.22	6.23	5.456	0.40(0.04)	0.10	4.4	410.00
2	9.82	5.96	5.595	0.40(0.04)	0.10	2.0	450.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	31.03	5.64	5.777	0.40(0.04)	0.10	5.8	350.00
2	31.57	5.89	5.635	0.40(0.04)	0.10	6.1	320.00
3	31.71	5.96	5.595	0.40(0.04)	0.10	6.2	450.00
4	31.77	6.16	5.490	0.40(0.04)	0.10	6.3	300.00
5	31.79	6.23	5.456	0.40(0.04)	0.10	6.3	410.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 31.79 Tc(MIN.) = 6.23
 EFFECTIVE AREA(ACRES) = 6.34 AREA-AVERAGED Fm(INCH/HR) = 0.04
 AREA-AVERAGED Fp(INCH/HR) = 0.40 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 6.3
 LONGEST FLOWPATH FROM NODE 320.00 TO NODE 470.00 = 403.30 FEET.

FLOW PROCESS FROM NODE 470.00 TO NODE 570.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 171.39 DOWNSTREAM(FEET) = 170.95

FLOW LENGTH(FEET) = 88.00 MANNING'S N = 0.013

DEPTH OF FLOW IN 33.0 INCH PIPE IS 23.9 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 6.91

ESTIMATED PIPE DIAMETER(INCH) = 33.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 31.79

PIPE TRAVEL TIME(MIN.) = 0.21 Tc(MIN.) = 6.44

LONGEST FLOWPATH FROM NODE 320.00 TO NODE 570.00 = 491.30 FEET.

```

*****
FLOW PROCESS FROM NODE      570.00 TO NODE      570.00 IS CODE =  12
-----
>>>>>CLEAR MEMORY BANK # 2 <<<<<
=====

*****
FLOW PROCESS FROM NODE      570.00 TO NODE      570.00 IS CODE =  10
-----
>>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
=====

*****
FLOW PROCESS FROM NODE      480.00 TO NODE      490.00 IS CODE =  21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
=====
INITIAL SUBAREA FLOW-LENGTH(FEET) =   221.70
ELEVATION DATA: UPSTREAM(FEET) =   178.46  DOWNSTREAM(FEET) =   174.52

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   5.905
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.625
SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp        Ap      SCS   Tc
    LAND USE          GROUP  (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
COMMERCIAL             A       1.95    0.40    0.100    52   5.91
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.40
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
SUBAREA RUNOFF(CFS) =      9.80
TOTAL AREA(ACRES) =      1.95  PEAK FLOW RATE(CFS) =      9.80

*****
FLOW PROCESS FROM NODE      490.00 TO NODE      500.00 IS CODE =  31
-----
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) =   172.01  DOWNSTREAM(FEET) =   171.82
FLOW LENGTH(FEET) =   38.50  MANNING'S N =  0.013
DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.6 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   5.11
ESTIMATED PIPE DIAMETER(INCH) =  21.00  NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      9.80
PIPE TRAVEL TIME(MIN.) =   0.13  Tc(MIN.) =   6.03
LONGEST FLOWPATH FROM NODE      480.00 TO NODE      500.00 =   260.20 FEET.

*****

```

FLOW PROCESS FROM NODE 500.00 TO NODE 530.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 171.82 DOWNSTREAM(FEET) = 171.48
FLOW LENGTH(FEET) = 69.30 MANNING'S N = 0.013
DEPTH OF FLOW IN 21.0 INCH PIPE IS 15.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 5.09
ESTIMATED PIPE DIAMETER(INCH) = 21.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 9.80
PIPE TRAVEL TIME(MIN.) = 0.23 Tc(MIN.) = 6.26
LONGEST FLOWPATH FROM NODE 480.00 TO NODE 530.00 = 329.50 FEET.

FLOW PROCESS FROM NODE 530.00 TO NODE 530.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 6.26
RAINFALL INTENSITY(INCH/HR) = 5.44
AREA-AVERAGED Fm(INCH/HR) = 0.04
AREA-AVERAGED Fp(INCH/HR) = 0.40
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 1.95
TOTAL STREAM AREA(ACRES) = 1.95
PEAK FLOW RATE(CFS) AT CONFLUENCE = 9.80

FLOW PROCESS FROM NODE 510.00 TO NODE 520.00 IS CODE = 21

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

INITIAL SUBAREA FLOW-LENGTH(FEET) = 221.00
ELEVATION DATA: UPSTREAM(FEET) = 178.45 DOWNSTREAM(FEET) = 174.52

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

SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.897

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 5.629

SUBAREA Tc AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	A	1.95	0.40	0.100	52	5.90

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.40

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100

SUBAREA RUNOFF(CFS) = 9.81

TOTAL AREA(ACRES) = 1.95 PEAK FLOW RATE(CFS) = 9.81

 FLOW PROCESS FROM NODE 520.00 TO NODE 530.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
 =====

ELEVATION DATA: UPSTREAM(FEET) = 171.61 DOWNSTREAM(FEET) = 171.48
 FLOW LENGTH(FEET) = 25.70 MANNING'S N = 0.013
 DEPTH OF FLOW IN 21.0 INCH PIPE IS 15.5 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 5.16
 ESTIMATED PIPE DIAMETER(INCH) = 21.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 9.81
 PIPE TRAVEL TIME(MIN.) = 0.08 Tc(MIN.) = 5.98
 LONGEST FLOWPATH FROM NODE 510.00 TO NODE 530.00 = 246.70 FEET.

 FLOW PROCESS FROM NODE 530.00 TO NODE 530.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 5.98
 RAINFALL INTENSITY(INCH/HR) = 5.58
 AREA-AVERAGED Fm(INCH/HR) = 0.04
 AREA-AVERAGED Fp(INCH/HR) = 0.40
 AREA-AVERAGED Ap = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 1.95
 TOTAL STREAM AREA(ACRES) = 1.95
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 9.81

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	9.80	6.26	5.441	0.40(0.04)	0.10	2.0	480.00
2	9.81	5.98	5.584	0.40(0.04)	0.10	2.0	510.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19.42	5.98	5.584	0.40(0.04)	0.10	3.8	510.00
2	19.36	6.26	5.441	0.40(0.04)	0.10	3.9	480.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 19.42 Tc(MIN.) = 5.98

EFFECTIVE AREA(ACRES) = 3.81 AREA-AVERAGED Fm(INCH/HR) = 0.04
AREA-AVERAGED Fp(INCH/HR) = 0.40 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 3.9
LONGEST FLOWPATH FROM NODE 480.00 TO NODE 530.00 = 329.50 FEET.

FLOW PROCESS FROM NODE 530.00 TO NODE 560.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 171.48 DOWNSTREAM(FEET) = 171.00
FLOW LENGTH(FEET) = 98.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 27.0 INCH PIPE IS 20.4 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 6.03
ESTIMATED PIPE DIAMETER(INCH) = 27.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 19.42
PIPE TRAVEL TIME(MIN.) = 0.27 Tc(MIN.) = 6.25
LONGEST FLOWPATH FROM NODE 480.00 TO NODE 560.00 = 427.50 FEET.

FLOW PROCESS FROM NODE 560.00 TO NODE 560.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 6.25
RAINFALL INTENSITY(INCH/HR) = 5.44
AREA-AVERAGED Fm(INCH/HR) = 0.04
AREA-AVERAGED Fp(INCH/HR) = 0.40
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 3.81
TOTAL STREAM AREA(ACRES) = 3.90
PEAK FLOW RATE(CFS) AT CONFLUENCE = 19.42

FLOW PROCESS FROM NODE 540.00 TO NODE 550.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 220.70
ELEVATION DATA: UPSTREAM(FEET) = 178.45 DOWNSTREAM(FEET) = 174.52

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.892
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 5.632
SUBAREA Tc AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/	SCS SOIL	AREA	Fp	Ap	SCS	Tc
-------------------	----------	------	----	----	-----	----

LAND USE	GROUP	(ACRES)	(INCH/HR)	(DECIMAL)	CN	(MIN.)
COMMERCIAL	A	1.95	0.40	0.100	52	5.89

SUBAREA AVERAGE PERVIOUS LOSS RATE, F_p (INCH/HR) = 0.40
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100
 SUBAREA RUNOFF(CFS) = 9.81
 TOTAL AREA(ACRES) = 1.95 PEAK FLOW RATE(CFS) = 9.81

FLOW PROCESS FROM NODE 550.00 TO NODE 560.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

ELEVATION DATA: UPSTREAM(Feet) = 171.51 DOWNSTREAM(Feet) = 171.00
 FLOW LENGTH(Feet) = 25.70 MANNING'S N = 0.013
 DEPTH OF FLOW IN 18.0 INCH PIPE IS 10.9 INCHES
 PIPE-FLOW VELOCITY(Feet/Sec.) = 8.78
 ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 9.81
 PIPE TRAVEL TIME(MIN.) = 0.05 T_c (MIN.) = 5.94
 LONGEST FLOWPATH FROM NODE 540.00 TO NODE 560.00 = 246.40 FEET.

FLOW PROCESS FROM NODE 560.00 TO NODE 560.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 5.94
 RAINFALL INTENSITY(INCH/HR) = 5.61
 AREA-AVERAGED F_m (INCH/HR) = 0.04
 AREA-AVERAGED F_p (INCH/HR) = 0.40
 AREA-AVERAGED A_p = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 1.95
 TOTAL STREAM AREA(ACRES) = 1.95
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 9.81

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	T_c (MIN.)	Intensity (INCH/HR)	$F_p(F_m)$ (INCH/HR)	A_p	A_e (ACRES)	HEADWATER NODE
1	19.42	6.25	5.444	0.40(0.04)	0.10	3.8	510.00
1	19.36	6.53	5.310	0.40(0.04)	0.10	3.9	480.00
2	9.81	5.94	5.605	0.40(0.04)	0.10	2.0	540.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	28.82	5.94	5.605	0.40(0.04)	0.10	5.6	540.00
2	28.95	6.25	5.444	0.40(0.04)	0.10	5.8	510.00
3	28.65	6.53	5.310	0.40(0.04)	0.10	5.9	480.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 28.95 Tc(MIN.) = 6.25
EFFECTIVE AREA(ACRES) = 5.76 AREA-AVERAGED Fm(INCH/HR) = 0.04
AREA-AVERAGED Fp(INCH/HR) = 0.40 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 5.9
LONGEST FLOWPATH FROM NODE 480.00 TO NODE 560.00 = 427.50 FEET.

FLOW PROCESS FROM NODE 560.00 TO NODE 570.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 171.00 DOWNSTREAM(FEET) = 170.95
FLOW LENGTH(FEET) = 10.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 33.0 INCH PIPE IS 22.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 6.81
ESTIMATED PIPE DIAMETER(INCH) = 33.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 28.95
PIPE TRAVEL TIME(MIN.) = 0.02 Tc(MIN.) = 6.28
LONGEST FLOWPATH FROM NODE 480.00 TO NODE 570.00 = 437.50 FEET.

FLOW PROCESS FROM NODE 570.00 TO NODE 570.00 IS CODE = 11

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

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	28.82	5.97	5.592	0.40(0.04)	0.10	5.6	540.00
2	28.95	6.28	5.432	0.40(0.04)	0.10	5.8	510.00
3	28.65	6.55	5.299	0.40(0.04)	0.10	5.9	480.00

LONGEST FLOWPATH FROM NODE 480.00 TO NODE 570.00 = 437.50 FEET.

** MEMORY BANK # 2 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	31.03	5.85	5.655	0.40(0.04)	0.10	5.8	350.00
2	31.57	6.10	5.521	0.40(0.04)	0.10	6.1	320.00
3	31.71	6.17	5.484	0.40(0.04)	0.10	6.2	450.00
4	31.77	6.37	5.385	0.40(0.04)	0.10	6.3	300.00
5	31.79	6.44	5.353	0.40(0.04)	0.10	6.3	410.00

LONGEST FLOWPATH FROM NODE 320.00 TO NODE 570.00 = 491.30 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	59.62	5.85	5.655	0.40(0.04)	0.10	11.3	350.00
2	60.11	5.97	5.592	0.40(0.04)	0.10	11.5	540.00
3	60.45	6.10	5.521	0.40(0.04)	0.10	11.7	320.00
4	60.62	6.17	5.484	0.40(0.04)	0.10	11.9	450.00
5	60.70	6.28	5.432	0.40(0.04)	0.10	12.0	510.00
6	60.62	6.37	5.385	0.40(0.04)	0.10	12.1	300.00
7	60.56	6.44	5.353	0.40(0.04)	0.10	12.2	410.00
8	60.12	6.55	5.299	0.40(0.04)	0.10	12.2	480.00
TOTAL AREA(ACRES) =		12.2					

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 60.70 Tc(MIN.) = 6.275
EFFECTIVE AREA(ACRES) = 11.99 AREA-AVERAGED Fm(INCH/HR) = 0.04
AREA-AVERAGED Fp(INCH/HR) = 0.40 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 12.2
LONGEST FLOWPATH FROM NODE 320.00 TO NODE 570.00 = 491.30 FEET.

FLOW PROCESS FROM NODE 570.00 TO NODE 580.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 170.95 DOWNSTREAM(FEET) = 170.65
FLOW LENGTH(FEET) = 56.10 MANNING'S N = 0.013
DEPTH OF FLOW IN 42.0 INCH PIPE IS 29.6 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 8.36
ESTIMATED PIPE DIAMETER(INCH) = 42.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 60.70
PIPE TRAVEL TIME(MIN.) = 0.11 Tc(MIN.) = 6.39
LONGEST FLOWPATH FROM NODE 320.00 TO NODE 580.00 = 547.40 FEET.

FLOW PROCESS FROM NODE 580.00 TO NODE 580.00 IS CODE = 11

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

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	59.62	5.96	5.594	0.40(0.04)	0.10	11.3	350.00
2	60.11	6.08	5.533	0.40(0.04)	0.10	11.5	540.00
3	60.45	6.21	5.464	0.40(0.04)	0.10	11.7	320.00
4	60.62	6.28	5.428	0.40(0.04)	0.10	11.9	450.00

5	60.70	6.39	5.377	0.40(0.04)	0.10	12.0	510.00
6	60.62	6.48	5.331	0.40(0.04)	0.10	12.1	300.00
7	60.56	6.55	5.300	0.40(0.04)	0.10	12.2	410.00
8	60.12	6.67	5.248	0.40(0.04)	0.10	12.2	480.00

LONGEST FLOWPATH FROM NODE 320.00 TO NODE 580.00 = 547.40 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	47.92	5.69	5.746	0.40(0.04)	0.10	8.8	220.00
2	49.09	6.12	5.511	0.40(0.04)	0.10	9.4	270.00
3	49.09	6.15	5.497	0.40(0.04)	0.10	9.4	320.00
4	49.05	6.17	5.484	0.40(0.04)	0.10	9.4	150.00
5	49.00	6.20	5.470	0.40(0.04)	0.10	9.5	180.00
6	48.50	6.49	5.330	0.40(0.04)	0.10	9.6	300.00
7	48.33	6.54	5.307	0.40(0.04)	0.10	9.6	240.00
8	47.57	6.77	5.202	0.40(0.04)	0.10	9.7	70.00
9	47.51	6.79	5.193	0.40(0.04)	0.10	9.7	120.00
10	47.01	6.93	5.131	0.40(0.04)	0.10	9.7	30.00
11	46.23	7.16	5.038	0.40(0.04)	0.10	9.7	10.00
12	42.94	8.20	4.659	0.40(0.04)	0.10	9.8	100.00

LONGEST FLOWPATH FROM NODE 100.00 TO NODE 580.00 = 924.80 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	106.37	5.69	5.746	0.40(0.04)	0.10	19.6	220.00
2	108.28	5.96	5.594	0.40(0.04)	0.10	20.5	350.00
3	109.08	6.08	5.533	0.40(0.04)	0.10	20.9	540.00
4	109.30	6.12	5.511	0.40(0.04)	0.10	21.0	270.00
5	109.37	6.15	5.497	0.40(0.04)	0.10	21.1	320.00
6	109.40	6.17	5.484	0.40(0.04)	0.10	21.1	150.00
7	109.42	6.20	5.470	0.40(0.04)	0.10	21.2	180.00
8	109.43	6.21	5.464	0.40(0.04)	0.10	21.2	320.00
9	109.47	6.28	5.428	0.40(0.04)	0.10	21.4	450.00
10	109.37	6.39	5.377	0.40(0.04)	0.10	21.6	510.00
11	109.12	6.48	5.331	0.40(0.04)	0.10	21.7	300.00
12	109.11	6.49	5.330	0.40(0.04)	0.10	21.7	300.00
13	108.91	6.54	5.307	0.40(0.04)	0.10	21.8	240.00
14	108.85	6.55	5.300	0.40(0.04)	0.10	21.8	410.00
15	108.02	6.67	5.248	0.40(0.04)	0.10	21.8	480.00
16	107.16	6.77	5.202	0.40(0.04)	0.10	21.9	70.00
17	106.99	6.79	5.193	0.40(0.04)	0.10	21.9	120.00
18	105.78	6.93	5.131	0.40(0.04)	0.10	21.9	30.00
19	103.93	7.16	5.038	0.40(0.04)	0.10	21.9	10.00
20	96.25	8.20	4.659	0.40(0.04)	0.10	22.0	100.00

TOTAL AREA(ACRES) = 22.0

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 109.47 Tc(MIN.) = 6.284

EFFECTIVE AREA(ACRES) = 21.36 AREA-AVERAGED Fm(INCH/HR) = 0.04
 AREA-AVERAGED Fp(INCH/HR) = 0.40 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 22.0
 LONGEST FLOWPATH FROM NODE 100.00 TO NODE 580.00 = 924.80 FEET.

=====

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 22.0 TC(MIN.) = 6.28
 EFFECTIVE AREA(ACRES) = 21.36 AREA-AVERAGED Fm(INCH/HR)= 0.04
 AREA-AVERAGED Fp(INCH/HR) = 0.40 AREA-AVERAGED Ap = 0.100
 PEAK FLOW RATE(CFS) = 109.47

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	106.37	5.69	5.746	0.40(0.04)	0.10	19.6	220.00
2	108.28	5.96	5.594	0.40(0.04)	0.10	20.5	350.00
3	109.08	6.08	5.533	0.40(0.04)	0.10	20.9	540.00
4	109.30	6.12	5.511	0.40(0.04)	0.10	21.0	270.00
5	109.37	6.15	5.497	0.40(0.04)	0.10	21.1	320.00
6	109.40	6.17	5.484	0.40(0.04)	0.10	21.1	150.00
7	109.42	6.20	5.470	0.40(0.04)	0.10	21.2	180.00
8	109.43	6.21	5.464	0.40(0.04)	0.10	21.2	320.00
9	109.47	6.28	5.428	0.40(0.04)	0.10	21.4	450.00
10	109.37	6.39	5.377	0.40(0.04)	0.10	21.6	510.00
11	109.12	6.48	5.331	0.40(0.04)	0.10	21.7	300.00
12	109.11	6.49	5.330	0.40(0.04)	0.10	21.7	300.00
13	108.91	6.54	5.307	0.40(0.04)	0.10	21.8	240.00
14	108.85	6.55	5.300	0.40(0.04)	0.10	21.8	410.00
15	108.02	6.67	5.248	0.40(0.04)	0.10	21.8	480.00
16	107.16	6.77	5.202	0.40(0.04)	0.10	21.9	70.00
17	106.99	6.79	5.193	0.40(0.04)	0.10	21.9	120.00
18	105.78	6.93	5.131	0.40(0.04)	0.10	21.9	30.00
19	103.93	7.16	5.038	0.40(0.04)	0.10	21.9	10.00
20	96.25	8.20	4.659	0.40(0.04)	0.10	22.0	100.00

=====

END OF RATIONAL METHOD ANALYSIS



RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
(c) Copyright 1983-2016 Advanced Engineering Software (aes)
Ver. 23.0 Release Date: 07/01/2016 License ID 1334

Analysis prepared by:

***** DESCRIPTION OF STUDY *****

* SP8454 - FULLERTON *
* GOODMAN LOGISTICS CENTER *
* BASIN B - 25 YEAR PEAK FLOW *

FILE NAME: GLC25B.DAT
TIME/DATE OF STUDY: 14:51 04/27/2021

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--*TIME-OF-CONCENTRATION MODEL*--

USER SPECIFIED STORM EVENT(YEAR) = 25.00
SPECIFIED MINIMUM PIPE SIZE(INCH) = 4.00
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
DATA BANK RAINFALL USED
ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD

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

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL: IN- / OUT-/PARK- SIDE / SIDE/ WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH LIP HIKE (FT) (FT) (FT)	MANNING FACTOR (n)
1	32.0	20.0	0.200/0.200/0.020	0.67	2.00 0.0313 0.167	0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

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

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

*USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

FLOW PROCESS FROM NODE 10.00 TO NODE 20.00 IS CODE = 21

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

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 271.20

ELEVATION DATA: UPSTREAM(FEET) = 182.46 DOWNSTREAM(FEET) = 179.77

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

SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 7.193

* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 3.926

SUBAREA T_c AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	B	0.38	0.30	0.100	56	7.19

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

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100

SUBAREA RUNOFF(CFS) = 1.33

TOTAL AREA(ACRES) = 0.38 PEAK FLOW RATE(CFS) = 1.33

FLOW PROCESS FROM NODE 20.00 TO NODE 50.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 176.23 DOWNSTREAM(FEET) = 175.94

FLOW LENGTH(FEET) = 28.70 MANNING'S N = 0.013

DEPTH OF FLOW IN 9.0 INCH PIPE IS 6.2 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 4.09

ESTIMATED PIPE DIAMETER(INCH) = 9.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 1.33

PIPE TRAVEL TIME(MIN.) = 0.12 T_c (MIN.) = 7.31

LONGEST FLOWPATH FROM NODE 10.00 TO NODE 50.00 = 299.90 FEET.

FLOW PROCESS FROM NODE 50.00 TO NODE 50.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:

TIME OF CONCENTRATION(MIN.) = 7.31

RAINFALL INTENSITY(INCH/HR) = 3.89

AREA-AVERAGED Fm(INCH/HR) = 0.03

AREA-AVERAGED Fp(INCH/HR) = 0.30

AREA-AVERAGED Ap = 0.10

EFFECTIVE STREAM AREA(ACRES) = 0.38

TOTAL STREAM AREA(ACRES) = 0.38

PEAK FLOW RATE(CFS) AT CONFLUENCE = 1.33

FLOW PROCESS FROM NODE 30.00 TO NODE 40.00 IS CODE = 21

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

INITIAL SUBAREA FLOW-LENGTH(FEET) = 109.60
ELEVATION DATA: UPSTREAM(FEET) = 181.93 DOWNSTREAM(FEET) = 178.99

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

SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 5.000

* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.824

SUBAREA T_c AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	B	0.11	0.30	0.100	56	5.00

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

SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100

SUBAREA RUNOFF(CFS) = 0.47

TOTAL AREA(ACRES) = 0.11 PEAK FLOW RATE(CFS) = 0.47

FLOW PROCESS FROM NODE 40.00 TO NODE 50.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
=====

ELEVATION DATA: UPSTREAM(FEET) = 176.04 DOWNSTREAM(FEET) = 175.94

FLOW LENGTH(FEET) = 19.80 MANNING'S N = 0.013

DEPTH OF FLOW IN 9.0 INCH PIPE IS 4.0 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 2.47

ESTIMATED PIPE DIAMETER(INCH) = 9.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 0.47

PIPE TRAVEL TIME(MIN.) = 0.13 T_c (MIN.) = 5.13

LONGEST FLOWPATH FROM NODE 30.00 TO NODE 50.00 = 129.40 FEET.

FLOW PROCESS FROM NODE 50.00 TO NODE 50.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 2

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:

TIME OF CONCENTRATION(MIN.) = 5.13

RAINFALL INTENSITY(INCH/HR) = 4.75

AREA-AVERAGED F_m (INCH/HR) = 0.03

AREA-AVERAGED F_p (INCH/HR) = 0.30

AREA-AVERAGED A_p = 0.10

EFFECTIVE STREAM AREA(ACRES) = 0.11

TOTAL STREAM AREA(ACRES) = 0.11
PEAK FLOW RATE(CFS) AT CONFLUENCE = 0.47

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1.33	7.31	3.891	0.30(0.03)	0.10	0.4	10.00
2	0.47	5.13	4.752	0.30(0.03)	0.10	0.1	30.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1.62	5.13	4.752	0.30(0.03)	0.10	0.4	30.00
2	1.72	7.31	3.891	0.30(0.03)	0.10	0.5	10.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 1.72 Tc(MIN.) = 7.31
EFFECTIVE AREA(ACRES) = 0.49 AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 0.5
LONGEST FLOWPATH FROM NODE 10.00 TO NODE 50.00 = 299.90 FEET.

FLOW PROCESS FROM NODE 50.00 TO NODE 120.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 175.94 DOWNSTREAM(FEET) = 175.34

FLOW LENGTH(FEET) = 58.10 MANNING'S N = 0.013

DEPTH OF FLOW IN 12.0 INCH PIPE IS 5.9 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 4.46

ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 1.72

PIPE TRAVEL TIME(MIN.) = 0.22 Tc(MIN.) = 7.53

LONGEST FLOWPATH FROM NODE 10.00 TO NODE 120.00 = 358.00 FEET.

FLOW PROCESS FROM NODE 120.00 TO NODE 120.00 IS CODE = 10

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

FLOW PROCESS FROM NODE 60.00 TO NODE 70.00 IS CODE = 21

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

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 186.00
ELEVATION DATA: UPSTREAM(FEET) = 184.34 DOWNSTREAM(FEET) = 181.00

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$
SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 5.493
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.574
SUBAREA T_c AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	F_p (INCH/HR)	A_p (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	B	0.30	0.30	0.100	56	5.49

SUBAREA AVERAGE PERVIOUS LOSS RATE, F_p (INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100
SUBAREA RUNOFF(CFS) = 1.23
TOTAL AREA(ACRES) = 0.30 PEAK FLOW RATE(CFS) = 1.23

FLOW PROCESS FROM NODE 70.00 TO NODE 90.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 177.55 DOWNSTREAM(FEET) = 177.36
FLOW LENGTH(FEET) = 64.80 MANNING'S N = 0.013
DEPTH OF FLOW IN 12.0 INCH PIPE IS 7.1 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 2.55
ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 1.23
PIPE TRAVEL TIME(MIN.) = 0.42 T_c (MIN.) = 5.92
LONGEST FLOWPATH FROM NODE 60.00 TO NODE 90.00 = 250.80 FEET.

FLOW PROCESS FROM NODE 90.00 TO NODE 90.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 5.92
RAINFALL INTENSITY(INCH/HR) = 4.38
AREA-AVERAGED F_m (INCH/HR) = 0.03
AREA-AVERAGED F_p (INCH/HR) = 0.30
AREA-AVERAGED A_p = 0.10
EFFECTIVE STREAM AREA(ACRES) = 0.30
TOTAL STREAM AREA(ACRES) = 0.30
PEAK FLOW RATE(CFS) AT CONFLUENCE = 1.23

FLOW PROCESS FROM NODE 80.00 TO NODE 90.00 IS CODE = 21

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

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 113.10

ELEVATION DATA: UPSTREAM(FEET) = 183.25 DOWNSTREAM(FEET) = 179.41

$T_c = K * [(LENGTH^{**} 3.00) / (ELEVATION\ CHANGE)]^{**} 0.20$

SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 5.000

* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.824

SUBAREA T_c AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	B	0.15	0.30	0.100	56	5.00

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

SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100

SUBAREA RUNOFF(CFS) = 0.65

TOTAL AREA(ACRES) = 0.15 PEAK FLOW RATE(CFS) = 0.65

FLOW PROCESS FROM NODE 90.00 TO NODE 90.00 IS CODE = 1

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

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

=====

TOTAL NUMBER OF STREAMS = 2

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:

TIME OF CONCENTRATION(MIN.) = 5.00

RAINFALL INTENSITY(INCH/HR) = 4.82

AREA-AVERAGED F_m (INCH/HR) = 0.03

AREA-AVERAGED F_p (INCH/HR) = 0.30

AREA-AVERAGED A_p = 0.10

EFFECTIVE STREAM AREA(ACRES) = 0.15

TOTAL STREAM AREA(ACRES) = 0.15

PEAK FLOW RATE(CFS) AT CONFLUENCE = 0.65

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	T_c (MIN.)	Intensity (INCH/HR)	$F_p(F_m)$ (INCH/HR)	A_p	A_e (ACRES)	HEADWATER NODE
1	1.23	5.92	4.385	0.30(0.03)	0.10	0.3	60.00
2	0.65	5.00	4.824	0.30(0.03)	0.10	0.2	80.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO

CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	T_c (MIN.)	Intensity (INCH/HR)	$F_p(F_m)$ (INCH/HR)	A_p	A_e (ACRES)	HEADWATER NODE
1	1.79	5.00	4.824	0.30(0.03)	0.10	0.4	80.00
2	1.81	5.92	4.385	0.30(0.03)	0.10	0.5	60.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 1.81 Tc(MIN.) = 5.92
EFFECTIVE AREA(ACRES) = 0.45 AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 0.5
LONGEST FLOWPATH FROM NODE 60.00 TO NODE 90.00 = 250.80 FEET.

FLOW PROCESS FROM NODE 90.00 TO NODE 110.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 177.36 DOWNSTREAM(FEET) = 176.74
FLOW LENGTH(FEET) = 123.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 12.0 INCH PIPE IS 7.6 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 3.44
ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 1.81
PIPE TRAVEL TIME(MIN.) = 0.60 Tc(MIN.) = 6.51
LONGEST FLOWPATH FROM NODE 60.00 TO NODE 110.00 = 373.80 FEET.

FLOW PROCESS FROM NODE 110.00 TO NODE 110.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 6.51
RAINFALL INTENSITY(INCH/HR) = 4.15
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 0.45
TOTAL STREAM AREA(ACRES) = 0.45
PEAK FLOW RATE(CFS) AT CONFLUENCE = 1.81

FLOW PROCESS FROM NODE 100.00 TO NODE 110.00 IS CODE = 21

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

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 132.20
ELEVATION DATA: UPSTREAM(FEET) = 182.26 DOWNSTREAM(FEET) = 174.41

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

SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.000

* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.824
 SUBAREA Tc AND LOSS RATE DATA(AMC II):
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS Tc
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
 COMMERCIAL B 0.12 0.30 0.100 56 5.00
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
 SUBAREA RUNOFF(CFS) = 0.52
 TOTAL AREA(ACRES) = 0.12 PEAK FLOW RATE(CFS) = 0.52

FLOW PROCESS FROM NODE 110.00 TO NODE 110.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 5.00
 RAINFALL INTENSITY(INCH/HR) = 4.82
 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 0.12
 TOTAL STREAM AREA(ACRES) = 0.12
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 0.52

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1.79	5.60	4.525	0.30(0.03)	0.10	0.4	80.00
1	1.81	6.51	4.153	0.30(0.03)	0.10	0.5	60.00
2	0.52	5.00	4.824	0.30(0.03)	0.10	0.1	100.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2.22	5.00	4.824	0.30(0.03)	0.10	0.5	100.00
2	2.27	5.60	4.525	0.30(0.03)	0.10	0.5	80.00
3	2.26	6.51	4.153	0.30(0.03)	0.10	0.6	60.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 2.27 Tc(MIN.) = 5.60
 EFFECTIVE AREA(ACRES) = 0.52 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 0.6
 LONGEST FLOWPATH FROM NODE 60.00 TO NODE 110.00 = 373.80 FEET.

FLOW PROCESS FROM NODE 110.00 TO NODE 120.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 176.74 DOWNSTREAM(FEET) = 175.94
FLOW LENGTH(FEET) = 35.90 MANNING'S N = 0.013
DEPTH OF FLOW IN 9.0 INCH PIPE IS 7.0 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 6.20
ESTIMATED PIPE DIAMETER(INCH) = 9.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 2.27
PIPE TRAVEL TIME(MIN.) = 0.10 Tc(MIN.) = 5.69
LONGEST FLOWPATH FROM NODE 60.00 TO NODE 120.00 = 409.70 FEET.

FLOW PROCESS FROM NODE 120.00 TO NODE 120.00 IS CODE = 11

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

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2.22	5.10	4.772	0.30(0.03)	0.10	0.5	100.00
2	2.27	5.69	4.481	0.30(0.03)	0.10	0.5	80.00
3	2.26	6.61	4.118	0.30(0.03)	0.10	0.6	60.00

LONGEST FLOWPATH FROM NODE 60.00 TO NODE 120.00 = 409.70 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1.62	5.36	4.636	0.30(0.03)	0.10	0.4	30.00
2	1.72	7.53	3.827	0.30(0.03)	0.10	0.5	10.00

LONGEST FLOWPATH FROM NODE 10.00 TO NODE 120.00 = 358.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	3.81	5.10	4.772	0.30(0.03)	0.10	0.8	100.00
2	3.86	5.36	4.636	0.30(0.03)	0.10	0.9	30.00
3	3.91	5.69	4.481	0.30(0.03)	0.10	0.9	80.00
4	3.94	6.61	4.118	0.30(0.03)	0.10	1.0	60.00
5	3.82	7.53	3.827	0.30(0.03)	0.10	1.1	10.00

TOTAL AREA(ACRES) = 1.1

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 3.94 Tc(MIN.) = 6.611

EFFECTIVE AREA(ACRES) = 1.01 AREA-AVERAGED Fm(INCH/HR) = 0.03

AREA-AVERAGED F_p (INCH/HR) = 0.30 AREA-AVERAGED A_p = 0.10
TOTAL AREA(ACRES) = 1.1
LONGEST FLOWPATH FROM NODE 60.00 TO NODE 120.00 = 409.70 FEET.

FLOW PROCESS FROM NODE 120.00 TO NODE 170.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET)	=	175.94	DOWNSTREAM(FEET)	=	174.18
FLOW LENGTH(FEET)	=	113.40	MANNING'S N	=	0.013
DEPTH OF FLOW IN 12.0 INCH PIPE IS		9.0 INCHES			
PIPE-FLOW VELOCITY(FEET/SEC.)	=	6.24			
ESTIMATED PIPE DIAMETER(INCH)	=	12.00	NUMBER OF PIPES	=	1
PIPE-FLOW(CFS)	=	3.94			
PIPE TRAVEL TIME(MIN.)	=	0.30	T_c (MIN.)	=	6.91
LONGEST FLOWPATH FROM NODE 60.00 TO NODE 170.00	=	523.10 FEET.			

FLOW PROCESS FROM NODE 170.00 TO NODE 170.00 IS CODE = 10

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

FLOW PROCESS FROM NODE 130.00 TO NODE 140.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET)	=	78.40					
ELEVATION DATA: UPSTREAM(FEET)	=	182.17	DOWNSTREAM(FEET)	=	179.15		

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$
SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 5.000
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.824
SUBAREA T_c AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	F_p (INCH/HR)	A_p (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	B	0.04	0.30	0.100	56	5.00

SUBAREA AVERAGE PERVIOUS LOSS RATE, F_p (INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100
SUBAREA RUNOFF(CFS) = 0.17
TOTAL AREA(ACRES) = 0.04 PEAK FLOW RATE(CFS) = 0.17

FLOW PROCESS FROM NODE 140.00 TO NODE 160.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 175.49 DOWNSTREAM(FEET) = 174.78
FLOW LENGTH(FEET) = 69.20 MANNING'S N = 0.013
DEPTH OF FLOW IN 6.0 INCH PIPE IS 2.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 2.45
ESTIMATED PIPE DIAMETER(INCH) = 6.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 0.17
PIPE TRAVEL TIME(MIN.) = 0.47 Tc(MIN.) = 5.47
LONGEST FLOWPATH FROM NODE 130.00 TO NODE 160.00 = 147.60 FEET.

FLOW PROCESS FROM NODE 160.00 TO NODE 160.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 5.47
RAINFALL INTENSITY(INCH/HR) = 4.58
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 0.04
TOTAL STREAM AREA(ACRES) = 0.04
PEAK FLOW RATE(CFS) AT CONFLUENCE = 0.17

FLOW PROCESS FROM NODE 150.00 TO NODE 160.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 110.10
ELEVATION DATA: UPSTREAM(FEET) = 182.41 DOWNSTREAM(FEET) = 178.97

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.000
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.824
SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	B	0.14	0.30	0.100	56	5.00

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 0.60
TOTAL AREA(ACRES) = 0.14 PEAK FLOW RATE(CFS) = 0.60

FLOW PROCESS FROM NODE 160.00 TO NODE 160.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 5.00
 RAINFALL INTENSITY(INCH/HR) = 4.82
 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 0.14
 TOTAL STREAM AREA(ACRES) = 0.14
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 0.60

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	0.17	5.47	4.584	0.30(0.03)	0.10	0.0	130.00
2	0.60	5.00	4.824	0.30(0.03)	0.10	0.1	150.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	0.77	5.00	4.824	0.30(0.03)	0.10	0.2	150.00
2	0.75	5.47	4.584	0.30(0.03)	0.10	0.2	130.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 0.77 Tc(MIN.) = 5.00
 EFFECTIVE AREA(ACRES) = 0.18 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 0.2
 LONGEST FLOWPATH FROM NODE 130.00 TO NODE 160.00 = 147.60 FEET.

FLOW PROCESS FROM NODE 160.00 TO NODE 170.00 IS CODE = 31

 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
 =====

ELEVATION DATA: UPSTREAM(Feet) = 174.78 DOWNSTREAM(Feet) = 174.18
 FLOW LENGTH(Feet) = 61.40 MANNING'S N = 0.013
 DEPTH OF FLOW IN 9.0 INCH PIPE IS 4.4 INCHES
 PIPE-FLOW VELOCITY(Feet/Sec.) = 3.59
 ESTIMATED PIPE DIAMETER(INCH) = 9.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 0.77
 PIPE TRAVEL TIME(MIN.) = 0.29 Tc(MIN.) = 5.29

LONGEST FLOWPATH FROM NODE 130.00 TO NODE 170.00 = 209.00 FEET.

FLOW PROCESS FROM NODE 170.00 TO NODE 170.00 IS CODE = 11

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

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	0.77	5.29	4.675	0.30(0.03)	0.10	0.2	150.00
2	0.75	5.76	4.454	0.30(0.03)	0.10	0.2	130.00

LONGEST FLOWPATH FROM NODE 130.00 TO NODE 170.00 = 209.00 FEET.

** MEMORY BANK # 2 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	3.81	5.40	4.618	0.30(0.03)	0.10	0.8	100.00
2	3.86	5.67	4.494	0.30(0.03)	0.10	0.9	30.00
3	3.91	6.00	4.352	0.30(0.03)	0.10	0.9	80.00
4	3.94	6.91	4.015	0.30(0.03)	0.10	1.0	60.00
5	3.82	7.83	3.742	0.30(0.03)	0.10	1.1	10.00

LONGEST FLOWPATH FROM NODE 60.00 TO NODE 170.00 = 523.10 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	4.54	5.29	4.675	0.30(0.03)	0.10	1.0	150.00
2	4.57	5.40	4.618	0.30(0.03)	0.10	1.0	100.00
3	4.61	5.67	4.494	0.30(0.03)	0.10	1.1	30.00
4	4.62	5.76	4.454	0.30(0.03)	0.10	1.1	130.00
5	4.64	6.00	4.352	0.30(0.03)	0.10	1.1	80.00
6	4.61	6.91	4.015	0.30(0.03)	0.10	1.2	60.00
7	4.45	7.83	3.742	0.30(0.03)	0.10	1.2	10.00

TOTAL AREA(ACRES) = 1.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 4.64 Tc(MIN.) = 5.998
EFFECTIVE AREA(ACRES) = 1.10 AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 1.2
LONGEST FLOWPATH FROM NODE 60.00 TO NODE 170.00 = 523.10 FEET.

FLOW PROCESS FROM NODE 170.00 TO NODE 200.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
=====

ELEVATION DATA: UPSTREAM(FEET) = 174.18 DOWNSTREAM(FEET) = 173.85
 FLOW LENGTH(FEET) = 33.00 MANNING'S N = 0.013
 DEPTH OF FLOW IN 15.0 INCH PIPE IS 9.6 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 5.61
 ESTIMATED PIPE DIAMETER(INCH) = 15.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 4.64
 PIPE TRAVEL TIME(MIN.) = 0.10 Tc(MIN.) = 6.10
 LONGEST FLOWPATH FROM NODE 60.00 TO NODE 200.00 = 556.10 FEET.

FLOW PROCESS FROM NODE 200.00 TO NODE 200.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
 TIME OF CONCENTRATION(MIN.) = 6.10
 RAINFALL INTENSITY(INCH/HR) = 4.31
 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 1.10
 TOTAL STREAM AREA(ACRES) = 1.24
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 4.64

FLOW PROCESS FROM NODE 180.00 TO NODE 190.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 143.70
 ELEVATION DATA: UPSTREAM(FEET) = 180.13 DOWNSTREAM(FEET) = 178.49

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.425
 * 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.606
 SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	B	0.21	0.30	0.100	56	5.42

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
 SUBAREA RUNOFF(CFS) = 0.86
 TOTAL AREA(ACRES) = 0.21 PEAK FLOW RATE(CFS) = 0.86

FLOW PROCESS FROM NODE 190.00 TO NODE 200.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 174.47 DOWNSTREAM(FEET) = 173.85
FLOW LENGTH(FEET) = 8.90 MANNING'S N = 0.013
DEPTH OF FLOW IN 6.0 INCH PIPE IS 3.4 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 7.66
ESTIMATED PIPE DIAMETER(INCH) = 6.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 0.86
PIPE TRAVEL TIME(MIN.) = 0.02 Tc(MIN.) = 5.44
LONGEST FLOWPATH FROM NODE 180.00 TO NODE 200.00 = 152.60 FEET.

FLOW PROCESS FROM NODE 200.00 TO NODE 200.00 IS CODE = 1

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

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

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 5.44
RAINFALL INTENSITY(INCH/HR) = 4.60
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 0.21
TOTAL STREAM AREA(ACRES) = 0.21
PEAK FLOW RATE(CFS) AT CONFLUENCE = 0.86

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	4.54	5.38	4.626	0.30(0.03)	0.10	1.0	150.00
1	4.57	5.50	4.571	0.30(0.03)	0.10	1.0	100.00
1	4.61	5.76	4.450	0.30(0.03)	0.10	1.1	30.00
1	4.62	5.86	4.411	0.30(0.03)	0.10	1.1	130.00
1	4.64	6.10	4.312	0.30(0.03)	0.10	1.1	80.00
1	4.61	7.01	3.983	0.30(0.03)	0.10	1.2	60.00
1	4.45	7.93	3.716	0.30(0.03)	0.10	1.2	10.00
2	0.86	5.44	4.597	0.30(0.03)	0.10	0.2	180.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	5.40	5.38	4.626	0.30(0.03)	0.10	1.2	150.00
2	5.42	5.44	4.597	0.30(0.03)	0.10	1.2	180.00
3	5.43	5.50	4.571	0.30(0.03)	0.10	1.2	100.00
4	5.45	5.76	4.450	0.30(0.03)	0.10	1.3	30.00

5	5.45	5.86	4.411	0.30(0.03)	0.10	1.3	130.00
6	5.45	6.10	4.312	0.30(0.03)	0.10	1.3	80.00
7	5.36	7.01	3.983	0.30(0.03)	0.10	1.4	60.00
8	5.14	7.93	3.716	0.30(0.03)	0.10	1.5	10.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 5.45 Tc(MIN.) = 5.86
 EFFECTIVE AREA(ACRES) = 1.28 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 1.5
 LONGEST FLOWPATH FROM NODE 60.00 TO NODE 200.00 = 556.10 FEET.

FLOW PROCESS FROM NODE 200.00 TO NODE 230.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 173.85 DOWNSTREAM(FEET) = 173.71
 FLOW LENGTH(FEET) = 13.50 MANNING'S N = 0.013
 DEPTH OF FLOW IN 15.0 INCH PIPE IS 10.6 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 5.86
 ESTIMATED PIPE DIAMETER(INCH) = 15.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 5.45
 PIPE TRAVEL TIME(MIN.) = 0.04 Tc(MIN.) = 5.89
 LONGEST FLOWPATH FROM NODE 60.00 TO NODE 230.00 = 569.60 FEET.

FLOW PROCESS FROM NODE 230.00 TO NODE 230.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
 TIME OF CONCENTRATION(MIN.) = 5.89
 RAINFALL INTENSITY(INCH/HR) = 4.39
 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 1.28
 TOTAL STREAM AREA(ACRES) = 1.45
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 5.45

FLOW PROCESS FROM NODE 210.00 TO NODE 220.00 IS CODE = 21

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

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 135.00

ELEVATION DATA: UPSTREAM(FEET) = 179.84 DOWNSTREAM(FEET) = 177.43

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

SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 5.000

* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.824

SUBAREA T_c AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	F_p (INCH/HR)	A_p (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	B	0.12	0.30	0.100	56	5.00

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

SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100

SUBAREA RUNOFF(CFS) = 0.52

TOTAL AREA(ACRES) = 0.12 PEAK FLOW RATE(CFS) = 0.52

FLOW PROCESS FROM NODE 220.00 TO NODE 230.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 173.88 DOWNSTREAM(FEET) = 173.71

FLOW LENGTH(FEET) = 15.00 MANNING'S N = 0.013

DEPTH OF FLOW IN 6.0 INCH PIPE IS 4.4 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 3.36

ESTIMATED PIPE DIAMETER(INCH) = 6.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 0.52

PIPE TRAVEL TIME(MIN.) = 0.07 T_c (MIN.) = 5.07

LONGEST FLOWPATH FROM NODE 210.00 TO NODE 230.00 = 150.00 FEET.

FLOW PROCESS FROM NODE 230.00 TO NODE 230.00 IS CODE = 1

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

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

TOTAL NUMBER OF STREAMS = 2

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:

TIME OF CONCENTRATION(MIN.) = 5.07

RAINFALL INTENSITY(INCH/HR) = 4.78

AREA-AVERAGED F_m (INCH/HR) = 0.03

AREA-AVERAGED F_p (INCH/HR) = 0.30

AREA-AVERAGED A_p = 0.10

EFFECTIVE STREAM AREA(ACRES) = 0.12

TOTAL STREAM AREA(ACRES) = 0.12

PEAK FLOW RATE(CFS) AT CONFLUENCE = 0.52

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	T_c (MIN.)	Intensity (INCH/HR)	F_p (F_m) (INCH/HR)	A_p	A_e (ACRES)	HEADWATER NODE
1	5.40	5.42	4.608	0.30(0.03)	0.10	1.2	150.00

1	5.42	5.48	4.579	0.30(0.03)	0.10	1.2	180.00
1	5.43	5.54	4.553	0.30(0.03)	0.10	1.2	100.00
1	5.45	5.80	4.434	0.30(0.03)	0.10	1.3	30.00
1	5.45	5.89	4.395	0.30(0.03)	0.10	1.3	130.00
1	5.45	6.13	4.297	0.30(0.03)	0.10	1.3	80.00
1	5.36	7.05	3.971	0.30(0.03)	0.10	1.4	60.00
1	5.14	7.97	3.705	0.30(0.03)	0.10	1.5	10.00
2	0.52	5.07	4.784	0.30(0.03)	0.10	0.1	210.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	5.77	5.07	4.784	0.30(0.03)	0.10	1.2	210.00
2	5.90	5.42	4.608	0.30(0.03)	0.10	1.3	150.00
3	5.92	5.48	4.579	0.30(0.03)	0.10	1.3	180.00
4	5.92	5.54	4.553	0.30(0.03)	0.10	1.3	100.00
5	5.93	5.80	4.434	0.30(0.03)	0.10	1.4	30.00
6	5.93	5.89	4.395	0.30(0.03)	0.10	1.4	130.00
7	5.91	6.13	4.297	0.30(0.03)	0.10	1.4	80.00
8	5.79	7.05	3.971	0.30(0.03)	0.10	1.5	60.00
9	5.54	7.97	3.705	0.30(0.03)	0.10	1.6	10.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 5.93 Tc(MIN.) = 5.80
EFFECTIVE AREA(ACRES) = 1.39 AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 1.6
LONGEST FLOWPATH FROM NODE 60.00 TO NODE 230.00 = 569.60 FEET.

FLOW PROCESS FROM NODE 230.00 TO NODE 250.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 173.71 DOWNSTREAM(FEET) = 173.16
FLOW LENGTH(FEET) = 54.10 MANNING'S N = 0.013
DEPTH OF FLOW IN 15.0 INCH PIPE IS 11.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 5.88
ESTIMATED PIPE DIAMETER(INCH) = 15.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 5.93
PIPE TRAVEL TIME(MIN.) = 0.15 Tc(MIN.) = 5.96
LONGEST FLOWPATH FROM NODE 60.00 TO NODE 250.00 = 623.70 FEET.

FLOW PROCESS FROM NODE 260.00 TO NODE 260.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 5.96
RAINFALL INTENSITY(INCH/HR) = 4.37
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 1.39
TOTAL STREAM AREA(ACRES) = 1.57
PEAK FLOW RATE(CFS) AT CONFLUENCE = 5.93

FLOW PROCESS FROM NODE 240.00 TO NODE 250.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 254.70
ELEVATION DATA: UPSTREAM(FEET) = 183.92 DOWNSTREAM(FEET) = 176.96

$T_c = K * [(LENGTH^{**} 3.00) / (ELEVATION\ CHANGE)]^{**0.20}$
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.728
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.467
SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	B	3.73	0.30	0.100	56	5.73

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 14.89
TOTAL AREA(ACRES) = 3.73 PEAK FLOW RATE(CFS) = 14.89

FLOW PROCESS FROM NODE 250.00 TO NODE 260.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 173.96 DOWNSTREAM(FEET) = 173.16
FLOW LENGTH(FEET) = 23.10 MANNING'S N = 0.013
DEPTH OF FLOW IN 18.0 INCH PIPE IS 12.0 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 11.93
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 14.89
PIPE TRAVEL TIME(MIN.) = 0.03 Tc(MIN.) = 5.76
LONGEST FLOWPATH FROM NODE 240.00 TO NODE 260.00 = 277.80 FEET.

FLOW PROCESS FROM NODE 260.00 TO NODE 260.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 5.76
RAINFALL INTENSITY(INCH/HR) = 4.45
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 3.73
TOTAL STREAM AREA(ACRES) = 3.73
PEAK FLOW RATE(CFS) AT CONFLUENCE = 14.89

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	5.77	5.23	4.703	0.30(0.03)	0.10	1.2	210.00
1	5.90	5.58	4.535	0.30(0.03)	0.10	1.3	150.00
1	5.92	5.64	4.508	0.30(0.03)	0.10	1.3	180.00
1	5.92	5.69	4.483	0.30(0.03)	0.10	1.3	100.00
1	5.93	5.96	4.369	0.30(0.03)	0.10	1.4	30.00
1	5.93	6.05	4.331	0.30(0.03)	0.10	1.4	130.00
1	5.91	6.29	4.237	0.30(0.03)	0.10	1.4	80.00
1	5.79	7.20	3.923	0.30(0.03)	0.10	1.5	60.00
1	5.54	8.12	3.665	0.30(0.03)	0.10	1.6	10.00
2	14.89	5.76	4.453	0.30(0.03)	0.10	3.7	240.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20.05	5.23	4.703	0.30(0.03)	0.10	4.6	210.00
2	20.59	5.58	4.535	0.30(0.03)	0.10	4.9	150.00
3	20.67	5.64	4.508	0.30(0.03)	0.10	5.0	180.00
4	20.74	5.69	4.483	0.30(0.03)	0.10	5.0	100.00
5	20.82	5.76	4.453	0.30(0.03)	0.10	5.1	240.00
6	20.54	5.96	4.369	0.30(0.03)	0.10	5.1	30.00
7	20.41	6.05	4.331	0.30(0.03)	0.10	5.1	130.00
8	20.08	6.29	4.237	0.30(0.03)	0.10	5.2	80.00
9	18.90	7.20	3.923	0.30(0.03)	0.10	5.3	60.00
10	17.79	8.12	3.665	0.30(0.03)	0.10	5.3	10.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 20.82 Tc(MIN.) = 5.76
EFFECTIVE AREA(ACRES) = 5.09 AREA-AVERAGED Fm(INCH/HR) = 0.03

AREA-AVERAGED F_p (INCH/HR) = 0.30 AREA-AVERAGED A_p = 0.10
TOTAL AREA(ACRES) = 5.3
LONGEST FLOWPATH FROM NODE 60.00 TO NODE 260.00 = 623.70 FEET.

FLOW PROCESS FROM NODE 260.00 TO NODE 320.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(Feet) = 173.16 DOWNSTREAM(Feet) = 173.00
FLOW LENGTH(Feet) = 15.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 24.0 INCH PIPE IS 18.0 INCHES
PIPE-FLOW VELOCITY(Feet/Sec.) = 8.22
ESTIMATED PIPE DIAMETER(INCH) = 24.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 20.82
PIPE TRAVEL TIME(Min.) = 0.03 T_c (Min.) = 5.79
LONGEST FLOWPATH FROM NODE 60.00 TO NODE 320.00 = 638.70 FEET.

FLOW PROCESS FROM NODE 320.00 TO NODE 320.00 IS CODE = 10

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

=====

FLOW PROCESS FROM NODE 270.00 TO NODE 280.00 IS CODE = 21

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

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

=====

INITIAL SUBAREA FLOW-LENGTH(Feet) = 254.00
ELEVATION DATA: UPSTREAM(Feet) = 180.24 DOWNSTREAM(Feet) = 176.96

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

SUBAREA ANALYSIS USED MINIMUM T_c (Min.) = 6.647

* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.106

SUBAREA T_c AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	F_p (INCH/HR)	A_p (DECIMAL)	SCS CN	T_c (Min.)
COMMERCIAL	B	2.02	0.30	0.100	56	6.65

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

SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100

SUBAREA RUNOFF(CFS) = 7.41

TOTAL AREA(ACRES) = 2.02 PEAK FLOW RATE(CFS) = 7.41

FLOW PROCESS FROM NODE 280.00 TO NODE 310.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 173.97 DOWNSTREAM(FEET) = 173.44
FLOW LENGTH(FEET) = 111.10 MANNING'S N = 0.013
DEPTH OF FLOW IN 21.0 INCH PIPE IS 12.9 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 4.79
ESTIMATED PIPE DIAMETER(INCH) = 21.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 7.41
PIPE TRAVEL TIME(MIN.) = 0.39 Tc(MIN.) = 7.03
LONGEST FLOWPATH FROM NODE 270.00 TO NODE 310.00 = 365.10 FEET.

FLOW PROCESS FROM NODE 310.00 TO NODE 310.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 7.03
RAINFALL INTENSITY(INCH/HR) = 3.98
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 2.02
TOTAL STREAM AREA(ACRES) = 2.02
PEAK FLOW RATE(CFS) AT CONFLUENCE = 7.41

FLOW PROCESS FROM NODE 290.00 TO NODE 300.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 254.60
ELEVATION DATA: UPSTREAM(FEET) = 180.25 DOWNSTREAM(FEET) = 176.96

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 6.652
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.104
SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	B	2.02	0.30	0.100	56	6.65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 7.41
TOTAL AREA(ACRES) = 2.02 PEAK FLOW RATE(CFS) = 7.41

FLOW PROCESS FROM NODE 300.00 TO NODE 310.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 173.96 DOWNSTREAM(FEET) = 173.44
FLOW LENGTH(FEET) = 33.70 MANNING'S N = 0.013
DEPTH OF FLOW IN 15.0 INCH PIPE IS 11.6 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 7.25
ESTIMATED PIPE DIAMETER(INCH) = 15.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 7.41
PIPE TRAVEL TIME(MIN.) = 0.08 Tc(MIN.) = 6.73
LONGEST FLOWPATH FROM NODE 290.00 TO NODE 310.00 = 288.30 FEET.

FLOW PROCESS FROM NODE 310.00 TO NODE 310.00 IS CODE = 1

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

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 6.73
RAINFALL INTENSITY(INCH/HR) = 4.08
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 2.02
TOTAL STREAM AREA(ACRES) = 2.02
PEAK FLOW RATE(CFS) AT CONFLUENCE = 7.41

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	7.41	7.03	3.977	0.30(0.03)	0.10	2.0	270.00
2	7.41	6.73	4.077	0.30(0.03)	0.10	2.0	290.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14.68	6.73	4.077	0.30(0.03)	0.10	4.0	290.00
2	14.63	7.03	3.977	0.30(0.03)	0.10	4.0	270.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 14.68 Tc(MIN.) = 6.73
EFFECTIVE AREA(ACRES) = 3.95 AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 4.0

LONGEST FLOWPATH FROM NODE 270.00 TO NODE 310.00 = 365.10 FEET.

FLOW PROCESS FROM NODE 310.00 TO NODE 320.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 173.44 DOWNSTREAM(FEET) = 173.00

FLOW LENGTH(FEET) = 87.40 MANNING'S N = 0.013

DEPTH OF FLOW IN 24.0 INCH PIPE IS 18.5 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 5.66

ESTIMATED PIPE DIAMETER(INCH) = 24.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 14.68

PIPE TRAVEL TIME(MIN.) = 0.26 Tc(MIN.) = 6.99

LONGEST FLOWPATH FROM NODE 270.00 TO NODE 320.00 = 452.50 FEET.

FLOW PROCESS FROM NODE 320.00 TO NODE 320.00 IS CODE = 11

>>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<

=====

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14.68	6.99	3.992	0.30(0.03)	0.10	4.0	290.00
2	14.63	7.29	3.896	0.30(0.03)	0.10	4.0	270.00

LONGEST FLOWPATH FROM NODE 270.00 TO NODE 320.00 = 452.50 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20.05	5.26	4.688	0.30(0.03)	0.10	4.6	210.00
2	20.59	5.61	4.521	0.30(0.03)	0.10	4.9	150.00
3	20.67	5.67	4.494	0.30(0.03)	0.10	5.0	180.00
4	20.74	5.72	4.469	0.30(0.03)	0.10	5.0	100.00
5	20.82	5.79	4.439	0.30(0.03)	0.10	5.1	240.00
6	20.54	5.99	4.356	0.30(0.03)	0.10	5.1	30.00
7	20.41	6.08	4.319	0.30(0.03)	0.10	5.1	130.00
8	20.08	6.32	4.225	0.30(0.03)	0.10	5.2	80.00
9	18.90	7.23	3.913	0.30(0.03)	0.10	5.3	60.00
10	17.79	8.15	3.657	0.30(0.03)	0.10	5.3	10.00

LONGEST FLOWPATH FROM NODE 60.00 TO NODE 320.00 = 638.70 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	33.04	5.26	4.688	0.30(0.03)	0.10	7.6	210.00
2	33.94	5.61	4.521	0.30(0.03)	0.10	8.1	150.00

3	34.08	5.67	4.494	0.30(0.03)	0.10	8.2	180.00
4	34.21	5.72	4.469	0.30(0.03)	0.10	8.3	100.00
5	34.36	5.79	4.439	0.30(0.03)	0.10	8.4	240.00
6	34.28	5.99	4.356	0.30(0.03)	0.10	8.5	30.00
7	34.24	6.08	4.319	0.30(0.03)	0.10	8.6	130.00
8	34.14	6.32	4.225	0.30(0.03)	0.10	8.7	80.00
9	33.90	6.99	3.992	0.30(0.03)	0.10	9.2	290.00
10	33.54	7.23	3.913	0.30(0.03)	0.10	9.3	60.00
11	33.46	7.29	3.896	0.30(0.03)	0.10	9.3	270.00
12	31.51	8.15	3.657	0.30(0.03)	0.10	9.3	10.00
TOTAL AREA(ACRES) =			9.3				

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 34.36 Tc(MIN.) = 5.790
 EFFECTIVE AREA(ACRES) = 8.36 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 9.3
 LONGEST FLOWPATH FROM NODE 60.00 TO NODE 320.00 = 638.70 FEET.

FLOW PROCESS FROM NODE 320.00 TO NODE 710.00 IS CODE = 31

 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 173.00 DOWNSTREAM(FEET) = 172.80
 FLOW LENGTH(FEET) = 40.60 MANNING'S N = 0.013
 DEPTH OF FLOW IN 33.0 INCH PIPE IS 25.7 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 6.93
 ESTIMATED PIPE DIAMETER(INCH) = 33.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 34.36
 PIPE TRAVEL TIME(MIN.) = 0.10 Tc(MIN.) = 5.89
 LONGEST FLOWPATH FROM NODE 60.00 TO NODE 710.00 = 679.30 FEET.

FLOW PROCESS FROM NODE 710.00 TO NODE 710.00 IS CODE = 12

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

FLOW PROCESS FROM NODE 710.00 TO NODE 710.00 IS CODE = 10

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

FLOW PROCESS FROM NODE 330.00 TO NODE 340.00 IS CODE = 21

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

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 159.00
ELEVATION DATA: UPSTREAM(FEET) = 182.30 DOWNSTREAM(FEET) = 181.25

$T_c = K * [(LENGTH^{**} 3.00) / (ELEVATION \text{ CHANGE})]^{**} 0.20$
SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 6.302
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.232
SUBAREA T_c AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	F_p (INCH/HR)	A_p (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	B	0.25	0.30	0.100	56	6.30

SUBAREA AVERAGE PERVIOUS LOSS RATE, F_p (INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100
SUBAREA RUNOFF(CFS) = 0.95
TOTAL AREA(ACRES) = 0.25 PEAK FLOW RATE(CFS) = 0.95

FLOW PROCESS FROM NODE 340.00 TO NODE 350.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 178.04 DOWNSTREAM(FEET) = 177.82
FLOW LENGTH(FEET) = 44.30 MANNING'S N = 0.013
DEPTH OF FLOW IN 9.0 INCH PIPE IS 6.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 2.88
ESTIMATED PIPE DIAMETER(INCH) = 9.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 0.95
PIPE TRAVEL TIME(MIN.) = 0.26 T_c (MIN.) = 6.56
LONGEST FLOWPATH FROM NODE 330.00 TO NODE 350.00 = 203.30 FEET.

FLOW PROCESS FROM NODE 350.00 TO NODE 380.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 177.82 DOWNSTREAM(FEET) = 177.74
FLOW LENGTH(FEET) = 5.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 9.0 INCH PIPE IS 4.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 4.51
ESTIMATED PIPE DIAMETER(INCH) = 9.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 0.95
PIPE TRAVEL TIME(MIN.) = 0.02 T_c (MIN.) = 6.58
LONGEST FLOWPATH FROM NODE 330.00 TO NODE 380.00 = 208.30 FEET.

FLOW PROCESS FROM NODE 380.00 TO NODE 380.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 6.58
RAINFALL INTENSITY(INCH/HR) = 4.13
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 0.25
TOTAL STREAM AREA(ACRES) = 0.25
PEAK FLOW RATE(CFS) AT CONFLUENCE = 0.95

FLOW PROCESS FROM NODE 360.00 TO NODE 370.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 16.60
ELEVATION DATA: UPSTREAM(FEET) = 181.94 DOWNSTREAM(FEET) = 181.37

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$
SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 5.000
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.824
SUBAREA T_c AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	B	0.02	0.30	0.100	56	5.00

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 0.09
TOTAL AREA(ACRES) = 0.02 PEAK FLOW RATE(CFS) = 0.09

FLOW PROCESS FROM NODE 370.00 TO NODE 380.00 IS CODE = 31

** WARNING: Computed Flowrate is less than 0.1 cfs,
Routing Algorithm is UNAVAILABLE.

FLOW PROCESS FROM NODE 380.00 TO NODE 380.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 5.00
RAINFALL INTENSITY(INCH/HR) = 4.82

AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 0.02
 TOTAL STREAM AREA(ACRES) = 0.02
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 0.09

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	0.95	6.58	4.131	0.30(0.03)	0.10	0.2	330.00
2	0.09	5.00	4.824	0.30(0.03)	0.10	0.0	360.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	0.93	5.00	4.824	0.30(0.03)	0.10	0.2	360.00
2	1.02	6.58	4.131	0.30(0.03)	0.10	0.3	330.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 1.02 Tc(MIN.) = 6.58
 EFFECTIVE AREA(ACRES) = 0.27 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 0.3
 LONGEST FLOWPATH FROM NODE 330.00 TO NODE 380.00 = 208.30 FEET.

FLOW PROCESS FROM NODE 380.00 TO NODE 420.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 177.74 DOWNSTREAM(FEET) = 176.15
 FLOW LENGTH(FEET) = 93.70 MANNING'S N = 0.013
 DEPTH OF FLOW IN 9.0 INCH PIPE IS 4.4 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 4.72
 ESTIMATED PIPE DIAMETER(INCH) = 9.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 1.02
 PIPE TRAVEL TIME(MIN.) = 0.33 Tc(MIN.) = 6.91
 LONGEST FLOWPATH FROM NODE 330.00 TO NODE 420.00 = 302.00 FEET.

FLOW PROCESS FROM NODE 420.00 TO NODE 420.00 IS CODE = 12

>>>>>CLEAR MEMORY BANK # 2 <<<<<

=====

FLOW PROCESS FROM NODE 420.00 TO NODE 420.00 IS CODE = 10

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

FLOW PROCESS FROM NODE 390.00 TO NODE 400.00 IS CODE = 21

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

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

INITIAL SUBAREA FLOW-LENGTH(FEET) = 61.30

ELEVATION DATA: UPSTREAM(FEET) = 182.25 DOWNSTREAM(FEET) = 180.70

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

SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 5.000

* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.824

SUBAREA T_c AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	F_p (INCH/HR)	A_p (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	B	0.09	0.30	0.100	56	5.00

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

SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100

SUBAREA RUNOFF(CFS) = 0.39

TOTAL AREA(ACRES) = 0.09 PEAK FLOW RATE(CFS) = 0.39

FLOW PROCESS FROM NODE 400.00 TO NODE 410.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 177.11 DOWNSTREAM(FEET) = 176.97

FLOW LENGTH(FEET) = 28.40 MANNING'S N = 0.013

DEPTH OF FLOW IN 9.0 INCH PIPE IS 3.6 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 2.31

ESTIMATED PIPE DIAMETER(INCH) = 9.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 0.39

PIPE TRAVEL TIME(MIN.) = 0.20 T_c (MIN.) = 5.20

LONGEST FLOWPATH FROM NODE 390.00 TO NODE 410.00 = 89.70 FEET.

FLOW PROCESS FROM NODE 410.00 TO NODE 420.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 176.97 DOWNSTREAM(FEET) = 176.15

FLOW LENGTH(FEET) = 92.30 MANNING'S N = 0.013

DEPTH OF FLOW IN 6.0 INCH PIPE IS 3.9 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 2.87
 ESTIMATED PIPE DIAMETER(INCH) = 6.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 0.39
 PIPE TRAVEL TIME(MIN.) = 0.54 Tc(MIN.) = 5.74
 LONGEST FLOWPATH FROM NODE 390.00 TO NODE 420.00 = 182.00 FEET.

FLOW PROCESS FROM NODE 420.00 TO NODE 420.00 IS CODE = 11

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

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	0.39	5.74	4.461	0.30(0.03)	0.10	0.1	390.00

LONGEST FLOWPATH FROM NODE 390.00 TO NODE 420.00 = 182.00 FEET.

** MEMORY BANK # 2 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	0.93	5.34	4.648	0.30(0.03)	0.10	0.2	360.00
2	1.02	6.91	4.018	0.30(0.03)	0.10	0.3	330.00

LONGEST FLOWPATH FROM NODE 330.00 TO NODE 420.00 = 302.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1.30	5.34	4.648	0.30(0.03)	0.10	0.3	360.00
2	1.34	5.74	4.461	0.30(0.03)	0.10	0.3	390.00
3	1.37	6.91	4.018	0.30(0.03)	0.10	0.4	330.00

TOTAL AREA(ACRES) = 0.4

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 1.37 Tc(MIN.) = 6.907
 EFFECTIVE AREA(ACRES) = 0.36 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 0.4
 LONGEST FLOWPATH FROM NODE 330.00 TO NODE 420.00 = 302.00 FEET.

FLOW PROCESS FROM NODE 420.00 TO NODE 480.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 176.15 DOWNSTREAM(FEET) = 174.75
 FLOW LENGTH(FEET) = 156.70 MANNING'S N = 0.013
 DEPTH OF FLOW IN 9.0 INCH PIPE IS 6.7 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 3.91
ESTIMATED PIPE DIAMETER(INCH) = 9.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 1.37
PIPE TRAVEL TIME(MIN.) = 0.67 Tc(MIN.) = 7.58
LONGEST FLOWPATH FROM NODE 330.00 TO NODE 480.00 = 458.70 FEET.

FLOW PROCESS FROM NODE 480.00 TO NODE 480.00 IS CODE = 12

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

FLOW PROCESS FROM NODE 480.00 TO NODE 480.00 IS CODE = 10

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

FLOW PROCESS FROM NODE 430.00 TO NODE 440.00 IS CODE = 21

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

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

INITIAL SUBAREA FLOW-LENGTH(FEET) = 132.90

ELEVATION DATA: UPSTREAM(FEET) = 182.20 DOWNSTREAM(FEET) = 177.50

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

SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.000

* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.824

SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	B	0.08	0.30	0.100	56	5.00

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

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100

SUBAREA RUNOFF(CFS) = 0.35

TOTAL AREA(ACRES) = 0.08 PEAK FLOW RATE(CFS) = 0.35

FLOW PROCESS FROM NODE 440.00 TO NODE 460.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 175.02 DOWNSTREAM(FEET) = 174.80

FLOW LENGTH(FEET) = 46.30 MANNING'S N = 0.013

DEPTH OF FLOW IN 6.0 INCH PIPE IS 4.5 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 2.19

ESTIMATED PIPE DIAMETER(INCH) = 6.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 0.35
PIPE TRAVEL TIME(MIN.) = 0.35 Tc(MIN.) = 5.35
LONGEST FLOWPATH FROM NODE 430.00 TO NODE 460.00 = 179.20 FEET.

FLOW PROCESS FROM NODE 470.00 TO NODE 470.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 5.35
RAINFALL INTENSITY(INCH/HR) = 4.64
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 0.08
TOTAL STREAM AREA(ACRES) = 0.08
PEAK FLOW RATE(CFS) AT CONFLUENCE = 0.35

FLOW PROCESS FROM NODE 450.00 TO NODE 460.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 133.00
ELEVATION DATA: UPSTREAM(FEET) = 181.96 DOWNSTREAM(FEET) = 178.00

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.000
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.824
SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	B	0.21	0.30	0.100	56	5.00

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 0.91
TOTAL AREA(ACRES) = 0.21 PEAK FLOW RATE(CFS) = 0.91

FLOW PROCESS FROM NODE 470.00 TO NODE 470.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 5.00

RAINFALL INTENSITY(INCH/HR) = 4.82
 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 0.21
 TOTAL STREAM AREA(ACRES) = 0.21
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 0.91

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	0.35	5.35	4.642	0.30(0.03)	0.10	0.1	430.00
2	0.91	5.00	4.824	0.30(0.03)	0.10	0.2	450.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1.24	5.00	4.824	0.30(0.03)	0.10	0.3	450.00
2	1.22	5.35	4.642	0.30(0.03)	0.10	0.3	430.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 1.24 Tc(MIN.) = 5.00
 EFFECTIVE AREA(ACRES) = 0.28 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 0.3
 LONGEST FLOWPATH FROM NODE 430.00 TO NODE 470.00 = 179.20 FEET.

FLOW PROCESS FROM NODE 470.00 TO NODE 480.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 174.78 DOWNSTREAM(FEET) = 174.75
 FLOW LENGTH(FEET) = 6.00 MANNING'S N = 0.013
 DEPTH OF FLOW IN 12.0 INCH PIPE IS 6.0 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 3.13
 ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 1.24
 PIPE TRAVEL TIME(MIN.) = 0.03 Tc(MIN.) = 5.03
 LONGEST FLOWPATH FROM NODE 430.00 TO NODE 480.00 = 185.20 FEET.

FLOW PROCESS FROM NODE 480.00 TO NODE 480.00 IS CODE = 11

>>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1.24	5.03	4.806	0.30(0.03)	0.10	0.3	450.00
2	1.22	5.38	4.626	0.30(0.03)	0.10	0.3	430.00

LONGEST FLOWPATH FROM NODE 430.00 TO NODE 480.00 = 185.20 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1.30	6.01	4.346	0.30(0.03)	0.10	0.3	360.00
2	1.34	6.41	4.190	0.30(0.03)	0.10	0.3	390.00
3	1.37	7.58	3.813	0.30(0.03)	0.10	0.4	330.00

LONGEST FLOWPATH FROM NODE 330.00 TO NODE 480.00 = 458.70 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2.45	5.03	4.806	0.30(0.03)	0.10	0.5	450.00
2	2.46	5.38	4.626	0.30(0.03)	0.10	0.6	430.00
3	2.45	6.01	4.346	0.30(0.03)	0.10	0.6	360.00
4	2.44	6.41	4.190	0.30(0.03)	0.10	0.6	390.00
5	2.37	7.58	3.813	0.30(0.03)	0.10	0.6	330.00

TOTAL AREA(ACRES) = 0.6

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 2.46 Tc(MIN.) = 5.384
EFFECTIVE AREA(ACRES) = 0.55 AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 0.6
LONGEST FLOWPATH FROM NODE 330.00 TO NODE 480.00 = 458.70 FEET.

FLOW PROCESS FROM NODE 480.00 TO NODE 510.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 174.75 DOWNSTREAM(FEET) = 174.29
FLOW LENGTH(FEET) = 51.90 MANNING'S N = 0.013
DEPTH OF FLOW IN 12.0 INCH PIPE IS 7.8 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 4.57
ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 2.46
PIPE TRAVEL TIME(MIN.) = 0.19 Tc(MIN.) = 5.57
LONGEST FLOWPATH FROM NODE 330.00 TO NODE 510.00 = 510.60 FEET.

FLOW PROCESS FROM NODE 510.00 TO NODE 510.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 5.57
RAINFALL INTENSITY(INCH/HR) = 4.54
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 0.55
TOTAL STREAM AREA(ACRES) = 0.65
PEAK FLOW RATE(CFS) AT CONFLUENCE = 2.46

FLOW PROCESS FROM NODE 490.00 TO NODE 500.00 IS CODE = 21

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

INITIAL SUBAREA FLOW-LENGTH(FEET) = 260.60
ELEVATION DATA: UPSTREAM(FEET) = 180.24 DOWNSTREAM(FEET) = 176.96

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$
SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 6.750
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.070
SUBAREA T_c AND LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS T_c
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
COMMERCIAL B 2.91 0.30 0.100 56 6.75
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 10.58
TOTAL AREA(ACRES) = 2.91 PEAK FLOW RATE(CFS) = 10.58

FLOW PROCESS FROM NODE 500.00 TO NODE 510.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
=====

ELEVATION DATA: UPSTREAM(FEET) = 174.46 DOWNSTREAM(FEET) = 174.29
FLOW LENGTH(FEET) = 33.70 MANNING'S N = 0.013
DEPTH OF FLOW IN 21.0 INCH PIPE IS 16.6 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 5.19
ESTIMATED PIPE DIAMETER(INCH) = 21.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 10.58
PIPE TRAVEL TIME(MIN.) = 0.11 T_c (MIN.) = 6.86
LONGEST FLOWPATH FROM NODE 490.00 TO NODE 510.00 = 294.30 FEET.

FLOW PROCESS FROM NODE 510.00 TO NODE 510.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 6.86
RAINFALL INTENSITY(INCH/HR) = 4.03
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 2.91
TOTAL STREAM AREA(ACRES) = 2.91
PEAK FLOW RATE(CFS) AT CONFLUENCE = 10.58

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2.45	5.22	4.707	0.30(0.03)	0.10	0.5	450.00
1	2.46	5.57	4.536	0.30(0.03)	0.10	0.6	430.00
1	2.45	6.20	4.270	0.30(0.03)	0.10	0.6	360.00
1	2.44	6.60	4.122	0.30(0.03)	0.10	0.6	390.00
1	2.37	7.77	3.760	0.30(0.03)	0.10	0.6	330.00
2	10.58	6.86	4.034	0.30(0.03)	0.10	2.9	490.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	11.86	5.22	4.707	0.30(0.03)	0.10	2.7	450.00
2	12.14	5.57	4.536	0.30(0.03)	0.10	2.9	430.00
3	12.58	6.20	4.270	0.30(0.03)	0.10	3.2	360.00
4	12.85	6.60	4.122	0.30(0.03)	0.10	3.4	390.00
5	13.01	6.86	4.034	0.30(0.03)	0.10	3.5	490.00
6	12.23	7.77	3.760	0.30(0.03)	0.10	3.6	330.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 13.01 Tc(MIN.) = 6.86
EFFECTIVE AREA(ACRES) = 3.53 AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 3.6
LONGEST FLOWPATH FROM NODE 330.00 TO NODE 510.00 = 510.60 FEET.

FLOW PROCESS FROM NODE 510.00 TO NODE 570.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 174.29 DOWNSTREAM(FEET) = 174.18
FLOW LENGTH(FEET) = 20.70 MANNING'S N = 0.013
DEPTH OF FLOW IN 24.0 INCH PIPE IS 16.4 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 5.70
ESTIMATED PIPE DIAMETER(INCH) = 24.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 13.01
PIPE TRAVEL TIME(MIN.) = 0.06 Tc(MIN.) = 6.92
LONGEST FLOWPATH FROM NODE 330.00 TO NODE 570.00 = 531.30 FEET.

FLOW PROCESS FROM NODE 570.00 TO NODE 570.00 IS CODE = 12

>>>>>CLEAR MEMORY BANK # 2 <<<<<

FLOW PROCESS FROM NODE 570.00 TO NODE 570.00 IS CODE = 10

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

FLOW PROCESS FROM NODE 520.00 TO NODE 530.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 214.50
ELEVATION DATA: UPSTREAM(FEET) = 182.97 DOWNSTREAM(FEET) = 179.00

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.781
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.443
SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	B	0.24	0.30	0.100	56	5.78

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 0.95
TOTAL AREA(ACRES) = 0.24 PEAK FLOW RATE(CFS) = 0.95

FLOW PROCESS FROM NODE 530.00 TO NODE 560.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

```

=====
ELEVATION DATA: UPSTREAM(FEET) = 175.55 DOWNSTREAM(FEET) = 174.58
FLOW LENGTH(FEET) = 62.90 MANNING'S N = 0.013
DEPTH OF FLOW IN 9.0 INCH PIPE IS 4.4 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 4.47
ESTIMATED PIPE DIAMETER(INCH) = 9.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 0.95
PIPE TRAVEL TIME(MIN.) = 0.23 Tc(MIN.) = 6.02
LONGEST FLOWPATH FROM NODE 520.00 TO NODE 560.00 = 277.40 FEET.

*****
FLOW PROCESS FROM NODE 560.00 TO NODE 560.00 IS CODE = 1
-----
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
=====
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 6.02
RAINFALL INTENSITY(INCH/HR) = 4.34
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 0.24
TOTAL STREAM AREA(ACRES) = 0.24
PEAK FLOW RATE(CFS) AT CONFLUENCE = 0.95

*****
FLOW PROCESS FROM NODE 540.00 TO NODE 550.00 IS CODE = 21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
=====
INITIAL SUBAREA FLOW-LENGTH(FEET) = 223.90
ELEVATION DATA: UPSTREAM(FEET) = 183.03 DOWNSTREAM(FEET) = 179.80

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 6.181
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.278
SUBAREA Tc AND LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS Tc
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
COMMERCIAL B 0.27 0.30 0.100 56 6.18
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 1.03
TOTAL AREA(ACRES) = 0.27 PEAK FLOW RATE(CFS) = 1.03

*****
FLOW PROCESS FROM NODE 550.00 TO NODE 560.00 IS CODE = 31
-----

```

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

```
=====
ELEVATION DATA: UPSTREAM(FEET) = 174.70 DOWNSTREAM(FEET) = 174.58
FLOW LENGTH(FEET) = 4.50 MANNING'S N = 0.013
DEPTH OF FLOW IN 9.0 INCH PIPE IS 3.9 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 5.59
ESTIMATED PIPE DIAMETER(INCH) = 9.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 1.03
PIPE TRAVEL TIME(MIN.) = 0.01 Tc(MIN.) = 6.19
LONGEST FLOWPATH FROM NODE 540.00 TO NODE 560.00 = 228.40 FEET.
```

```
FLOW PROCESS FROM NODE 560.00 TO NODE 560.00 IS CODE = 1
```

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

```
=====
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 6.19
RAINFALL INTENSITY(INCH/HR) = 4.27
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 0.27
TOTAL STREAM AREA(ACRES) = 0.27
PEAK FLOW RATE(CFS) AT CONFLUENCE = 1.03
```

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	0.95	6.02	4.345	0.30(0.03)	0.10	0.2	520.00
2	1.03	6.19	4.273	0.30(0.03)	0.10	0.3	540.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1.97	6.02	4.345	0.30(0.03)	0.10	0.5	520.00
2	1.97	6.19	4.273	0.30(0.03)	0.10	0.5	540.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

```
PEAK FLOW RATE(CFS) = 1.97 Tc(MIN.) = 6.02
EFFECTIVE AREA(ACRES) = 0.50 AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 0.5
LONGEST FLOWPATH FROM NODE 520.00 TO NODE 560.00 = 277.40 FEET.
```

FLOW PROCESS FROM NODE 560.00 TO NODE 570.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 174.58 DOWNSTREAM(FEET) = 174.18
FLOW LENGTH(FEET) = 26.20 MANNING'S N = 0.013
DEPTH OF FLOW IN 9.0 INCH PIPE IS 7.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 5.13
ESTIMATED PIPE DIAMETER(INCH) = 9.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 1.97
PIPE TRAVEL TIME(MIN.) = 0.09 Tc(MIN.) = 6.10
LONGEST FLOWPATH FROM NODE 520.00 TO NODE 570.00 = 303.60 FEET.

FLOW PROCESS FROM NODE 570.00 TO NODE 570.00 IS CODE = 11

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

=====

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1.97	6.10	4.310	0.30(0.03)	0.10	0.5	520.00
2	1.97	6.28	4.240	0.30(0.03)	0.10	0.5	540.00

LONGEST FLOWPATH FROM NODE 520.00 TO NODE 570.00 = 303.60 FEET.

** MEMORY BANK # 2 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	11.86	5.28	4.676	0.30(0.03)	0.10	2.7	450.00
2	12.14	5.63	4.508	0.30(0.03)	0.10	2.9	430.00
3	12.58	6.26	4.246	0.30(0.03)	0.10	3.2	360.00
4	12.85	6.66	4.101	0.30(0.03)	0.10	3.4	390.00
5	13.01	6.92	4.014	0.30(0.03)	0.10	3.5	490.00
6	12.23	7.83	3.743	0.30(0.03)	0.10	3.6	330.00

LONGEST FLOWPATH FROM NODE 330.00 TO NODE 570.00 = 531.30 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13.71	5.28	4.676	0.30(0.03)	0.10	3.2	450.00
2	14.04	5.63	4.508	0.30(0.03)	0.10	3.4	430.00
3	14.44	6.10	4.310	0.30(0.03)	0.10	3.6	520.00
4	14.55	6.26	4.246	0.30(0.03)	0.10	3.7	360.00
5	14.56	6.28	4.240	0.30(0.03)	0.10	3.7	540.00
6	14.75	6.66	4.101	0.30(0.03)	0.10	3.9	390.00
7	14.87	6.92	4.014	0.30(0.03)	0.10	4.0	490.00

8 13.96 7.83 3.743 0.30(0.03) 0.10 4.1 330.00
TOTAL AREA(ACRES) = 4.1

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 14.87 Tc(MIN.) = 6.918
EFFECTIVE AREA(ACRES) = 4.04 AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 4.1
LONGEST FLOWPATH FROM NODE 330.00 TO NODE 570.00 = 531.30 FEET.

FLOW PROCESS FROM NODE 570.00 TO NODE 600.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(Feet) = 174.18 DOWNSTREAM(Feet) = 173.77
FLOW LENGTH(Feet) = 77.30 MANNING'S N = 0.013
DEPTH OF FLOW IN 24.0 INCH PIPE IS 18.2 INCHES
PIPE-FLOW VELOCITY(Feet/Sec.) = 5.80
ESTIMATED PIPE DIAMETER(INCH) = 24.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 14.87
PIPE TRAVEL TIME(MIN.) = 0.22 Tc(MIN.) = 7.14
LONGEST FLOWPATH FROM NODE 330.00 TO NODE 600.00 = 608.60 FEET.

FLOW PROCESS FROM NODE 600.00 TO NODE 600.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 7.14
RAINFALL INTENSITY(INCH/HR) = 3.94
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 4.04
TOTAL STREAM AREA(ACRES) = 4.07
PEAK FLOW RATE(CFS) AT CONFLUENCE = 14.87

FLOW PROCESS FROM NODE 580.00 TO NODE 590.00 IS CODE = 21

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

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

=====

INITIAL SUBAREA FLOW-LENGTH(Feet) = 253.70
ELEVATION DATA: UPSTREAM(Feet) = 180.25 DOWNSTREAM(Feet) = 176.96

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$
 SUBAREA ANALYSIS USED MINIMUM $T_c(MIN.) = 6.638$
 * 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.109
 SUBAREA T_c AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	F_p (INCH/HR)	A_p (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	B	2.02	0.30	0.100	56	6.64

 SUBAREA AVERAGE PERVIOUS LOSS RATE, $F_p(INCH/HR) = 0.30$
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, $A_p = 0.100$
 SUBAREA RUNOFF(CFS) = 7.42
 TOTAL AREA(ACRES) = 2.02 PEAK FLOW RATE(CFS) = 7.42

FLOW PROCESS FROM NODE 590.00 TO NODE 600.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====
 ELEVATION DATA: UPSTREAM(FEET) = 173.96 DOWNSTREAM(FEET) = 173.77
 FLOW LENGTH(FEET) = 33.70 MANNING'S N = 0.013
 DEPTH OF FLOW IN 18.0 INCH PIPE IS 14.2 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 4.95
 ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 7.42
 PIPE TRAVEL TIME(MIN.) = 0.11 $T_c(MIN.) = 6.75$
 LONGEST FLOWPATH FROM NODE 580.00 TO NODE 600.00 = 287.40 FEET.

FLOW PROCESS FROM NODE 600.00 TO NODE 600.00 IS CODE = 1

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

=====
 TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 6.75
 RAINFALL INTENSITY(INCH/HR) = 4.07
 AREA-AVERAGED $F_m(INCH/HR) = 0.03$
 AREA-AVERAGED $F_p(INCH/HR) = 0.30$
 AREA-AVERAGED $A_p = 0.10$
 EFFECTIVE STREAM AREA(ACRES) = 2.02
 TOTAL STREAM AREA(ACRES) = 2.02
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 7.42

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	T_c (MIN.)	Intensity (INCH/HR)	$F_p(F_m)$ (INCH/HR)	A_p	A_e (ACRES)	HEADWATER NODE
1	13.71	5.51	4.567	0.30(0.03)	0.10	3.2	450.00
1	14.04	5.86	4.410	0.30(0.03)	0.10	3.4	430.00
1	14.44	6.32	4.224	0.30(0.03)	0.10	3.6	520.00

1	14.55	6.49	4.163	0.30(0.03)	0.10	3.7	360.00
1	14.56	6.50	4.157	0.30(0.03)	0.10	3.7	540.00
1	14.75	6.88	4.025	0.30(0.03)	0.10	3.9	390.00
1	14.87	7.14	3.943	0.30(0.03)	0.10	4.0	490.00
1	13.96	8.05	3.684	0.30(0.03)	0.10	4.1	330.00
2	7.42	6.75	4.070	0.30(0.03)	0.10	2.0	580.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20.51	5.51	4.567	0.30(0.03)	0.10	4.8	450.00
2	21.02	5.86	4.410	0.30(0.03)	0.10	5.1	430.00
3	21.65	6.32	4.224	0.30(0.03)	0.10	5.5	520.00
4	21.84	6.49	4.163	0.30(0.03)	0.10	5.7	360.00
5	21.86	6.50	4.157	0.30(0.03)	0.10	5.7	540.00
6	22.10	6.75	4.070	0.30(0.03)	0.10	5.9	580.00
7	22.09	6.88	4.025	0.30(0.03)	0.10	5.9	390.00
8	22.05	7.14	3.943	0.30(0.03)	0.10	6.1	490.00
9	20.67	8.05	3.684	0.30(0.03)	0.10	6.1	330.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 22.10 Tc(MIN.) = 6.75
EFFECTIVE AREA(ACRES) = 5.87 AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 6.1
LONGEST FLOWPATH FROM NODE 330.00 TO NODE 600.00 = 608.60 FEET.

FLOW PROCESS FROM NODE 600.00 TO NODE 630.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 173.77 DOWNSTREAM(FEET) = 173.26
FLOW LENGTH(FEET) = 98.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 30.0 INCH PIPE IS 19.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 6.47
ESTIMATED PIPE DIAMETER(INCH) = 30.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 22.10
PIPE TRAVEL TIME(MIN.) = 0.25 Tc(MIN.) = 7.00
LONGEST FLOWPATH FROM NODE 330.00 TO NODE 630.00 = 706.60 FEET.

FLOW PROCESS FROM NODE 630.00 TO NODE 630.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
 TIME OF CONCENTRATION(MIN.) = 7.00
 RAINFALL INTENSITY(INCH/HR) = 3.99
 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 5.87
 TOTAL STREAM AREA(ACRES) = 6.09
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 22.10

FLOW PROCESS FROM NODE 610.00 TO NODE 620.00 IS CODE = 21

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

INITIAL SUBAREA FLOW-LENGTH(Feet) = 254.20
 ELEVATION DATA: UPSTREAM(Feet) = 180.25 DOWNSTREAM(Feet) = 176.96

$T_c = K * [(LENGTH^{0.75}) / (ELEVATION\ CHANGE)]^{0.20}$
 SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 6.646
 * 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.106
 SUBAREA T_c AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	B	2.02	0.30	0.100	56	6.65

 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
 SUBAREA RUNOFF(CFS) = 7.41
 TOTAL AREA(ACRES) = 2.02 PEAK FLOW RATE(CFS) = 7.41

FLOW PROCESS FROM NODE 620.00 TO NODE 630.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(Feet) = 173.96 DOWNSTREAM(Feet) = 173.26
 FLOW LENGTH(Feet) = 33.70 MANNING'S N = 0.013
 DEPTH OF FLOW IN 15.0 INCH PIPE IS 10.3 INCHES
 PIPE-FLOW VELOCITY(Feet/Sec.) = 8.24
 ESTIMATED PIPE DIAMETER(INCH) = 15.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 7.41
 PIPE TRAVEL TIME(MIN.) = 0.07 T_c (MIN.) = 6.71
 LONGEST FLOWPATH FROM NODE 610.00 TO NODE 630.00 = 287.90 FEET.

FLOW PROCESS FROM NODE 630.00 TO NODE 630.00 IS CODE = 1

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

```
=====
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 6.71
RAINFALL INTENSITY(INCH/HR) = 4.08
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 2.02
TOTAL STREAM AREA(ACRES) = 2.02
PEAK FLOW RATE(CFS) AT CONFLUENCE = 7.41
```

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20.51	5.77	4.448	0.30(0.03)	0.10	4.8	450.00
1	21.02	6.12	4.302	0.30(0.03)	0.10	5.1	430.00
1	21.65	6.58	4.128	0.30(0.03)	0.10	5.5	520.00
1	21.84	6.74	4.074	0.30(0.03)	0.10	5.7	360.00
1	21.86	6.75	4.069	0.30(0.03)	0.10	5.7	540.00
1	22.10	7.00	3.986	0.30(0.03)	0.10	5.9	580.00
1	22.09	7.14	3.944	0.30(0.03)	0.10	5.9	390.00
1	22.05	7.39	3.866	0.30(0.03)	0.10	6.1	490.00
1	20.67	8.31	3.618	0.30(0.03)	0.10	6.1	330.00
2	7.41	6.71	4.083	0.30(0.03)	0.10	2.0	610.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	27.45	5.77	4.448	0.30(0.03)	0.10	6.6	450.00
2	28.14	6.12	4.302	0.30(0.03)	0.10	7.0	430.00
3	29.00	6.58	4.128	0.30(0.03)	0.10	7.5	520.00
4	29.22	6.71	4.083	0.30(0.03)	0.10	7.7	610.00
5	29.23	6.74	4.074	0.30(0.03)	0.10	7.7	360.00
6	29.24	6.75	4.069	0.30(0.03)	0.10	7.7	540.00
7	29.34	7.00	3.986	0.30(0.03)	0.10	7.9	580.00
8	29.24	7.14	3.944	0.30(0.03)	0.10	8.0	390.00
9	29.07	7.39	3.866	0.30(0.03)	0.10	8.1	490.00
10	27.23	8.31	3.618	0.30(0.03)	0.10	8.1	330.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

```
PEAK FLOW RATE(CFS) = 29.34    Tc(MIN.) = 7.00
EFFECTIVE AREA(ACRES) = 7.89    AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30    AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 8.1
```

LONGEST FLOWPATH FROM NODE 330.00 TO NODE 630.00 = 706.60 FEET.

FLOW PROCESS FROM NODE 630.00 TO NODE 690.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 173.26 DOWNSTREAM(FEET) = 173.01

FLOW LENGTH(FEET) = 45.90 MANNING'S N = 0.013

DEPTH OF FLOW IN 30.0 INCH PIPE IS 24.4 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 6.85

ESTIMATED PIPE DIAMETER(INCH) = 30.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 29.34

PIPE TRAVEL TIME(MIN.) = 0.11 Tc(MIN.) = 7.12

LONGEST FLOWPATH FROM NODE 330.00 TO NODE 690.00 = 752.50 FEET.

FLOW PROCESS FROM NODE 690.00 TO NODE 690.00 IS CODE = 12

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

FLOW PROCESS FROM NODE 690.00 TO NODE 690.00 IS CODE = 10

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

FLOW PROCESS FROM NODE 640.00 TO NODE 650.00 IS CODE = 21

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

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 255.50

ELEVATION DATA: UPSTREAM(FEET) = 180.25 DOWNSTREAM(FEET) = 176.96

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

SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 6.666

* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.099

SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	B	2.02	0.30	0.100	56	6.67

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

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100

SUBAREA RUNOFF(CFS) = 7.40

TOTAL AREA(ACRES) = 2.02 PEAK FLOW RATE(CFS) = 7.40

FLOW PROCESS FROM NODE 650.00 TO NODE 680.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 173.96 DOWNSTREAM(FEET) = 173.32
FLOW LENGTH(FEET) = 111.10 MANNING'S N = 0.013
DEPTH OF FLOW IN 18.0 INCH PIPE IS 14.0 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 5.00
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 7.40
PIPE TRAVEL TIME(MIN.) = 0.37 Tc(MIN.) = 7.04
LONGEST FLOWPATH FROM NODE 640.00 TO NODE 680.00 = 366.60 FEET.

FLOW PROCESS FROM NODE 680.00 TO NODE 680.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 7.04
RAINFALL INTENSITY(INCH/HR) = 3.98
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 2.02
TOTAL STREAM AREA(ACRES) = 2.02
PEAK FLOW RATE(CFS) AT CONFLUENCE = 7.40

FLOW PROCESS FROM NODE 660.00 TO NODE 670.00 IS CODE = 21

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

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

INITIAL SUBAREA FLOW-LENGTH(FEET) = 253.60
ELEVATION DATA: UPSTREAM(FEET) = 180.25 DOWNSTREAM(FEET) = 176.96

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

SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 6.636

* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.110

SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	B	2.02	0.30	0.100	56	6.64

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

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100

SUBAREA RUNOFF(CFS) = 7.42

TOTAL AREA(ACRES) = 2.02 PEAK FLOW RATE(CFS) = 7.42

FLOW PROCESS FROM NODE 670.00 TO NODE 680.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 173.96 DOWNSTREAM(FEET) = 173.32
FLOW LENGTH(FEET) = 33.70 MANNING'S N = 0.013
DEPTH OF FLOW IN 15.0 INCH PIPE IS 10.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 7.94
ESTIMATED PIPE DIAMETER(INCH) = 15.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 7.42
PIPE TRAVEL TIME(MIN.) = 0.07 Tc(MIN.) = 6.71
LONGEST FLOWPATH FROM NODE 660.00 TO NODE 680.00 = 287.30 FEET.

FLOW PROCESS FROM NODE 680.00 TO NODE 680.00 IS CODE = 1

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

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 6.71
RAINFALL INTENSITY(INCH/HR) = 4.08
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 2.02
TOTAL STREAM AREA(ACRES) = 2.02
PEAK FLOW RATE(CFS) AT CONFLUENCE = 7.42

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	7.40	7.04	3.976	0.30(0.03)	0.10	2.0	640.00
2	7.42	6.71	4.085	0.30(0.03)	0.10	2.0	660.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14.66	6.71	4.085	0.30(0.03)	0.10	3.9	660.00
2	14.61	7.04	3.976	0.30(0.03)	0.10	4.0	640.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 14.66 Tc(MIN.) = 6.71
 EFFECTIVE AREA(ACRES) = 3.95 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 4.0
 LONGEST FLOWPATH FROM NODE 640.00 TO NODE 680.00 = 366.60 FEET.

FLOW PROCESS FROM NODE 680.00 TO NODE 690.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 173.32 DOWNSTREAM(FEET) = 173.01
 FLOW LENGTH(FEET) = 52.10 MANNING'S N = 0.013
 DEPTH OF FLOW IN 24.0 INCH PIPE IS 17.2 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 6.09
 ESTIMATED PIPE DIAMETER(INCH) = 24.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 14.66
 PIPE TRAVEL TIME(MIN.) = 0.14 Tc(MIN.) = 6.85
 LONGEST FLOWPATH FROM NODE 640.00 TO NODE 690.00 = 418.70 FEET.

FLOW PROCESS FROM NODE 690.00 TO NODE 690.00 IS CODE = 11

>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14.66	6.85	4.037	0.30(0.03)	0.10	3.9	660.00
2	14.61	7.18	3.931	0.30(0.03)	0.10	4.0	640.00

LONGEST FLOWPATH FROM NODE 640.00 TO NODE 690.00 = 418.70 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	27.45	5.88	4.400	0.30(0.03)	0.10	6.6	450.00
2	28.14	6.23	4.258	0.30(0.03)	0.10	7.0	430.00
3	29.00	6.70	4.089	0.30(0.03)	0.10	7.5	520.00
4	29.22	6.83	4.045	0.30(0.03)	0.10	7.7	610.00
5	29.23	6.85	4.036	0.30(0.03)	0.10	7.7	360.00
6	29.24	6.87	4.031	0.30(0.03)	0.10	7.7	540.00
7	29.34	7.12	3.951	0.30(0.03)	0.10	7.9	580.00
8	29.24	7.25	3.910	0.30(0.03)	0.10	8.0	390.00
9	29.07	7.50	3.833	0.30(0.03)	0.10	8.1	490.00
10	27.23	8.43	3.590	0.30(0.03)	0.10	8.1	330.00

LONGEST FLOWPATH FROM NODE 330.00 TO NODE 690.00 = 752.50 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	41.18	5.88	4.400	0.30(0.03)	0.10	10.0	450.00
2	42.22	6.23	4.258	0.30(0.03)	0.10	10.6	430.00
3	43.52	6.70	4.089	0.30(0.03)	0.10	11.4	520.00
4	43.86	6.83	4.045	0.30(0.03)	0.10	11.6	610.00
5	43.90	6.85	4.037	0.30(0.03)	0.10	11.6	660.00
6	43.90	6.85	4.036	0.30(0.03)	0.10	11.6	360.00
7	43.90	6.87	4.031	0.30(0.03)	0.10	11.6	540.00
8	43.96	7.12	3.951	0.30(0.03)	0.10	11.9	580.00
9	43.91	7.18	3.931	0.30(0.03)	0.10	12.0	640.00
10	43.78	7.25	3.910	0.30(0.03)	0.10	12.0	390.00
11	43.32	7.50	3.833	0.30(0.03)	0.10	12.1	490.00
12	40.57	8.43	3.590	0.30(0.03)	0.10	12.1	330.00
TOTAL AREA(ACRES) =			12.1				

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 43.96 Tc(MIN.) = 7.115
EFFECTIVE AREA(ACRES) = 11.91 AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 12.1
LONGEST FLOWPATH FROM NODE 330.00 TO NODE 690.00 = 752.50 FEET.

FLOW PROCESS FROM NODE 690.00 TO NODE 700.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 173.01 DOWNSTREAM(FEET) = 172.80
FLOW LENGTH(FEET) = 40.60 MANNING'S N = 0.013
DEPTH OF FLOW IN 36.0 INCH PIPE IS 27.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 7.52
ESTIMATED PIPE DIAMETER(INCH) = 36.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 43.96
PIPE TRAVEL TIME(MIN.) = 0.09 Tc(MIN.) = 7.21
LONGEST FLOWPATH FROM NODE 330.00 TO NODE 700.00 = 793.10 FEET.

FLOW PROCESS FROM NODE 700.00 TO NODE 700.00 IS CODE = 11

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

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	41.18	5.97	4.362	0.30(0.03)	0.10	10.0	450.00
2	42.22	6.32	4.224	0.30(0.03)	0.10	10.6	430.00
3	43.52	6.79	4.058	0.30(0.03)	0.10	11.4	520.00

4	43.86	6.92	4.015	0.30(0.03)	0.10	11.6	610.00
5	43.90	6.94	4.007	0.30(0.03)	0.10	11.6	660.00
6	43.90	6.94	4.007	0.30(0.03)	0.10	11.6	360.00
7	43.90	6.96	4.001	0.30(0.03)	0.10	11.6	540.00
8	43.96	7.21	3.923	0.30(0.03)	0.10	11.9	580.00
9	43.91	7.27	3.903	0.30(0.03)	0.10	12.0	640.00
10	43.78	7.34	3.882	0.30(0.03)	0.10	12.0	390.00
11	43.32	7.59	3.807	0.30(0.03)	0.10	12.1	490.00
12	40.57	8.52	3.569	0.30(0.03)	0.10	12.1	330.00

LONGEST FLOWPATH FROM NODE 330.00 TO NODE 700.00 = 793.10 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	33.04	5.36	4.639	0.30(0.03)	0.10	7.6	210.00
2	33.94	5.70	4.477	0.30(0.03)	0.10	8.1	150.00
3	34.08	5.76	4.451	0.30(0.03)	0.10	8.2	180.00
4	34.21	5.82	4.427	0.30(0.03)	0.10	8.3	100.00
5	34.36	5.89	4.397	0.30(0.03)	0.10	8.4	240.00
6	34.28	6.08	4.317	0.30(0.03)	0.10	8.5	30.00
7	34.24	6.18	4.280	0.30(0.03)	0.10	8.6	130.00
8	34.14	6.42	4.189	0.30(0.03)	0.10	8.7	80.00
9	33.90	7.08	3.960	0.30(0.03)	0.10	9.2	290.00
10	33.54	7.33	3.884	0.30(0.03)	0.10	9.3	60.00
11	33.46	7.39	3.867	0.30(0.03)	0.10	9.3	270.00
12	31.51	8.25	3.633	0.30(0.03)	0.10	9.3	10.00

LONGEST FLOWPATH FROM NODE 60.00 TO NODE 700.00 = 679.30 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	72.34	5.36	4.639	0.30(0.03)	0.10	16.5	210.00
2	74.31	5.70	4.477	0.30(0.03)	0.10	17.6	150.00
3	74.64	5.76	4.451	0.30(0.03)	0.10	17.8	180.00
4	74.93	5.82	4.427	0.30(0.03)	0.10	18.0	100.00
5	75.29	5.89	4.397	0.30(0.03)	0.10	18.2	240.00
6	75.51	5.97	4.362	0.30(0.03)	0.10	18.4	450.00
7	75.79	6.08	4.317	0.30(0.03)	0.10	18.7	30.00
8	76.02	6.18	4.280	0.30(0.03)	0.10	18.9	130.00
9	76.40	6.32	4.224	0.30(0.03)	0.10	19.2	430.00
10	76.62	6.42	4.189	0.30(0.03)	0.10	19.5	80.00
11	77.52	6.79	4.058	0.30(0.03)	0.10	20.4	520.00
12	77.82	6.92	4.015	0.30(0.03)	0.10	20.7	610.00
13	77.84	6.94	4.007	0.30(0.03)	0.10	20.7	660.00
14	77.84	6.94	4.007	0.30(0.03)	0.10	20.7	360.00
15	77.85	6.96	4.001	0.30(0.03)	0.10	20.7	540.00
16	77.83	7.08	3.960	0.30(0.03)	0.10	21.0	290.00
17	77.68	7.21	3.923	0.30(0.03)	0.10	21.1	580.00
18	77.54	7.27	3.903	0.30(0.03)	0.10	21.2	640.00
19	77.33	7.33	3.884	0.30(0.03)	0.10	21.3	60.00

20	77.31	7.34	3.882	0.30(0.03)	0.10	21.3	390.00
21	77.15	7.39	3.867	0.30(0.03)	0.10	21.3	270.00
22	76.31	7.59	3.807	0.30(0.03)	0.10	21.4	490.00
23	72.87	8.25	3.633	0.30(0.03)	0.10	21.5	10.00
24	71.52	8.52	3.569	0.30(0.03)	0.10	21.5	330.00
TOTAL AREA(ACRES) =			21.5				

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 77.85 Tc(MIN.) = 6.956
 EFFECTIVE AREA(ACRES) = 20.74 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 21.5
 LONGEST FLOWPATH FROM NODE 330.00 TO NODE 700.00 = 793.10 FEET.

=====

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 21.5 TC(MIN.) = 6.96
 EFFECTIVE AREA(ACRES) = 20.74 AREA-AVERAGED Fm(INCH/HR)= 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.100
 PEAK FLOW RATE(CFS) = 77.85

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	72.34	5.36	4.639	0.30(0.03)	0.10	16.5	210.00
2	74.31	5.70	4.477	0.30(0.03)	0.10	17.6	150.00
3	74.64	5.76	4.451	0.30(0.03)	0.10	17.8	180.00
4	74.93	5.82	4.427	0.30(0.03)	0.10	18.0	100.00
5	75.29	5.89	4.397	0.30(0.03)	0.10	18.2	240.00
6	75.51	5.97	4.362	0.30(0.03)	0.10	18.4	450.00
7	75.79	6.08	4.317	0.30(0.03)	0.10	18.7	30.00
8	76.02	6.18	4.280	0.30(0.03)	0.10	18.9	130.00
9	76.40	6.32	4.224	0.30(0.03)	0.10	19.2	430.00
10	76.62	6.42	4.189	0.30(0.03)	0.10	19.5	80.00
11	77.52	6.79	4.058	0.30(0.03)	0.10	20.4	520.00
12	77.82	6.92	4.015	0.30(0.03)	0.10	20.7	610.00
13	77.84	6.94	4.007	0.30(0.03)	0.10	20.7	660.00
14	77.84	6.94	4.007	0.30(0.03)	0.10	20.7	360.00
15	77.85	6.96	4.001	0.30(0.03)	0.10	20.7	540.00
16	77.83	7.08	3.960	0.30(0.03)	0.10	21.0	290.00
17	77.68	7.21	3.923	0.30(0.03)	0.10	21.1	580.00
18	77.54	7.27	3.903	0.30(0.03)	0.10	21.2	640.00
19	77.33	7.33	3.884	0.30(0.03)	0.10	21.3	60.00
20	77.31	7.34	3.882	0.30(0.03)	0.10	21.3	390.00
21	77.15	7.39	3.867	0.30(0.03)	0.10	21.3	270.00
22	76.31	7.59	3.807	0.30(0.03)	0.10	21.4	490.00
23	72.87	8.25	3.633	0.30(0.03)	0.10	21.5	10.00
24	71.52	8.52	3.569	0.30(0.03)	0.10	21.5	330.00

=====

END OF RATIONAL METHOD ANALYSIS



RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
(c) Copyright 1983-2016 Advanced Engineering Software (aes)
Ver. 23.0 Release Date: 07/01/2016 License ID 1334

Analysis prepared by:

***** DESCRIPTION OF STUDY *****

* SP8454 - FULLERTON *
* GOODMAN LOGISTICS CENTER *
* BASIN B - 100 YEAR PEAK FLOW *

FILE NAME: GLC100B.DAT
TIME/DATE OF STUDY: 10:11 04/28/2021

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--*TIME-OF-CONCENTRATION MODEL*--

USER SPECIFIED STORM EVENT(YEAR) = 100.00
SPECIFIED MINIMUM PIPE SIZE(INCH) = 4.00
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
DATA BANK RAINFALL USED
ANTECEDENT MOISTURE CONDITION (AMC) III ASSUMED FOR RATIONAL METHOD

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

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL: IN- / OUT- / PARK- SIDE / SIDE / WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH LIP HIKE (FT) (FT) (FT)	MANNING FACTOR (n)
1	32.0	20.0	0.200/0.200/0.020	0.67	2.00 0.0313 0.167	0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

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

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

*USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

FLOW PROCESS FROM NODE 10.00 TO NODE 20.00 IS CODE = 21

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

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 271.20

ELEVATION DATA: UPSTREAM(FEET) = 182.46 DOWNSTREAM(FEET) = 179.77

$T_c = K * [(LENGTH^{**} 3.00) / (ELEVATION\ CHANGE)]^{**0.20}$

SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 7.193

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 5.024

SUBAREA T_c AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	B	0.38	0.30	0.100	76	7.19

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

SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100

SUBAREA RUNOFF(CFS) = 1.71

TOTAL AREA(ACRES) = 0.38 PEAK FLOW RATE(CFS) = 1.71

FLOW PROCESS FROM NODE 20.00 TO NODE 50.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 176.23 DOWNSTREAM(FEET) = 175.94

FLOW LENGTH(FEET) = 28.70 MANNING'S N = 0.013

DEPTH OF FLOW IN 12.0 INCH PIPE IS 5.9 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 4.43

ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 1.71

PIPE TRAVEL TIME(MIN.) = 0.11 T_c (MIN.) = 7.30

LONGEST FLOWPATH FROM NODE 10.00 TO NODE 50.00 = 299.90 FEET.

FLOW PROCESS FROM NODE 50.00 TO NODE 50.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:

TIME OF CONCENTRATION(MIN.) = 7.30

RAINFALL INTENSITY(INCH/HR) = 4.98

AREA-AVERAGED F_m (INCH/HR) = 0.03

AREA-AVERAGED F_p (INCH/HR) = 0.30

AREA-AVERAGED A_p = 0.10

EFFECTIVE STREAM AREA(ACRES) = 0.38

TOTAL STREAM AREA(ACRES) = 0.38

PEAK FLOW RATE(CFS) AT CONFLUENCE = 1.71

FLOW PROCESS FROM NODE 30.00 TO NODE 40.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 109.60
ELEVATION DATA: UPSTREAM(FEET) = 181.93 DOWNSTREAM(FEET) = 178.99

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

SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 5.000

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 6.187

SUBAREA T_c AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	B	0.11	0.30	0.100	76	5.00

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

SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100

SUBAREA RUNOFF(CFS) = 0.61

TOTAL AREA(ACRES) = 0.11 PEAK FLOW RATE(CFS) = 0.61

FLOW PROCESS FROM NODE 40.00 TO NODE 50.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 176.04 DOWNSTREAM(FEET) = 175.94
FLOW LENGTH(FEET) = 19.80 MANNING'S N = 0.013
DEPTH OF FLOW IN 9.0 INCH PIPE IS 4.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 2.63
ESTIMATED PIPE DIAMETER(INCH) = 9.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 0.61
PIPE TRAVEL TIME(MIN.) = 0.13 T_c (MIN.) = 5.13
LONGEST FLOWPATH FROM NODE 30.00 TO NODE 50.00 = 129.40 FEET.

FLOW PROCESS FROM NODE 50.00 TO NODE 50.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 5.13
RAINFALL INTENSITY(INCH/HR) = 6.10
AREA-AVERAGED F_m (INCH/HR) = 0.03
AREA-AVERAGED F_p (INCH/HR) = 0.30
AREA-AVERAGED A_p = 0.10
EFFECTIVE STREAM AREA(ACRES) = 0.11

TOTAL STREAM AREA(ACRES) = 0.11
PEAK FLOW RATE(CFS) AT CONFLUENCE = 0.61

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1.71	7.30	4.981	0.30(0.03)	0.10	0.4	10.00
2	0.61	5.13	6.100	0.30(0.03)	0.10	0.1	30.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2.08	5.13	6.100	0.30(0.03)	0.10	0.4	30.00
2	2.20	7.30	4.981	0.30(0.03)	0.10	0.5	10.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 2.20 Tc(MIN.) = 7.30
EFFECTIVE AREA(ACRES) = 0.49 AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 0.5
LONGEST FLOWPATH FROM NODE 10.00 TO NODE 50.00 = 299.90 FEET.

FLOW PROCESS FROM NODE 50.00 TO NODE 120.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 175.94 DOWNSTREAM(FEET) = 175.34
FLOW LENGTH(FEET) = 58.10 MANNING'S N = 0.013
DEPTH OF FLOW IN 12.0 INCH PIPE IS 6.9 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 4.74
ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 2.20
PIPE TRAVEL TIME(MIN.) = 0.20 Tc(MIN.) = 7.50
LONGEST FLOWPATH FROM NODE 10.00 TO NODE 120.00 = 358.00 FEET.

FLOW PROCESS FROM NODE 120.00 TO NODE 120.00 IS CODE = 10

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

=====

FLOW PROCESS FROM NODE 60.00 TO NODE 70.00 IS CODE = 21

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

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 186.00
ELEVATION DATA: UPSTREAM(FEET) = 184.34 DOWNSTREAM(FEET) = 181.00

$T_c = K * [(LENGTH^{**} 3.00) / (ELEVATION\ CHANGE)]^{**0.20}$
SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 5.493
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 5.863
SUBAREA T_c AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	F_p (INCH/HR)	A_p (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	B	0.30	0.30	0.100	76	5.49

SUBAREA AVERAGE PERVIOUS LOSS RATE, F_p (INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100
SUBAREA RUNOFF(CFS) = 1.57
TOTAL AREA(ACRES) = 0.30 PEAK FLOW RATE(CFS) = 1.57

FLOW PROCESS FROM NODE 70.00 TO NODE 90.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 177.55 DOWNSTREAM(FEET) = 177.36
FLOW LENGTH(FEET) = 64.80 MANNING'S N = 0.013
DEPTH OF FLOW IN 12.0 INCH PIPE IS 8.4 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 2.68
ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 1.57
PIPE TRAVEL TIME(MIN.) = 0.40 T_c (MIN.) = 5.90
LONGEST FLOWPATH FROM NODE 60.00 TO NODE 90.00 = 250.80 FEET.

FLOW PROCESS FROM NODE 90.00 TO NODE 90.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 5.90
RAINFALL INTENSITY(INCH/HR) = 5.63
AREA-AVERAGED F_m (INCH/HR) = 0.03
AREA-AVERAGED F_p (INCH/HR) = 0.30
AREA-AVERAGED A_p = 0.10
EFFECTIVE STREAM AREA(ACRES) = 0.30
TOTAL STREAM AREA(ACRES) = 0.30
PEAK FLOW RATE(CFS) AT CONFLUENCE = 1.57

FLOW PROCESS FROM NODE 80.00 TO NODE 90.00 IS CODE = 21

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

INITIAL SUBAREA FLOW-LENGTH(FEET) = 113.10
 ELEVATION DATA: UPSTREAM(FEET) = 183.25 DOWNSTREAM(FEET) = 179.41

$T_c = K * [(LENGTH^{**} 3.00) / (ELEVATION\ CHANGE)]^{**0.20}$
 SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 5.000
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 6.187

SUBAREA T_c AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	B	0.15	0.30	0.100	76	5.00

SUBAREA AVERAGE PERVIOUS LOSS RATE, F_p (INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100
 SUBAREA RUNOFF(CFS) = 0.83
 TOTAL AREA(ACRES) = 0.15 PEAK FLOW RATE(CFS) = 0.83

FLOW PROCESS FROM NODE 90.00 TO NODE 90.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 5.00
 RAINFALL INTENSITY(INCH/HR) = 6.19
 AREA-AVERAGED F_m (INCH/HR) = 0.03
 AREA-AVERAGED F_p (INCH/HR) = 0.30
 AREA-AVERAGED A_p = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 0.15
 TOTAL STREAM AREA(ACRES) = 0.15
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 0.83

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	T_c (MIN.)	Intensity (INCH/HR)	$F_p(F_m)$ (INCH/HR)	A_p	A_e (ACRES)	HEADWATER NODE
1	1.57	5.90	5.630	0.30(0.03)	0.10	0.3	60.00
2	0.83	5.00	6.187	0.30(0.03)	0.10	0.2	80.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	T_c (MIN.)	Intensity (INCH/HR)	$F_p(F_m)$ (INCH/HR)	A_p	A_e (ACRES)	HEADWATER NODE
1	2.30	5.00	6.187	0.30(0.03)	0.10	0.4	80.00
2	2.33	5.90	5.630	0.30(0.03)	0.10	0.5	60.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 2.33 Tc(MIN.) = 5.90
EFFECTIVE AREA(ACRES) = 0.45 AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 0.5
LONGEST FLOWPATH FROM NODE 60.00 TO NODE 90.00 = 250.80 FEET.

FLOW PROCESS FROM NODE 90.00 TO NODE 110.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 177.36 DOWNSTREAM(FEET) = 176.74
FLOW LENGTH(FEET) = 123.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 12.0 INCH PIPE IS 9.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 3.58
ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 2.33
PIPE TRAVEL TIME(MIN.) = 0.57 Tc(MIN.) = 6.47
LONGEST FLOWPATH FROM NODE 60.00 TO NODE 110.00 = 373.80 FEET.

FLOW PROCESS FROM NODE 110.00 TO NODE 110.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 6.47
RAINFALL INTENSITY(INCH/HR) = 5.34
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 0.45
TOTAL STREAM AREA(ACRES) = 0.45
PEAK FLOW RATE(CFS) AT CONFLUENCE = 2.33

FLOW PROCESS FROM NODE 100.00 TO NODE 110.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 132.20
ELEVATION DATA: UPSTREAM(FEET) = 182.26 DOWNSTREAM(FEET) = 174.41

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.000

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 6.187
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS Tc
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
 COMMERCIAL B 0.12 0.30 0.100 76 5.00
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
 SUBAREA RUNOFF(CFS) = 0.66
 TOTAL AREA(ACRES) = 0.12 PEAK FLOW RATE(CFS) = 0.66

FLOW PROCESS FROM NODE 110.00 TO NODE 110.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 5.00
 RAINFALL INTENSITY(INCH/HR) = 6.19
 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 0.12
 TOTAL STREAM AREA(ACRES) = 0.12
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 0.66

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2.30	5.58	5.813	0.30(0.03)	0.10	0.4	80.00
1	2.33	6.47	5.338	0.30(0.03)	0.10	0.5	60.00
2	0.66	5.00	6.187	0.30(0.03)	0.10	0.1	100.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2.86	5.00	6.187	0.30(0.03)	0.10	0.5	100.00
2	2.92	5.58	5.813	0.30(0.03)	0.10	0.5	80.00
3	2.90	6.47	5.338	0.30(0.03)	0.10	0.6	60.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 2.92 Tc(MIN.) = 5.58
 EFFECTIVE AREA(ACRES) = 0.52 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 0.6
 LONGEST FLOWPATH FROM NODE 60.00 TO NODE 110.00 = 373.80 FEET.

FLOW PROCESS FROM NODE 110.00 TO NODE 120.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 176.74 DOWNSTREAM(FEET) = 175.94
FLOW LENGTH(FEET) = 35.90 MANNING'S N = 0.013
DEPTH OF FLOW IN 12.0 INCH PIPE IS 6.4 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 6.80
ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 2.92
PIPE TRAVEL TIME(MIN.) = 0.09 Tc(MIN.) = 5.66
LONGEST FLOWPATH FROM NODE 60.00 TO NODE 120.00 = 409.70 FEET.

FLOW PROCESS FROM NODE 120.00 TO NODE 120.00 IS CODE = 11

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

=====

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2.86	5.09	6.125	0.30(0.03)	0.10	0.5	100.00
2	2.92	5.66	5.761	0.30(0.03)	0.10	0.5	80.00
3	2.90	6.56	5.297	0.30(0.03)	0.10	0.6	60.00

LONGEST FLOWPATH FROM NODE 60.00 TO NODE 120.00 = 409.70 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2.08	5.33	5.963	0.30(0.03)	0.10	0.4	30.00
2	2.20	7.50	4.903	0.30(0.03)	0.10	0.5	10.00

LONGEST FLOWPATH FROM NODE 10.00 TO NODE 120.00 = 358.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	4.90	5.09	6.125	0.30(0.03)	0.10	0.8	100.00
2	4.97	5.33	5.963	0.30(0.03)	0.10	0.9	30.00
3	5.02	5.66	5.761	0.30(0.03)	0.10	0.9	80.00
4	5.05	6.56	5.297	0.30(0.03)	0.10	1.0	60.00
5	4.89	7.50	4.903	0.30(0.03)	0.10	1.1	10.00

TOTAL AREA(ACRES) = 1.1

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 5.05 Tc(MIN.) = 6.557

EFFECTIVE AREA(ACRES) = 1.01 AREA-AVERAGED Fm(INCH/HR) = 0.03

AREA-AVERAGED F_p (INCH/HR) = 0.30 AREA-AVERAGED A_p = 0.10
TOTAL AREA(ACRES) = 1.1
LONGEST FLOWPATH FROM NODE 60.00 TO NODE 120.00 = 409.70 FEET.

FLOW PROCESS FROM NODE 120.00 TO NODE 170.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 175.94 DOWNSTREAM(FEET) = 174.18
FLOW LENGTH(FEET) = 113.40 MANNING'S N = 0.013
DEPTH OF FLOW IN 15.0 INCH PIPE IS 8.8 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 6.79
ESTIMATED PIPE DIAMETER(INCH) = 15.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 5.05
PIPE TRAVEL TIME(MIN.) = 0.28 T_c (MIN.) = 6.84
LONGEST FLOWPATH FROM NODE 60.00 TO NODE 170.00 = 523.10 FEET.

FLOW PROCESS FROM NODE 170.00 TO NODE 170.00 IS CODE = 10

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

FLOW PROCESS FROM NODE 130.00 TO NODE 140.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 78.40
ELEVATION DATA: UPSTREAM(FEET) = 182.17 DOWNSTREAM(FEET) = 179.15

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$
SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 5.000
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 6.187
SUBAREA T_c AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	F_p (INCH/HR)	A_p (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	B	0.04	0.30	0.100	76	5.00

SUBAREA AVERAGE PERVIOUS LOSS RATE, F_p (INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100
SUBAREA RUNOFF(CFS) = 0.22
TOTAL AREA(ACRES) = 0.04 PEAK FLOW RATE(CFS) = 0.22

FLOW PROCESS FROM NODE 140.00 TO NODE 160.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 175.49 DOWNSTREAM(FEET) = 174.78
FLOW LENGTH(FEET) = 69.20 MANNING'S N = 0.013
DEPTH OF FLOW IN 6.0 INCH PIPE IS 2.6 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 2.66
ESTIMATED PIPE DIAMETER(INCH) = 6.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 0.22
PIPE TRAVEL TIME(MIN.) = 0.43 Tc(MIN.) = 5.43
LONGEST FLOWPATH FROM NODE 130.00 TO NODE 160.00 = 147.60 FEET.

FLOW PROCESS FROM NODE 160.00 TO NODE 160.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 5.43
RAINFALL INTENSITY(INCH/HR) = 5.90
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 0.04
TOTAL STREAM AREA(ACRES) = 0.04
PEAK FLOW RATE(CFS) AT CONFLUENCE = 0.22

FLOW PROCESS FROM NODE 150.00 TO NODE 160.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 110.10
ELEVATION DATA: UPSTREAM(FEET) = 182.41 DOWNSTREAM(FEET) = 178.97

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.000
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 6.187
SUBAREA Tc AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	B	0.14	0.30	0.100	76	5.00

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 0.78
TOTAL AREA(ACRES) = 0.14 PEAK FLOW RATE(CFS) = 0.78

FLOW PROCESS FROM NODE 160.00 TO NODE 160.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 5.00
 RAINFALL INTENSITY(INCH/HR) = 6.19
 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 0.14
 TOTAL STREAM AREA(ACRES) = 0.14
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 0.78

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	0.22	5.43	5.900	0.30(0.03)	0.10	0.0	130.00
2	0.78	5.00	6.187	0.30(0.03)	0.10	0.1	150.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	0.99	5.00	6.187	0.30(0.03)	0.10	0.2	150.00
2	0.96	5.43	5.900	0.30(0.03)	0.10	0.2	130.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 0.99 Tc(MIN.) = 5.00
 EFFECTIVE AREA(ACRES) = 0.18 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 0.2
 LONGEST FLOWPATH FROM NODE 130.00 TO NODE 160.00 = 147.60 FEET.

FLOW PROCESS FROM NODE 160.00 TO NODE 170.00 IS CODE = 31

 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
 =====

ELEVATION DATA: UPSTREAM(FEET) = 174.78 DOWNSTREAM(FEET) = 174.18
 FLOW LENGTH(FEET) = 61.40 MANNING'S N = 0.013
 DEPTH OF FLOW IN 9.0 INCH PIPE IS 5.1 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 3.80
 ESTIMATED PIPE DIAMETER(INCH) = 9.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 0.99
 PIPE TRAVEL TIME(MIN.) = 0.27 Tc(MIN.) = 5.27

LONGEST FLOWPATH FROM NODE 130.00 TO NODE 170.00 = 209.00 FEET.

FLOW PROCESS FROM NODE 170.00 TO NODE 170.00 IS CODE = 11

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

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	0.99	5.27	6.004	0.30(0.03)	0.10	0.2	150.00
2	0.96	5.70	5.738	0.30(0.03)	0.10	0.2	130.00

LONGEST FLOWPATH FROM NODE 130.00 TO NODE 170.00 = 209.00 FEET.

** MEMORY BANK # 2 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	4.90	5.37	5.940	0.30(0.03)	0.10	0.8	100.00
2	4.97	5.61	5.791	0.30(0.03)	0.10	0.9	30.00
3	5.02	5.94	5.605	0.30(0.03)	0.10	0.9	80.00
4	5.05	6.84	5.172	0.30(0.03)	0.10	1.0	60.00
5	4.89	7.79	4.801	0.30(0.03)	0.10	1.1	10.00

LONGEST FLOWPATH FROM NODE 60.00 TO NODE 170.00 = 523.10 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	5.85	5.27	6.004	0.30(0.03)	0.10	1.0	150.00
2	5.88	5.37	5.940	0.30(0.03)	0.10	1.0	100.00
3	5.93	5.61	5.791	0.30(0.03)	0.10	1.1	30.00
4	5.94	5.70	5.738	0.30(0.03)	0.10	1.1	130.00
5	5.96	5.94	5.605	0.30(0.03)	0.10	1.1	80.00
6	5.92	6.84	5.172	0.30(0.03)	0.10	1.2	60.00
7	5.70	7.79	4.801	0.30(0.03)	0.10	1.2	10.00

TOTAL AREA(ACRES) = 1.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 5.96 Tc(MIN.) = 5.942
EFFECTIVE AREA(ACRES) = 1.10 AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 1.2
LONGEST FLOWPATH FROM NODE 60.00 TO NODE 170.00 = 523.10 FEET.

FLOW PROCESS FROM NODE 170.00 TO NODE 200.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
=====

ELEVATION DATA: UPSTREAM(FEET) = 174.18 DOWNSTREAM(FEET) = 173.85
 FLOW LENGTH(FEET) = 33.00 MANNING'S N = 0.013
 DEPTH OF FLOW IN 15.0 INCH PIPE IS 11.6 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 5.84
 ESTIMATED PIPE DIAMETER(INCH) = 15.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 5.96
 PIPE TRAVEL TIME(MIN.) = 0.09 Tc(MIN.) = 6.04
 LONGEST FLOWPATH FROM NODE 60.00 TO NODE 200.00 = 556.10 FEET.

FLOW PROCESS FROM NODE 200.00 TO NODE 200.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
 TIME OF CONCENTRATION(MIN.) = 6.04
 RAINFALL INTENSITY(INCH/HR) = 5.55
 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 1.10
 TOTAL STREAM AREA(ACRES) = 1.24
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 5.96

FLOW PROCESS FROM NODE 180.00 TO NODE 190.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 143.70
 ELEVATION DATA: UPSTREAM(FEET) = 180.13 DOWNSTREAM(FEET) = 178.49

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.425
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 5.905
 SUBAREA Tc AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	B	0.21	0.30	0.100	76	5.42

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
 SUBAREA RUNOFF(CFS) = 1.11
 TOTAL AREA(ACRES) = 0.21 PEAK FLOW RATE(CFS) = 1.11

FLOW PROCESS FROM NODE 190.00 TO NODE 200.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 174.47 DOWNSTREAM(FEET) = 173.85
FLOW LENGTH(FEET) = 8.90 MANNING'S N = 0.013
DEPTH OF FLOW IN 6.0 INCH PIPE IS 3.9 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 8.10
ESTIMATED PIPE DIAMETER(INCH) = 6.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 1.11
PIPE TRAVEL TIME(MIN.) = 0.02 Tc(MIN.) = 5.44
LONGEST FLOWPATH FROM NODE 180.00 TO NODE 200.00 = 152.60 FEET.

FLOW PROCESS FROM NODE 200.00 TO NODE 200.00 IS CODE = 1

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

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

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 5.44
RAINFALL INTENSITY(INCH/HR) = 5.89
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 0.21
TOTAL STREAM AREA(ACRES) = 0.21
PEAK FLOW RATE(CFS) AT CONFLUENCE = 1.11

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	5.85	5.36	5.943	0.30(0.03)	0.10	1.0	150.00
1	5.88	5.46	5.881	0.30(0.03)	0.10	1.0	100.00
1	5.93	5.71	5.736	0.30(0.03)	0.10	1.1	30.00
1	5.94	5.80	5.684	0.30(0.03)	0.10	1.1	130.00
1	5.96	6.04	5.554	0.30(0.03)	0.10	1.1	80.00
1	5.92	6.93	5.132	0.30(0.03)	0.10	1.2	60.00
1	5.70	7.88	4.768	0.30(0.03)	0.10	1.2	10.00
2	1.11	5.44	5.893	0.30(0.03)	0.10	0.2	180.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	6.95	5.36	5.943	0.30(0.03)	0.10	1.2	150.00
2	6.99	5.44	5.893	0.30(0.03)	0.10	1.2	180.00
3	6.99	5.46	5.881	0.30(0.03)	0.10	1.2	100.00
4	7.02	5.71	5.736	0.30(0.03)	0.10	1.3	30.00

5	7.01	5.80	5.684	0.30(0.03)	0.10	1.3	130.00
6	7.01	6.04	5.554	0.30(0.03)	0.10	1.3	80.00
7	6.89	6.93	5.132	0.30(0.03)	0.10	1.4	60.00
8	6.59	7.88	4.768	0.30(0.03)	0.10	1.5	10.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 7.02 Tc(MIN.) = 5.71
 EFFECTIVE AREA(ACRES) = 1.27 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 1.5
 LONGEST FLOWPATH FROM NODE 60.00 TO NODE 200.00 = 556.10 FEET.

FLOW PROCESS FROM NODE 200.00 TO NODE 230.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 173.85 DOWNSTREAM(FEET) = 173.71
 FLOW LENGTH(FEET) = 13.50 MANNING'S N = 0.013
 DEPTH OF FLOW IN 18.0 INCH PIPE IS 10.8 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 6.33
 ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 7.02
 PIPE TRAVEL TIME(MIN.) = 0.04 Tc(MIN.) = 5.74
 LONGEST FLOWPATH FROM NODE 60.00 TO NODE 230.00 = 569.60 FEET.

FLOW PROCESS FROM NODE 230.00 TO NODE 230.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
 TIME OF CONCENTRATION(MIN.) = 5.74
 RAINFALL INTENSITY(INCH/HR) = 5.72
 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 1.27
 TOTAL STREAM AREA(ACRES) = 1.45
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 7.02

FLOW PROCESS FROM NODE 210.00 TO NODE 220.00 IS CODE = 21

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

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 135.00

ELEVATION DATA: UPSTREAM(FEET) = 179.84 DOWNSTREAM(FEET) = 177.43

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

SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 5.000

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 6.187

SUBAREA T_c AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	F_p (INCH/HR)	A_p (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	B	0.12	0.30	0.100	76	5.00

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

SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100

SUBAREA RUNOFF(CFS) = 0.66

TOTAL AREA(ACRES) = 0.12 PEAK FLOW RATE(CFS) = 0.66

FLOW PROCESS FROM NODE 220.00 TO NODE 230.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 173.88 DOWNSTREAM(FEET) = 173.71

FLOW LENGTH(FEET) = 15.00 MANNING'S N = 0.013

DEPTH OF FLOW IN 9.0 INCH PIPE IS 3.9 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 3.65

ESTIMATED PIPE DIAMETER(INCH) = 9.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 0.66

PIPE TRAVEL TIME(MIN.) = 0.07 T_c (MIN.) = 5.07

LONGEST FLOWPATH FROM NODE 210.00 TO NODE 230.00 = 150.00 FEET.

FLOW PROCESS FROM NODE 230.00 TO NODE 230.00 IS CODE = 1

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

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

TOTAL NUMBER OF STREAMS = 2

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:

TIME OF CONCENTRATION(MIN.) = 5.07

RAINFALL INTENSITY(INCH/HR) = 6.14

AREA-AVERAGED F_m (INCH/HR) = 0.03

AREA-AVERAGED F_p (INCH/HR) = 0.30

AREA-AVERAGED A_p = 0.10

EFFECTIVE STREAM AREA(ACRES) = 0.12

TOTAL STREAM AREA(ACRES) = 0.12

PEAK FLOW RATE(CFS) AT CONFLUENCE = 0.66

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	T_c (MIN.)	Intensity (INCH/HR)	F_p (F_m) (INCH/HR)	A_p	A_e (ACRES)	HEADWATER NODE
1	6.95	5.40	5.921	0.30(0.03)	0.10	1.2	150.00

1	6.99	5.48	5.872	0.30(0.03)	0.10	1.2	180.00
1	6.99	5.50	5.859	0.30(0.03)	0.10	1.2	100.00
1	7.02	5.74	5.716	0.30(0.03)	0.10	1.3	30.00
1	7.01	5.83	5.664	0.30(0.03)	0.10	1.3	130.00
1	7.01	6.07	5.536	0.30(0.03)	0.10	1.3	80.00
1	6.89	6.97	5.117	0.30(0.03)	0.10	1.4	60.00
1	6.59	7.92	4.755	0.30(0.03)	0.10	1.5	10.00
2	0.66	5.07	6.139	0.30(0.03)	0.10	0.1	210.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	7.44	5.07	6.139	0.30(0.03)	0.10	1.3	210.00
2	7.60	5.40	5.921	0.30(0.03)	0.10	1.3	150.00
3	7.62	5.48	5.872	0.30(0.03)	0.10	1.3	180.00
4	7.63	5.50	5.859	0.30(0.03)	0.10	1.3	100.00
5	7.63	5.74	5.716	0.30(0.03)	0.10	1.4	30.00
6	7.63	5.83	5.664	0.30(0.03)	0.10	1.4	130.00
7	7.61	6.07	5.536	0.30(0.03)	0.10	1.4	80.00
8	7.44	6.97	5.117	0.30(0.03)	0.10	1.5	60.00
9	7.11	7.92	4.755	0.30(0.03)	0.10	1.6	10.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 7.63 Tc(MIN.) = 5.74
EFFECTIVE AREA(ACRES) = 1.39 AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 1.6
LONGEST FLOWPATH FROM NODE 60.00 TO NODE 230.00 = 569.60 FEET.

FLOW PROCESS FROM NODE 230.00 TO NODE 250.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 173.71 DOWNSTREAM(FEET) = 173.16
FLOW LENGTH(FEET) = 54.10 MANNING'S N = 0.013
DEPTH OF FLOW IN 18.0 INCH PIPE IS 11.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 6.39
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 7.63
PIPE TRAVEL TIME(MIN.) = 0.14 Tc(MIN.) = 5.88
LONGEST FLOWPATH FROM NODE 60.00 TO NODE 250.00 = 623.70 FEET.

FLOW PROCESS FROM NODE 260.00 TO NODE 260.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 5.88
RAINFALL INTENSITY(INCH/HR) = 5.64
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 1.39
TOTAL STREAM AREA(ACRES) = 1.57
PEAK FLOW RATE(CFS) AT CONFLUENCE = 7.63

FLOW PROCESS FROM NODE 240.00 TO NODE 250.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 254.70
ELEVATION DATA: UPSTREAM(FEET) = 183.92 DOWNSTREAM(FEET) = 176.96

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$
SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 5.728
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 5.724
SUBAREA T_c AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	B	3.73	0.30	0.100	76	5.73

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 19.11
TOTAL AREA(ACRES) = 3.73 PEAK FLOW RATE(CFS) = 19.11

FLOW PROCESS FROM NODE 250.00 TO NODE 260.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 173.96 DOWNSTREAM(FEET) = 173.16
FLOW LENGTH(FEET) = 23.10 MANNING'S N = 0.013
DEPTH OF FLOW IN 21.0 INCH PIPE IS 12.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 12.79
ESTIMATED PIPE DIAMETER(INCH) = 21.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 19.11
PIPE TRAVEL TIME(MIN.) = 0.03 T_c (MIN.) = 5.76
LONGEST FLOWPATH FROM NODE 240.00 TO NODE 260.00 = 277.80 FEET.

FLOW PROCESS FROM NODE 260.00 TO NODE 260.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 5.76
RAINFALL INTENSITY(INCH/HR) = 5.71
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 3.73
TOTAL STREAM AREA(ACRES) = 3.73
PEAK FLOW RATE(CFS) AT CONFLUENCE = 19.11

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	7.44	5.21	6.043	0.30(0.03)	0.10	1.3	210.00
1	7.60	5.54	5.834	0.30(0.03)	0.10	1.3	150.00
1	7.62	5.62	5.787	0.30(0.03)	0.10	1.3	180.00
1	7.63	5.64	5.775	0.30(0.03)	0.10	1.3	100.00
1	7.63	5.88	5.637	0.30(0.03)	0.10	1.4	30.00
1	7.63	5.97	5.587	0.30(0.03)	0.10	1.4	130.00
1	7.61	6.21	5.463	0.30(0.03)	0.10	1.4	80.00
1	7.44	7.11	5.058	0.30(0.03)	0.10	1.5	60.00
1	7.11	8.06	4.706	0.30(0.03)	0.10	1.6	10.00
2	19.11	5.76	5.707	0.30(0.03)	0.10	3.7	240.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	25.76	5.21	6.043	0.30(0.03)	0.10	4.6	210.00
2	26.40	5.54	5.834	0.30(0.03)	0.10	4.9	150.00
3	26.54	5.62	5.787	0.30(0.03)	0.10	5.0	180.00
4	26.57	5.64	5.775	0.30(0.03)	0.10	5.0	100.00
5	26.74	5.76	5.707	0.30(0.03)	0.10	5.1	240.00
6	26.51	5.88	5.637	0.30(0.03)	0.10	5.1	30.00
7	26.34	5.97	5.587	0.30(0.03)	0.10	5.1	130.00
8	25.90	6.21	5.463	0.30(0.03)	0.10	5.2	80.00
9	24.37	7.11	5.058	0.30(0.03)	0.10	5.3	60.00
10	22.85	8.06	4.706	0.30(0.03)	0.10	5.3	10.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 26.74 Tc(MIN.) = 5.76
EFFECTIVE AREA(ACRES) = 5.10 AREA-AVERAGED Fm(INCH/HR) = 0.03

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 5.3
LONGEST FLOWPATH FROM NODE 60.00 TO NODE 260.00 = 623.70 FEET.

FLOW PROCESS FROM NODE 260.00 TO NODE 320.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 173.16 DOWNSTREAM(FEET) = 173.00
FLOW LENGTH(FEET) = 15.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 27.0 INCH PIPE IS 19.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 8.81
ESTIMATED PIPE DIAMETER(INCH) = 27.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 26.74
PIPE TRAVEL TIME(MIN.) = 0.03 Tc(MIN.) = 5.79
LONGEST FLOWPATH FROM NODE 60.00 TO NODE 320.00 = 638.70 FEET.

FLOW PROCESS FROM NODE 320.00 TO NODE 320.00 IS CODE = 10

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

=====

FLOW PROCESS FROM NODE 270.00 TO NODE 280.00 IS CODE = 21

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

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 254.00
ELEVATION DATA: UPSTREAM(FEET) = 180.24 DOWNSTREAM(FEET) = 176.96

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

SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 6.647

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 5.256

SUBAREA Tc AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	B	2.02	0.30	0.100	76	6.65

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

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100

SUBAREA RUNOFF(CFS) = 9.50

TOTAL AREA(ACRES) = 2.02 PEAK FLOW RATE(CFS) = 9.50

FLOW PROCESS FROM NODE 280.00 TO NODE 310.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 173.97 DOWNSTREAM(FEET) = 173.44
FLOW LENGTH(FEET) = 111.10 MANNING'S N = 0.013
DEPTH OF FLOW IN 21.0 INCH PIPE IS 15.4 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 5.01
ESTIMATED PIPE DIAMETER(INCH) = 21.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 9.50
PIPE TRAVEL TIME(MIN.) = 0.37 Tc(MIN.) = 7.02
LONGEST FLOWPATH FROM NODE 270.00 TO NODE 310.00 = 365.10 FEET.

FLOW PROCESS FROM NODE 310.00 TO NODE 310.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 7.02
RAINFALL INTENSITY(INCH/HR) = 5.10
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 2.02
TOTAL STREAM AREA(ACRES) = 2.02
PEAK FLOW RATE(CFS) AT CONFLUENCE = 9.50

FLOW PROCESS FROM NODE 290.00 TO NODE 300.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 254.60
ELEVATION DATA: UPSTREAM(FEET) = 180.25 DOWNSTREAM(FEET) = 176.96

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 6.652
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 5.254
SUBAREA Tc AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	B	2.02	0.30	0.100	76	6.65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 9.50
TOTAL AREA(ACRES) = 2.02 PEAK FLOW RATE(CFS) = 9.50

FLOW PROCESS FROM NODE 300.00 TO NODE 310.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 173.96 DOWNSTREAM(FEET) = 173.44
FLOW LENGTH(FEET) = 33.70 MANNING'S N = 0.013
DEPTH OF FLOW IN 18.0 INCH PIPE IS 11.6 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 7.89
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 9.50
PIPE TRAVEL TIME(MIN.) = 0.07 Tc(MIN.) = 6.72
LONGEST FLOWPATH FROM NODE 290.00 TO NODE 310.00 = 288.30 FEET.

FLOW PROCESS FROM NODE 310.00 TO NODE 310.00 IS CODE = 1

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

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 6.72
RAINFALL INTENSITY(INCH/HR) = 5.22
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 2.02
TOTAL STREAM AREA(ACRES) = 2.02
PEAK FLOW RATE(CFS) AT CONFLUENCE = 9.50

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	9.50	7.02	5.096	0.30(0.03)	0.10	2.0	270.00
2	9.50	6.72	5.222	0.30(0.03)	0.10	2.0	290.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18.83	6.72	5.222	0.30(0.03)	0.10	4.0	290.00
2	18.77	7.02	5.096	0.30(0.03)	0.10	4.0	270.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 18.83 Tc(MIN.) = 6.72
EFFECTIVE AREA(ACRES) = 3.96 AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 4.0

LONGEST FLOWPATH FROM NODE 270.00 TO NODE 310.00 = 365.10 FEET.

FLOW PROCESS FROM NODE 310.00 TO NODE 320.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) =	173.44	DOWNSTREAM(FEET) =	173.00
FLOW LENGTH(FEET) =	87.40	MANNING'S N =	0.013
DEPTH OF FLOW IN 27.0 INCH PIPE IS	19.6 INCHES		
PIPE-FLOW VELOCITY(FEET/SEC.) =	6.08		
ESTIMATED PIPE DIAMETER(INCH) =	27.00	NUMBER OF PIPES =	1
PIPE-FLOW(CFS) =	18.83		
PIPE TRAVEL TIME(MIN.) =	0.24	Tc(MIN.) =	6.96
LONGEST FLOWPATH FROM NODE 270.00 TO NODE 320.00 =	452.50 FEET.		

FLOW PROCESS FROM NODE 320.00 TO NODE 320.00 IS CODE = 11

>>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<

=====

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18.83	6.96	5.118	0.30(0.03)	0.10	4.0	290.00
2	18.77	7.26	4.998	0.30(0.03)	0.10	4.0	270.00

LONGEST FLOWPATH FROM NODE 270.00 TO NODE 320.00 = 452.50 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	25.76	5.24	6.024	0.30(0.03)	0.10	4.6	210.00
2	26.40	5.57	5.817	0.30(0.03)	0.10	4.9	150.00
3	26.54	5.65	5.770	0.30(0.03)	0.10	5.0	180.00
4	26.57	5.67	5.758	0.30(0.03)	0.10	5.0	100.00
5	26.74	5.79	5.691	0.30(0.03)	0.10	5.1	240.00
6	26.51	5.91	5.621	0.30(0.03)	0.10	5.1	30.00
7	26.34	6.00	5.572	0.30(0.03)	0.10	5.1	130.00
8	25.90	6.24	5.449	0.30(0.03)	0.10	5.2	80.00
9	24.37	7.14	5.046	0.30(0.03)	0.10	5.3	60.00
10	22.85	8.09	4.697	0.30(0.03)	0.10	5.3	10.00

LONGEST FLOWPATH FROM NODE 60.00 TO NODE 320.00 = 638.70 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	42.45	5.24	6.024	0.30(0.03)	0.10	7.6	210.00
2	43.53	5.57	5.817	0.30(0.03)	0.10	8.1	150.00

3	43.77	5.65	5.770	0.30(0.03)	0.10	8.2	180.00
4	43.83	5.67	5.758	0.30(0.03)	0.10	8.2	100.00
5	44.15	5.79	5.691	0.30(0.03)	0.10	8.4	240.00
6	44.08	5.91	5.621	0.30(0.03)	0.10	8.5	30.00
7	44.02	6.00	5.572	0.30(0.03)	0.10	8.5	130.00
8	43.88	6.24	5.449	0.30(0.03)	0.10	8.7	80.00
9	43.49	6.96	5.118	0.30(0.03)	0.10	9.2	290.00
10	43.16	7.14	5.046	0.30(0.03)	0.10	9.3	60.00
11	42.95	7.26	4.998	0.30(0.03)	0.10	9.3	270.00
12	40.48	8.09	4.697	0.30(0.03)	0.10	9.3	10.00
TOTAL AREA(ACRES) =			9.3				

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 44.15 Tc(MIN.) = 5.786
 EFFECTIVE AREA(ACRES) = 8.38 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 9.3
 LONGEST FLOWPATH FROM NODE 60.00 TO NODE 320.00 = 638.70 FEET.

FLOW PROCESS FROM NODE 320.00 TO NODE 710.00 IS CODE = 31

 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 173.00 DOWNSTREAM(FEET) = 172.80
 FLOW LENGTH(FEET) = 40.60 MANNING'S N = 0.013
 DEPTH OF FLOW IN 36.0 INCH PIPE IS 28.5 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 7.35
 ESTIMATED PIPE DIAMETER(INCH) = 36.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 44.15
 PIPE TRAVEL TIME(MIN.) = 0.09 Tc(MIN.) = 5.88
 LONGEST FLOWPATH FROM NODE 60.00 TO NODE 710.00 = 679.30 FEET.

FLOW PROCESS FROM NODE 710.00 TO NODE 710.00 IS CODE = 12

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

FLOW PROCESS FROM NODE 710.00 TO NODE 710.00 IS CODE = 10

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

FLOW PROCESS FROM NODE 330.00 TO NODE 340.00 IS CODE = 21

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

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 159.00
ELEVATION DATA: UPSTREAM(FEET) = 182.30 DOWNSTREAM(FEET) = 181.25

$T_c = K * [(LENGTH^{**} 3.00) / (ELEVATION \text{ CHANGE})]^{**} 0.20$
SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 6.302
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 5.419
SUBAREA T_c AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	B	0.25	0.30	0.100	76	6.30

SUBAREA AVERAGE PERVIOUS LOSS RATE, F_p (INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100
SUBAREA RUNOFF(CFS) = 1.21
TOTAL AREA(ACRES) = 0.25 PEAK FLOW RATE(CFS) = 1.21

FLOW PROCESS FROM NODE 340.00 TO NODE 350.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 178.04 DOWNSTREAM(FEET) = 177.82
FLOW LENGTH(FEET) = 44.30 MANNING'S N = 0.013
DEPTH OF FLOW IN 12.0 INCH PIPE IS 6.0 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 3.11
ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 1.21
PIPE TRAVEL TIME(MIN.) = 0.24 T_c (MIN.) = 6.54
LONGEST FLOWPATH FROM NODE 330.00 TO NODE 350.00 = 203.30 FEET.

FLOW PROCESS FROM NODE 350.00 TO NODE 380.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 177.82 DOWNSTREAM(FEET) = 177.74
FLOW LENGTH(FEET) = 5.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 9.0 INCH PIPE IS 5.0 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 4.82
ESTIMATED PIPE DIAMETER(INCH) = 9.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 1.21
PIPE TRAVEL TIME(MIN.) = 0.02 T_c (MIN.) = 6.56
LONGEST FLOWPATH FROM NODE 330.00 TO NODE 380.00 = 208.30 FEET.

FLOW PROCESS FROM NODE 380.00 TO NODE 380.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 6.56
RAINFALL INTENSITY(INCH/HR) = 5.30
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 0.25
TOTAL STREAM AREA(ACRES) = 0.25
PEAK FLOW RATE(CFS) AT CONFLUENCE = 1.21

FLOW PROCESS FROM NODE 360.00 TO NODE 370.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 16.60
ELEVATION DATA: UPSTREAM(FEET) = 181.94 DOWNSTREAM(FEET) = 181.37

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$
SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 5.000
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 6.187
SUBAREA T_c AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	B	0.02	0.30	0.100	76	5.00

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 0.11
TOTAL AREA(ACRES) = 0.02 PEAK FLOW RATE(CFS) = 0.11

FLOW PROCESS FROM NODE 370.00 TO NODE 380.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 177.88 DOWNSTREAM(FEET) = 177.74
FLOW LENGTH(FEET) = 28.40 MANNING'S N = 0.013
DEPTH OF FLOW IN 6.0 INCH PIPE IS 2.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 1.67
ESTIMATED PIPE DIAMETER(INCH) = 6.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 0.11
PIPE TRAVEL TIME(MIN.) = 0.28 T_c (MIN.) = 5.28
LONGEST FLOWPATH FROM NODE 360.00 TO NODE 380.00 = 45.00 FEET.

FLOW PROCESS FROM NODE 380.00 TO NODE 380.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 5.28
RAINFALL INTENSITY(INCH/HR) = 6.00
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 0.02
TOTAL STREAM AREA(ACRES) = 0.02
PEAK FLOW RATE(CFS) AT CONFLUENCE = 0.11

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1.21	6.56	5.297	0.30(0.03)	0.10	0.2	330.00
2	0.11	5.28	5.995	0.30(0.03)	0.10	0.0	360.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1.22	5.28	5.995	0.30(0.03)	0.10	0.2	360.00
2	1.31	6.56	5.297	0.30(0.03)	0.10	0.3	330.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 1.31 Tc(MIN.) = 6.56
EFFECTIVE AREA(ACRES) = 0.27 AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 0.3
LONGEST FLOWPATH FROM NODE 330.00 TO NODE 380.00 = 208.30 FEET.

FLOW PROCESS FROM NODE 380.00 TO NODE 420.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 177.74 DOWNSTREAM(FEET) = 176.15
FLOW LENGTH(FEET) = 93.70 MANNING'S N = 0.013
DEPTH OF FLOW IN 9.0 INCH PIPE IS 5.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 5.01
ESTIMATED PIPE DIAMETER(INCH) = 9.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 1.31

PIPE TRAVEL TIME(MIN.) = 0.31 Tc(MIN.) = 6.87
LONGEST FLOWPATH FROM NODE 330.00 TO NODE 420.00 = 302.00 FEET.

FLOW PROCESS FROM NODE 420.00 TO NODE 420.00 IS CODE = 12

>>>>>CLEAR MEMORY BANK # 2 <<<<<

=====

FLOW PROCESS FROM NODE 420.00 TO NODE 420.00 IS CODE = 10

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

=====

FLOW PROCESS FROM NODE 390.00 TO NODE 400.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 61.30
ELEVATION DATA: UPSTREAM(FEET) = 182.25 DOWNSTREAM(FEET) = 180.70

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.000
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 6.187
SUBAREA Tc AND LOSS RATE DATA(AMC III):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS Tc
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
COMMERCIAL B 0.09 0.30 0.100 76 5.00
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 0.50
TOTAL AREA(ACRES) = 0.09 PEAK FLOW RATE(CFS) = 0.50

FLOW PROCESS FROM NODE 400.00 TO NODE 410.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 177.11 DOWNSTREAM(FEET) = 176.97
FLOW LENGTH(FEET) = 28.40 MANNING'S N = 0.013
DEPTH OF FLOW IN 9.0 INCH PIPE IS 4.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 2.47
ESTIMATED PIPE DIAMETER(INCH) = 9.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 0.50
PIPE TRAVEL TIME(MIN.) = 0.19 Tc(MIN.) = 5.19
LONGEST FLOWPATH FROM NODE 390.00 TO NODE 410.00 = 89.70 FEET.

FLOW PROCESS FROM NODE 410.00 TO NODE 420.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 176.97 DOWNSTREAM(FEET) = 176.15
FLOW LENGTH(FEET) = 92.30 MANNING'S N = 0.013
DEPTH OF FLOW IN 6.0 INCH PIPE IS 4.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 2.99
ESTIMATED PIPE DIAMETER(INCH) = 6.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 0.50
PIPE TRAVEL TIME(MIN.) = 0.51 Tc(MIN.) = 5.71
LONGEST FLOWPATH FROM NODE 390.00 TO NODE 420.00 = 182.00 FEET.

FLOW PROCESS FROM NODE 420.00 TO NODE 420.00 IS CODE = 11

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

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	0.50	5.71	5.736	0.30(0.03)	0.10	0.1	390.00
LONGEST FLOWPATH FROM NODE 390.00 TO NODE 420.00 = 182.00 FEET.							

** MEMORY BANK # 2 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1.22	5.60	5.799	0.30(0.03)	0.10	0.2	360.00
2	1.31	6.87	5.158	0.30(0.03)	0.10	0.3	330.00
LONGEST FLOWPATH FROM NODE 330.00 TO NODE 420.00 = 302.00 FEET.							

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1.71	5.60	5.799	0.30(0.03)	0.10	0.3	360.00
2	1.72	5.71	5.736	0.30(0.03)	0.10	0.3	390.00
3	1.76	6.87	5.158	0.30(0.03)	0.10	0.4	330.00
TOTAL AREA(ACRES) = 0.4							

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 1.76 Tc(MIN.) = 6.868
EFFECTIVE AREA(ACRES) = 0.36 AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 0.4
LONGEST FLOWPATH FROM NODE 330.00 TO NODE 420.00 = 302.00 FEET.

FLOW PROCESS FROM NODE 420.00 TO NODE 480.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 176.15 DOWNSTREAM(FEET) = 174.75
FLOW LENGTH(FEET) = 156.70 MANNING'S N = 0.013
DEPTH OF FLOW IN 12.0 INCH PIPE IS 6.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 4.24
ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 1.76
PIPE TRAVEL TIME(MIN.) = 0.62 Tc(MIN.) = 7.48
LONGEST FLOWPATH FROM NODE 330.00 TO NODE 480.00 = 458.70 FEET.

FLOW PROCESS FROM NODE 480.00 TO NODE 480.00 IS CODE = 12

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

FLOW PROCESS FROM NODE 480.00 TO NODE 480.00 IS CODE = 10

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

FLOW PROCESS FROM NODE 430.00 TO NODE 440.00 IS CODE = 21

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

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 132.90
ELEVATION DATA: UPSTREAM(FEET) = 182.20 DOWNSTREAM(FEET) = 177.50

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

SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.000

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 6.187

SUBAREA Tc AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	B	0.08	0.30	0.100	76	5.00

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

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100

SUBAREA RUNOFF(CFS) = 0.44

TOTAL AREA(ACRES) = 0.08 PEAK FLOW RATE(CFS) = 0.44

FLOW PROCESS FROM NODE 440.00 TO NODE 460.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 175.02 DOWNSTREAM(FEET) = 174.80
FLOW LENGTH(FEET) = 46.30 MANNING'S N = 0.013
DEPTH OF FLOW IN 9.0 INCH PIPE IS 4.0 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 2.37
ESTIMATED PIPE DIAMETER(INCH) = 9.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 0.44
PIPE TRAVEL TIME(MIN.) = 0.33 Tc(MIN.) = 5.33
LONGEST FLOWPATH FROM NODE 430.00 TO NODE 460.00 = 179.20 FEET.

FLOW PROCESS FROM NODE 470.00 TO NODE 470.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 5.33
RAINFALL INTENSITY(INCH/HR) = 5.97
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 0.08
TOTAL STREAM AREA(ACRES) = 0.08
PEAK FLOW RATE(CFS) AT CONFLUENCE = 0.44

FLOW PROCESS FROM NODE 450.00 TO NODE 460.00 IS CODE = 21

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

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 133.00
ELEVATION DATA: UPSTREAM(FEET) = 181.96 DOWNSTREAM(FEET) = 178.00

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

SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.000

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 6.187

SUBAREA Tc AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	B	0.21	0.30	0.100	76	5.00

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

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100

SUBAREA RUNOFF(CFS) = 1.16

TOTAL AREA(ACRES) = 0.21 PEAK FLOW RATE(CFS) = 1.16

FLOW PROCESS FROM NODE 470.00 TO NODE 470.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 5.00
RAINFALL INTENSITY(INCH/HR) = 6.19
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 0.21
TOTAL STREAM AREA(ACRES) = 0.21
PEAK FLOW RATE(CFS) AT CONFLUENCE = 1.16

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	0.44	5.33	5.967	0.30(0.03)	0.10	0.1	430.00
2	1.16	5.00	6.187	0.30(0.03)	0.10	0.2	450.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1.60	5.00	6.187	0.30(0.03)	0.10	0.3	450.00
2	1.57	5.33	5.967	0.30(0.03)	0.10	0.3	430.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 1.60 Tc(MIN.) = 5.00
EFFECTIVE AREA(ACRES) = 0.29 AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 0.3
LONGEST FLOWPATH FROM NODE 430.00 TO NODE 470.00 = 179.20 FEET.

FLOW PROCESS FROM NODE 470.00 TO NODE 480.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
=====

ELEVATION DATA: UPSTREAM(FEET) = 174.78 DOWNSTREAM(FEET) = 174.75
FLOW LENGTH(FEET) = 6.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 12.0 INCH PIPE IS 7.1 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 3.32
ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 1.60
PIPE TRAVEL TIME(MIN.) = 0.03 Tc(MIN.) = 5.03
LONGEST FLOWPATH FROM NODE 430.00 TO NODE 480.00 = 185.20 FEET.

FLOW PROCESS FROM NODE 480.00 TO NODE 480.00 IS CODE = 11

>>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
=====

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1.60	5.03	6.166	0.30(0.03)	0.10	0.3	450.00
2	1.57	5.36	5.948	0.30(0.03)	0.10	0.3	430.00

LONGEST FLOWPATH FROM NODE 430.00 TO NODE 480.00 = 185.20 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1.71	6.22	5.461	0.30(0.03)	0.10	0.3	360.00
2	1.72	6.32	5.408	0.30(0.03)	0.10	0.3	390.00
3	1.76	7.48	4.911	0.30(0.03)	0.10	0.4	330.00

LONGEST FLOWPATH FROM NODE 330.00 TO NODE 480.00 = 458.70 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	3.16	5.03	6.166	0.30(0.03)	0.10	0.5	450.00
2	3.17	5.36	5.948	0.30(0.03)	0.10	0.6	430.00
3	3.15	6.22	5.461	0.30(0.03)	0.10	0.6	360.00
4	3.15	6.32	5.408	0.30(0.03)	0.10	0.6	390.00
5	3.05	7.48	4.911	0.30(0.03)	0.10	0.6	330.00

TOTAL AREA(ACRES) = 0.6

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 3.17 Tc(MIN.) = 5.356
EFFECTIVE AREA(ACRES) = 0.56 AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 0.6
LONGEST FLOWPATH FROM NODE 330.00 TO NODE 480.00 = 458.70 FEET.

FLOW PROCESS FROM NODE 480.00 TO NODE 510.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 174.75 DOWNSTREAM(FEET) = 174.29

FLOW LENGTH(FEET) = 51.90 MANNING'S N = 0.013

DEPTH OF FLOW IN 12.0 INCH PIPE IS 9.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 4.74
ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 3.17
PIPE TRAVEL TIME(MIN.) = 0.18 Tc(MIN.) = 5.54
LONGEST FLOWPATH FROM NODE 330.00 TO NODE 510.00 = 510.60 FEET.

FLOW PROCESS FROM NODE 510.00 TO NODE 510.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 5.54
RAINFALL INTENSITY(INCH/HR) = 5.83
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 0.56
TOTAL STREAM AREA(ACRES) = 0.65
PEAK FLOW RATE(CFS) AT CONFLUENCE = 3.17

FLOW PROCESS FROM NODE 490.00 TO NODE 500.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 260.60
ELEVATION DATA: UPSTREAM(FEET) = 180.24 DOWNSTREAM(FEET) = 176.96

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 6.750
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 5.210
SUBAREA Tc AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	B	2.91	0.30	0.100	76	6.75

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 13.57
TOTAL AREA(ACRES) = 2.91 PEAK FLOW RATE(CFS) = 13.57

FLOW PROCESS FROM NODE 500.00 TO NODE 510.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 174.46 DOWNSTREAM(FEET) = 174.29
 FLOW LENGTH(FEET) = 33.70 MANNING'S N = 0.013
 DEPTH OF FLOW IN 24.0 INCH PIPE IS 17.3 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 5.61
 ESTIMATED PIPE DIAMETER(INCH) = 24.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 13.57
 PIPE TRAVEL TIME(MIN.) = 0.10 Tc(MIN.) = 6.85
 LONGEST FLOWPATH FROM NODE 490.00 TO NODE 510.00 = 294.30 FEET.

FLOW PROCESS FROM NODE 510.00 TO NODE 510.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 6.85
 RAINFALL INTENSITY(INCH/HR) = 5.17
 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 2.91
 TOTAL STREAM AREA(ACRES) = 2.91
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 13.57

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	3.16	5.21	6.041	0.30(0.03)	0.10	0.5	450.00
1	3.17	5.54	5.835	0.30(0.03)	0.10	0.6	430.00
1	3.15	6.40	5.371	0.30(0.03)	0.10	0.6	360.00
1	3.15	6.51	5.321	0.30(0.03)	0.10	0.6	390.00
1	3.05	7.67	4.843	0.30(0.03)	0.10	0.6	330.00
2	13.57	6.85	5.166	0.30(0.03)	0.10	2.9	490.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	15.24	5.21	6.041	0.30(0.03)	0.10	2.8	450.00
2	15.57	5.54	5.835	0.30(0.03)	0.10	2.9	430.00
3	16.33	6.40	5.371	0.30(0.03)	0.10	3.3	360.00
4	16.42	6.51	5.321	0.30(0.03)	0.10	3.4	390.00
5	16.68	6.85	5.166	0.30(0.03)	0.10	3.5	490.00
6	15.76	7.67	4.843	0.30(0.03)	0.10	3.6	330.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 16.68 Tc(MIN.) = 6.85
 EFFECTIVE AREA(ACRES) = 3.53 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 3.6
 LONGEST FLOWPATH FROM NODE 330.00 TO NODE 510.00 = 510.60 FEET.

 FLOW PROCESS FROM NODE 510.00 TO NODE 570.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

=====
 ELEVATION DATA: UPSTREAM(FEET) = 174.29 DOWNSTREAM(FEET) = 174.18
 FLOW LENGTH(FEET) = 20.70 MANNING'S N = 0.013
 DEPTH OF FLOW IN 27.0 INCH PIPE IS 17.6 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 6.09
 ESTIMATED PIPE DIAMETER(INCH) = 27.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 16.68
 PIPE TRAVEL TIME(MIN.) = 0.06 Tc(MIN.) = 6.91
 LONGEST FLOWPATH FROM NODE 330.00 TO NODE 570.00 = 531.30 FEET.

 FLOW PROCESS FROM NODE 570.00 TO NODE 570.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 2 <<<<

 FLOW PROCESS FROM NODE 570.00 TO NODE 570.00 IS CODE = 10

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

 FLOW PROCESS FROM NODE 520.00 TO NODE 530.00 IS CODE = 21

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

=====
 INITIAL SUBAREA FLOW-LENGTH(FEET) = 214.50
 ELEVATION DATA: UPSTREAM(FEET) = 182.97 DOWNSTREAM(FEET) = 179.00

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

SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.781

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 5.694

SUBAREA Tc AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	B	0.24	0.30	0.100	76	5.78

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

SUBAREA AVERAGE PERVIOUS AREA FRACTION, $A_p = 0.100$
SUBAREA RUNOFF(CFS) = 1.22
TOTAL AREA(ACRES) = 0.24 PEAK FLOW RATE(CFS) = 1.22

FLOW PROCESS FROM NODE 530.00 TO NODE 560.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(Feet) = 175.55 DOWNSTREAM(Feet) = 174.58
FLOW LENGTH(Feet) = 62.90 MANNING'S N = 0.013
DEPTH OF FLOW IN 9.0 INCH PIPE IS 5.1 INCHES
PIPE-FLOW VELOCITY(Feet/Sec.) = 4.77
ESTIMATED PIPE DIAMETER(INCH) = 9.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 1.22
PIPE TRAVEL TIME(Min.) = 0.22 T_c (Min.) = 6.00
LONGEST FLOWPATH FROM NODE 520.00 TO NODE 560.00 = 277.40 FEET.

FLOW PROCESS FROM NODE 560.00 TO NODE 560.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(Min.) = 6.00
RAINFALL INTENSITY(INCH/HR) = 5.57
AREA-AVERAGED F_m (INCH/HR) = 0.03
AREA-AVERAGED F_p (INCH/HR) = 0.30
AREA-AVERAGED $A_p = 0.10$
EFFECTIVE STREAM AREA(ACRES) = 0.24
TOTAL STREAM AREA(ACRES) = 0.24
PEAK FLOW RATE(CFS) AT CONFLUENCE = 1.22

FLOW PROCESS FROM NODE 540.00 TO NODE 550.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(Feet) = 223.90
ELEVATION DATA: UPSTREAM(Feet) = 183.03 DOWNSTREAM(Feet) = 179.80

$T_c = K * [(LENGTH^{**} 3.00) / (ELEVATION CHANGE)]^{**0.20}$

SUBAREA ANALYSIS USED MINIMUM T_c (Min.) = 6.181

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 5.479

SUBAREA T_c AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	F_p (INCH/HR)	A_p (DECIMAL)	SCS CN	T_c (Min.)
-------------------------------	-------------------	-----------------	--------------------	--------------------	-----------	-----------------

=====

=====

** CONFLUENCE DATA **

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
------------------	------------	--------------	------------------------	---------------------	----	---------------	-------------------

1	2.53	6.00	5.573	0.30(0.03)	0.10	0.5	520.00
2	2.53	6.19	5.473	0.30(0.03)	0.10	0.5	540.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 2.53 Tc(MIN.) = 6.00
 EFFECTIVE AREA(ACRES) = 0.50 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 0.5
 LONGEST FLOWPATH FROM NODE 520.00 TO NODE 560.00 = 277.40 FEET.

FLOW PROCESS FROM NODE 560.00 TO NODE 570.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 174.58 DOWNSTREAM(FEET) = 174.18
 FLOW LENGTH(FEET) = 26.20 MANNING'S N = 0.013
 DEPTH OF FLOW IN 12.0 INCH PIPE IS 6.6 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 5.68
 ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 2.53
 PIPE TRAVEL TIME(MIN.) = 0.08 Tc(MIN.) = 6.08
 LONGEST FLOWPATH FROM NODE 520.00 TO NODE 570.00 = 303.60 FEET.

FLOW PROCESS FROM NODE 570.00 TO NODE 570.00 IS CODE = 11

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

=====

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2.53	6.08	5.533	0.30(0.03)	0.10	0.5	520.00
2	2.53	6.27	5.434	0.30(0.03)	0.10	0.5	540.00

LONGEST FLOWPATH FROM NODE 520.00 TO NODE 570.00 = 303.60 FEET.

** MEMORY BANK # 2 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	15.24	5.27	6.002	0.30(0.03)	0.10	2.8	450.00
2	15.57	5.60	5.799	0.30(0.03)	0.10	2.9	430.00
3	16.33	6.46	5.344	0.30(0.03)	0.10	3.3	360.00
4	16.42	6.56	5.294	0.30(0.03)	0.10	3.4	390.00
5	16.68	6.91	5.142	0.30(0.03)	0.10	3.5	490.00
6	15.76	7.73	4.822	0.30(0.03)	0.10	3.6	330.00

LONGEST FLOWPATH FROM NODE 330.00 TO NODE 570.00 = 531.30 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	17.62	5.27	6.002	0.30(0.03)	0.10	3.2	450.00
2	18.01	5.60	5.799	0.30(0.03)	0.10	3.4	430.00
3	18.52	6.08	5.533	0.30(0.03)	0.10	3.6	520.00
4	18.69	6.27	5.434	0.30(0.03)	0.10	3.7	540.00
5	18.81	6.46	5.344	0.30(0.03)	0.10	3.8	360.00
6	18.88	6.56	5.294	0.30(0.03)	0.10	3.9	390.00
7	19.07	6.91	5.142	0.30(0.03)	0.10	4.0	490.00
8	18.00	7.73	4.822	0.30(0.03)	0.10	4.1	330.00
TOTAL AREA(ACRES) =							4.1

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 19.07 Tc(MIN.) = 6.906
EFFECTIVE AREA(ACRES) = 4.04 AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 4.1
LONGEST FLOWPATH FROM NODE 330.00 TO NODE 570.00 = 531.30 FEET.

FLOW PROCESS FROM NODE 570.00 TO NODE 600.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 174.18 DOWNSTREAM(FEET) = 173.77
FLOW LENGTH(FEET) = 77.30 MANNING'S N = 0.013
DEPTH OF FLOW IN 27.0 INCH PIPE IS 19.4 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 6.23
ESTIMATED PIPE DIAMETER(INCH) = 27.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 19.07
PIPE TRAVEL TIME(MIN.) = 0.21 Tc(MIN.) = 7.11
LONGEST FLOWPATH FROM NODE 330.00 TO NODE 600.00 = 608.60 FEET.

FLOW PROCESS FROM NODE 600.00 TO NODE 600.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 7.11
RAINFALL INTENSITY(INCH/HR) = 5.06
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 4.04
TOTAL STREAM AREA(ACRES) = 4.07
PEAK FLOW RATE(CFS) AT CONFLUENCE = 19.07

FLOW PROCESS FROM NODE 580.00 TO NODE 590.00 IS CODE = 21

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

INITIAL SUBAREA FLOW-LENGTH(FEET) = 253.70
ELEVATION DATA: UPSTREAM(FEET) = 180.25 DOWNSTREAM(FEET) = 176.96

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

SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 6.638

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 5.260

SUBAREA T_c AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	B	2.02	0.30	0.100	76	6.64

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

SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100

SUBAREA RUNOFF(CFS) = 9.51

TOTAL AREA(ACRES) = 2.02 PEAK FLOW RATE(CFS) = 9.51

FLOW PROCESS FROM NODE 590.00 TO NODE 600.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
=====

ELEVATION DATA: UPSTREAM(FEET) = 173.96 DOWNSTREAM(FEET) = 173.77
FLOW LENGTH(FEET) = 33.70 MANNING'S N = 0.013
DEPTH OF FLOW IN 21.0 INCH PIPE IS 14.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 5.38
ESTIMATED PIPE DIAMETER(INCH) = 21.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 9.51
PIPE TRAVEL TIME(MIN.) = 0.10 T_c (MIN.) = 6.74
LONGEST FLOWPATH FROM NODE 580.00 TO NODE 600.00 = 287.40 FEET.

FLOW PROCESS FROM NODE 600.00 TO NODE 600.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 6.74
RAINFALL INTENSITY(INCH/HR) = 5.21
AREA-AVERAGED F_m (INCH/HR) = 0.03
AREA-AVERAGED F_p (INCH/HR) = 0.30
AREA-AVERAGED A_p = 0.10
EFFECTIVE STREAM AREA(ACRES) = 2.02

TOTAL STREAM AREA(ACRES) = 2.02
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 9.51

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	17.62	5.48	5.870	0.30(0.03)	0.10	3.2	450.00
1	18.01	5.81	5.679	0.30(0.03)	0.10	3.4	430.00
1	18.52	6.29	5.427	0.30(0.03)	0.10	3.6	520.00
1	18.69	6.48	5.334	0.30(0.03)	0.10	3.7	540.00
1	18.81	6.66	5.248	0.30(0.03)	0.10	3.8	360.00
1	18.88	6.77	5.201	0.30(0.03)	0.10	3.9	390.00
1	19.07	7.11	5.056	0.30(0.03)	0.10	4.0	490.00
1	18.00	7.93	4.749	0.30(0.03)	0.10	4.1	330.00
2	9.51	6.74	5.213	0.30(0.03)	0.10	2.0	580.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	26.33	5.48	5.870	0.30(0.03)	0.10	4.8	450.00
2	26.94	5.81	5.679	0.30(0.03)	0.10	5.1	430.00
3	27.75	6.29	5.427	0.30(0.03)	0.10	5.5	520.00
4	28.04	6.48	5.334	0.30(0.03)	0.10	5.7	540.00
5	28.28	6.66	5.248	0.30(0.03)	0.10	5.8	360.00
6	28.37	6.74	5.213	0.30(0.03)	0.10	5.9	580.00
7	28.37	6.77	5.201	0.30(0.03)	0.10	5.9	390.00
8	28.29	7.11	5.056	0.30(0.03)	0.10	6.1	490.00
9	26.66	7.93	4.749	0.30(0.03)	0.10	6.1	330.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 28.37 Tc(MIN.) = 6.74
 EFFECTIVE AREA(ACRES) = 5.89 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 6.1
 LONGEST FLOWPATH FROM NODE 330.00 TO NODE 600.00 = 608.60 FEET.

FLOW PROCESS FROM NODE 600.00 TO NODE 630.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 173.77 DOWNSTREAM(FEET) = 173.26

FLOW LENGTH(FEET) = 98.00 MANNING'S N = 0.013

DEPTH OF FLOW IN 30.0 INCH PIPE IS 24.2 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 6.70

ESTIMATED PIPE DIAMETER(INCH) = 30.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 28.37
PIPE TRAVEL TIME(MIN.) = 0.24 Tc(MIN.) = 6.99
LONGEST FLOWPATH FROM NODE 330.00 TO NODE 630.00 = 706.60 FEET.

FLOW PROCESS FROM NODE 630.00 TO NODE 630.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 6.99
RAINFALL INTENSITY(INCH/HR) = 5.11
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 5.89
TOTAL STREAM AREA(ACRES) = 6.09
PEAK FLOW RATE(CFS) AT CONFLUENCE = 28.37

FLOW PROCESS FROM NODE 610.00 TO NODE 620.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 254.20
ELEVATION DATA: UPSTREAM(FEET) = 180.25 DOWNSTREAM(FEET) = 176.96

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 6.646
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 5.256
SUBAREA Tc AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	B	2.02	0.30	0.100	76	6.65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 9.50
TOTAL AREA(ACRES) = 2.02 PEAK FLOW RATE(CFS) = 9.50

FLOW PROCESS FROM NODE 620.00 TO NODE 630.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 173.96 DOWNSTREAM(FEET) = 173.26
FLOW LENGTH(FEET) = 33.70 MANNING'S N = 0.013
DEPTH OF FLOW IN 18.0 INCH PIPE IS 10.5 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 8.87
 ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 9.50
 PIPE TRAVEL TIME(MIN.) = 0.06 Tc(MIN.) = 6.71
 LONGEST FLOWPATH FROM NODE 610.00 TO NODE 630.00 = 287.90 FEET.

FLOW PROCESS FROM NODE 630.00 TO NODE 630.00 IS CODE = 1

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

=====
 TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 6.71
 RAINFALL INTENSITY(INCH/HR) = 5.23
 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 2.02
 TOTAL STREAM AREA(ACRES) = 2.02
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 9.50

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	26.33	5.73	5.724	0.30(0.03)	0.10	4.8	450.00
1	26.94	6.05	5.546	0.30(0.03)	0.10	5.1	430.00
1	27.75	6.53	5.310	0.30(0.03)	0.10	5.5	520.00
1	28.04	6.72	5.222	0.30(0.03)	0.10	5.7	540.00
1	28.28	6.91	5.141	0.30(0.03)	0.10	5.8	360.00
1	28.37	6.99	5.108	0.30(0.03)	0.10	5.9	580.00
1	28.37	7.01	5.096	0.30(0.03)	0.10	5.9	390.00
1	28.29	7.36	4.959	0.30(0.03)	0.10	6.1	490.00
1	26.66	8.18	4.667	0.30(0.03)	0.10	6.1	330.00
2	9.50	6.71	5.228	0.30(0.03)	0.10	2.0	610.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	35.22	5.73	5.724	0.30(0.03)	0.10	6.6	450.00
2	36.03	6.05	5.546	0.30(0.03)	0.10	6.9	430.00
3	37.15	6.53	5.310	0.30(0.03)	0.10	7.5	520.00
4	37.52	6.71	5.228	0.30(0.03)	0.10	7.7	610.00
5	37.53	6.72	5.222	0.30(0.03)	0.10	7.7	540.00
6	37.62	6.91	5.141	0.30(0.03)	0.10	7.8	360.00
7	37.65	6.99	5.108	0.30(0.03)	0.10	7.9	580.00

8	37.63	7.01	5.096	0.30(0.03)	0.10	7.9	390.00
9	37.30	7.36	4.959	0.30(0.03)	0.10	8.1	490.00
10	35.13	8.18	4.667	0.30(0.03)	0.10	8.1	330.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 37.65 Tc(MIN.) = 6.99
 EFFECTIVE AREA(ACRES) = 7.91 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 8.1
 LONGEST FLOWPATH FROM NODE 330.00 TO NODE 630.00 = 706.60 FEET.

FLOW PROCESS FROM NODE 630.00 TO NODE 690.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 173.26 DOWNSTREAM(FEET) = 173.01
 FLOW LENGTH(FEET) = 45.90 MANNING'S N = 0.013
 DEPTH OF FLOW IN 33.0 INCH PIPE IS 26.7 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 7.30
 ESTIMATED PIPE DIAMETER(INCH) = 33.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 37.65
 PIPE TRAVEL TIME(MIN.) = 0.10 Tc(MIN.) = 7.09
 LONGEST FLOWPATH FROM NODE 330.00 TO NODE 690.00 = 752.50 FEET.

FLOW PROCESS FROM NODE 690.00 TO NODE 690.00 IS CODE = 12

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

FLOW PROCESS FROM NODE 690.00 TO NODE 690.00 IS CODE = 10

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

FLOW PROCESS FROM NODE 640.00 TO NODE 650.00 IS CODE = 21

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

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 255.50
 ELEVATION DATA: UPSTREAM(FEET) = 180.25 DOWNSTREAM(FEET) = 176.96

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

SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 6.666

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 5.247

SUBAREA Tc AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	B	2.02	0.30	0.100	76	6.67

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
 SUBAREA RUNOFF(CFS) = 9.48
 TOTAL AREA(ACRES) = 2.02 PEAK FLOW RATE(CFS) = 9.48

FLOW PROCESS FROM NODE 650.00 TO NODE 680.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 173.96 DOWNSTREAM(FEET) = 173.32
 FLOW LENGTH(FEET) = 111.10 MANNING'S N = 0.013
 DEPTH OF FLOW IN 21.0 INCH PIPE IS 14.3 INCHES
 PIPE-FLOW VELOCITY(FT/SEC.) = 5.43
 ESTIMATED PIPE DIAMETER(INCH) = 21.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 9.48
 PIPE TRAVEL TIME(MIN.) = 0.34 Tc(MIN.) = 7.01
 LONGEST FLOWPATH FROM NODE 640.00 TO NODE 680.00 = 366.60 FEET.

FLOW PROCESS FROM NODE 680.00 TO NODE 680.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
 TIME OF CONCENTRATION(MIN.) = 7.01
 RAINFALL INTENSITY(INCH/HR) = 5.10
 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 2.02
 TOTAL STREAM AREA(ACRES) = 2.02
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 9.48

FLOW PROCESS FROM NODE 660.00 TO NODE 670.00 IS CODE = 21

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

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

INITIAL SUBAREA FLOW-LENGTH(FT) = 253.60
 ELEVATION DATA: UPSTREAM(FT) = 180.25 DOWNSTREAM(FT) = 176.96

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

SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 6.636
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 5.261
 SUBAREA Tc AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	B	2.02	0.30	0.100	76	6.64

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
 SUBAREA RUNOFF(CFS) = 9.51
 TOTAL AREA(ACRES) = 2.02 PEAK FLOW RATE(CFS) = 9.51

FLOW PROCESS FROM NODE 670.00 TO NODE 680.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 173.96 DOWNSTREAM(FEET) = 173.32
 FLOW LENGTH(FEET) = 33.70 MANNING'S N = 0.013
 DEPTH OF FLOW IN 18.0 INCH PIPE IS 10.8 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 8.57
 ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 9.51
 PIPE TRAVEL TIME(MIN.) = 0.07 Tc(MIN.) = 6.70
 LONGEST FLOWPATH FROM NODE 660.00 TO NODE 680.00 = 287.30 FEET.

FLOW PROCESS FROM NODE 680.00 TO NODE 680.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 6.70
 RAINFALL INTENSITY(INCH/HR) = 5.23
 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 2.02
 TOTAL STREAM AREA(ACRES) = 2.02
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 9.51

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	9.48	7.01	5.099	0.30(0.03)	0.10	2.0	640.00
2	9.51	6.70	5.231	0.30(0.03)	0.10	2.0	660.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO

CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18.82	6.70	5.231	0.30(0.03)	0.10	4.0	660.00
2	18.75	7.01	5.099	0.30(0.03)	0.10	4.0	640.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 18.82 Tc(MIN.) = 6.70
EFFECTIVE AREA(ACRES) = 3.95 AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 4.0
LONGEST FLOWPATH FROM NODE 640.00 TO NODE 680.00 = 366.60 FEET.

FLOW PROCESS FROM NODE 680.00 TO NODE 690.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 173.32 DOWNSTREAM(FEET) = 173.01
FLOW LENGTH(FEET) = 52.10 MANNING'S N = 0.013
DEPTH OF FLOW IN 27.0 INCH PIPE IS 18.4 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 6.52
ESTIMATED PIPE DIAMETER(INCH) = 27.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 18.82
PIPE TRAVEL TIME(MIN.) = 0.13 Tc(MIN.) = 6.84
LONGEST FLOWPATH FROM NODE 640.00 TO NODE 690.00 = 418.70 FEET.

FLOW PROCESS FROM NODE 690.00 TO NODE 690.00 IS CODE = 11

>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18.82	6.84	5.173	0.30(0.03)	0.10	4.0	660.00
2	18.75	7.14	5.045	0.30(0.03)	0.10	4.0	640.00

LONGEST FLOWPATH FROM NODE 640.00 TO NODE 690.00 = 418.70 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	35.22	5.83	5.665	0.30(0.03)	0.10	6.6	450.00
2	36.03	6.16	5.492	0.30(0.03)	0.10	6.9	430.00
3	37.15	6.63	5.262	0.30(0.03)	0.10	7.5	520.00
4	37.52	6.81	5.182	0.30(0.03)	0.10	7.7	610.00

5	37.53	6.83	5.176	0.30(0.03)	0.10	7.7	540.00
6	37.62	7.01	5.097	0.30(0.03)	0.10	7.8	360.00
7	37.65	7.09	5.065	0.30(0.03)	0.10	7.9	580.00
8	37.63	7.12	5.053	0.30(0.03)	0.10	7.9	390.00
9	37.30	7.46	4.919	0.30(0.03)	0.10	8.1	490.00
10	35.13	8.29	4.633	0.30(0.03)	0.10	8.1	330.00

LONGEST FLOWPATH FROM NODE 330.00 TO NODE 690.00 = 752.50 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	52.81	5.83	5.665	0.30(0.03)	0.10	9.9	450.00
2	54.04	6.16	5.492	0.30(0.03)	0.10	10.5	430.00
3	55.73	6.63	5.262	0.30(0.03)	0.10	11.3	520.00
4	56.31	6.81	5.182	0.30(0.03)	0.10	11.6	610.00
5	56.34	6.83	5.176	0.30(0.03)	0.10	11.6	540.00
6	56.35	6.84	5.173	0.30(0.03)	0.10	11.7	660.00
7	56.40	7.01	5.097	0.30(0.03)	0.10	11.8	360.00
8	56.42	7.09	5.065	0.30(0.03)	0.10	11.9	580.00
9	56.38	7.12	5.053	0.30(0.03)	0.10	12.0	390.00
10	56.36	7.14	5.045	0.30(0.03)	0.10	12.0	640.00
11	55.58	7.46	4.919	0.30(0.03)	0.10	12.1	490.00
12	52.35	8.29	4.633	0.30(0.03)	0.10	12.1	330.00
TOTAL AREA(ACRES) =			12.1				

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 56.42 Tc(MIN.) = 7.091
 EFFECTIVE AREA(ACRES) = 11.93 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 12.1
 LONGEST FLOWPATH FROM NODE 330.00 TO NODE 690.00 = 752.50 FEET.

FLOW PROCESS FROM NODE 690.00 TO NODE 700.00 IS CODE = 31

 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 173.01 DOWNSTREAM(FEET) = 172.80
 FLOW LENGTH(FEET) = 40.60 MANNING'S N = 0.013
 DEPTH OF FLOW IN 39.0 INCH PIPE IS 31.1 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 7.95
 ESTIMATED PIPE DIAMETER(INCH) = 39.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 56.42
 PIPE TRAVEL TIME(MIN.) = 0.09 Tc(MIN.) = 7.18
 LONGEST FLOWPATH FROM NODE 330.00 TO NODE 700.00 = 793.10 FEET.

FLOW PROCESS FROM NODE 700.00 TO NODE 700.00 IS CODE = 11

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

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	52.81	5.92	5.618	0.30(0.03)	0.10	9.9	450.00
2	54.04	6.24	5.449	0.30(0.03)	0.10	10.5	430.00
3	55.73	6.72	5.223	0.30(0.03)	0.10	11.3	520.00
4	56.31	6.90	5.145	0.30(0.03)	0.10	11.6	610.00
5	56.34	6.91	5.139	0.30(0.03)	0.10	11.6	540.00
6	56.35	6.92	5.136	0.30(0.03)	0.10	11.7	660.00
7	56.40	7.10	5.062	0.30(0.03)	0.10	11.8	360.00
8	56.42	7.18	5.030	0.30(0.03)	0.10	11.9	580.00
9	56.38	7.20	5.019	0.30(0.03)	0.10	12.0	390.00
10	56.36	7.23	5.010	0.30(0.03)	0.10	12.0	640.00
11	55.58	7.55	4.887	0.30(0.03)	0.10	12.1	490.00
12	52.35	8.37	4.605	0.30(0.03)	0.10	12.1	330.00

LONGEST FLOWPATH FROM NODE 330.00 TO NODE 700.00 = 793.10 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	42.45	5.33	5.964	0.30(0.03)	0.10	7.6	210.00
2	43.53	5.66	5.763	0.30(0.03)	0.10	8.1	150.00
3	43.77	5.74	5.717	0.30(0.03)	0.10	8.2	180.00
4	43.83	5.76	5.705	0.30(0.03)	0.10	8.2	100.00
5	44.15	5.88	5.639	0.30(0.03)	0.10	8.4	240.00
6	44.08	6.00	5.572	0.30(0.03)	0.10	8.5	30.00
7	44.02	6.09	5.524	0.30(0.03)	0.10	8.5	130.00
8	43.88	6.33	5.403	0.30(0.03)	0.10	8.7	80.00
9	43.49	7.05	5.080	0.30(0.03)	0.10	9.2	290.00
10	43.16	7.23	5.009	0.30(0.03)	0.10	9.3	60.00
11	42.95	7.35	4.962	0.30(0.03)	0.10	9.3	270.00
12	40.48	8.18	4.666	0.30(0.03)	0.10	9.3	10.00

LONGEST FLOWPATH FROM NODE 60.00 TO NODE 700.00 = 679.30 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	92.97	5.33	5.964	0.30(0.03)	0.10	16.5	210.00
2	95.35	5.66	5.763	0.30(0.03)	0.10	17.6	150.00
3	95.91	5.74	5.717	0.30(0.03)	0.10	17.8	180.00
4	96.04	5.76	5.705	0.30(0.03)	0.10	17.9	100.00
5	96.81	5.88	5.639	0.30(0.03)	0.10	18.2	240.00
6	96.94	5.92	5.618	0.30(0.03)	0.10	18.3	450.00
7	97.22	6.00	5.572	0.30(0.03)	0.10	18.5	30.00
8	97.50	6.09	5.524	0.30(0.03)	0.10	18.8	130.00
9	97.97	6.24	5.449	0.30(0.03)	0.10	19.1	430.00
10	98.24	6.33	5.403	0.30(0.03)	0.10	19.4	80.00

11	99.40	6.72	5.223	0.30(0.03)	0.10	20.3	520.00
12	99.89	6.90	5.145	0.30(0.03)	0.10	20.7	610.00
13	99.91	6.91	5.139	0.30(0.03)	0.10	20.7	540.00
14	99.92	6.92	5.136	0.30(0.03)	0.10	20.8	660.00
15	99.88	7.05	5.080	0.30(0.03)	0.10	21.0	290.00
16	99.81	7.10	5.062	0.30(0.03)	0.10	21.1	360.00
17	99.68	7.18	5.030	0.30(0.03)	0.10	21.2	580.00
18	99.59	7.20	5.019	0.30(0.03)	0.10	21.2	390.00
19	99.53	7.23	5.010	0.30(0.03)	0.10	21.2	640.00
20	99.51	7.23	5.009	0.30(0.03)	0.10	21.2	60.00
21	99.01	7.35	4.962	0.30(0.03)	0.10	21.3	270.00
22	97.94	7.55	4.887	0.30(0.03)	0.10	21.4	490.00
23	93.57	8.18	4.666	0.30(0.03)	0.10	21.5	10.00
24	92.30	8.37	4.605	0.30(0.03)	0.10	21.5	330.00
TOTAL AREA(ACRES) =			21.5				

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 99.92 Tc(MIN.) = 6.920
EFFECTIVE AREA(ACRES) = 20.76 AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 21.5
LONGEST FLOWPATH FROM NODE 330.00 TO NODE 700.00 = 793.10 FEET.

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 21.5 TC(MIN.) = 6.92
EFFECTIVE AREA(ACRES) = 20.76 AREA-AVERAGED Fm(INCH/HR)= 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.100
PEAK FLOW RATE(CFS) = 99.92

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	92.97	5.33	5.964	0.30(0.03)	0.10	16.5	210.00
2	95.35	5.66	5.763	0.30(0.03)	0.10	17.6	150.00
3	95.91	5.74	5.717	0.30(0.03)	0.10	17.8	180.00
4	96.04	5.76	5.705	0.30(0.03)	0.10	17.9	100.00
5	96.81	5.88	5.639	0.30(0.03)	0.10	18.2	240.00
6	96.94	5.92	5.618	0.30(0.03)	0.10	18.3	450.00
7	97.22	6.00	5.572	0.30(0.03)	0.10	18.5	30.00
8	97.50	6.09	5.524	0.30(0.03)	0.10	18.8	130.00
9	97.97	6.24	5.449	0.30(0.03)	0.10	19.1	430.00
10	98.24	6.33	5.403	0.30(0.03)	0.10	19.4	80.00
11	99.40	6.72	5.223	0.30(0.03)	0.10	20.3	520.00
12	99.89	6.90	5.145	0.30(0.03)	0.10	20.7	610.00
13	99.91	6.91	5.139	0.30(0.03)	0.10	20.7	540.00
14	99.92	6.92	5.136	0.30(0.03)	0.10	20.8	660.00
15	99.88	7.05	5.080	0.30(0.03)	0.10	21.0	290.00
16	99.81	7.10	5.062	0.30(0.03)	0.10	21.1	360.00
17	99.68	7.18	5.030	0.30(0.03)	0.10	21.2	580.00
18	99.59	7.20	5.019	0.30(0.03)	0.10	21.2	390.00

19	99.53	7.23	5.010	0.30(0.03)	0.10	21.2	640.00
20	99.51	7.23	5.009	0.30(0.03)	0.10	21.2	60.00
21	99.01	7.35	4.962	0.30(0.03)	0.10	21.3	270.00
22	97.94	7.55	4.887	0.30(0.03)	0.10	21.4	490.00
23	93.57	8.18	4.666	0.30(0.03)	0.10	21.5	10.00
24	92.30	8.37	4.605	0.30(0.03)	0.10	21.5	330.00

=====

END OF RATIONAL METHOD ANALYSIS



RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
(c) Copyright 1983-2016 Advanced Engineering Software (aes)
Ver. 23.0 Release Date: 07/01/2016 License ID 1334

Analysis prepared by:

***** DESCRIPTION OF STUDY *****

* SP8454 - FULLERTON *
* GOODMAN LOGISTICS CENTER *
* BASIN C - 25 YEAR PEAK FLOW *

FILE NAME: GLC25C.DAT
TIME/DATE OF STUDY: 09:40 04/28/2021

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--*TIME-OF-CONCENTRATION MODEL*--

USER SPECIFIED STORM EVENT(YEAR) = 25.00
SPECIFIED MINIMUM PIPE SIZE(INCH) = 4.00
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
DATA BANK RAINFALL USED
ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD

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

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL: IN- / OUT-/PARK- SIDE / SIDE/ WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH LIP HIKE (FT) (FT) (FT)	MANNING FACTOR (n)
1	32.0	20.0	0.200/0.200/0.020	0.67	2.00 0.0313 0.167	0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

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

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

*USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

FLOW PROCESS FROM NODE 10.00 TO NODE 20.00 IS CODE = 21

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

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 77.00

ELEVATION DATA: UPSTREAM(FEET) = 183.96 DOWNSTREAM(FEET) = 181.73

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

SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 5.000

* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.824

SUBAREA T_c AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	B	0.09	0.30	0.100	56	5.00

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

SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100

SUBAREA RUNOFF(CFS) = 0.39

TOTAL AREA(ACRES) = 0.09 PEAK FLOW RATE(CFS) = 0.39

FLOW PROCESS FROM NODE 20.00 TO NODE 40.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 178.90 DOWNSTREAM(FEET) = 178.80

FLOW LENGTH(FEET) = 24.20 MANNING'S N = 0.013

DEPTH OF FLOW IN 9.0 INCH PIPE IS 3.8 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 2.19

ESTIMATED PIPE DIAMETER(INCH) = 9.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 0.39

PIPE TRAVEL TIME(MIN.) = 0.18 T_c (MIN.) = 5.18

LONGEST FLOWPATH FROM NODE 10.00 TO NODE 40.00 = 101.20 FEET.

FLOW PROCESS FROM NODE 40.00 TO NODE 40.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:

TIME OF CONCENTRATION(MIN.) = 5.18

RAINFALL INTENSITY(INCH/HR) = 4.73

AREA-AVERAGED F_m (INCH/HR) = 0.03

AREA-AVERAGED F_p (INCH/HR) = 0.30

AREA-AVERAGED A_p = 0.10

EFFECTIVE STREAM AREA(ACRES) = 0.09

TOTAL STREAM AREA(ACRES) = 0.09

PEAK FLOW RATE(CFS) AT CONFLUENCE = 0.39

FLOW PROCESS FROM NODE 30.00 TO NODE 40.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 239.20
ELEVATION DATA: UPSTREAM(FEET) = 185.69 DOWNSTREAM(FEET) = 182.33

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$
SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 6.381
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.202
SUBAREA T_c AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	F_p (INCH/HR)	A_p (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	B	0.31	0.30	0.100	56	6.38

SUBAREA AVERAGE PERVIOUS LOSS RATE, F_p (INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100
SUBAREA RUNOFF(CFS) = 1.16
TOTAL AREA(ACRES) = 0.31 PEAK FLOW RATE(CFS) = 1.16

FLOW PROCESS FROM NODE 40.00 TO NODE 40.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 6.38
RAINFALL INTENSITY(INCH/HR) = 4.20
AREA-AVERAGED F_m (INCH/HR) = 0.03
AREA-AVERAGED F_p (INCH/HR) = 0.30
AREA-AVERAGED A_p = 0.10
EFFECTIVE STREAM AREA(ACRES) = 0.31
TOTAL STREAM AREA(ACRES) = 0.31
PEAK FLOW RATE(CFS) AT CONFLUENCE = 1.16

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	T_c (MIN.)	Intensity (INCH/HR)	$F_p(F_m)$ (INCH/HR)	A_p	A_e (ACRES)	HEADWATER NODE
1	0.39	5.18	4.726	0.30(0.03)	0.10	0.1	10.00
2	1.16	6.38	4.202	0.30(0.03)	0.10	0.3	30.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	T_c (MIN.)	Intensity (INCH/HR)	$F_p(F_m)$ (INCH/HR)	A_p	A_e (ACRES)	HEADWATER NODE
------------------	------------	-----------------	------------------------	-------------------------	-------	------------------	-------------------

1	1.45	5.18	4.726	0.30(0.03)	0.10	0.3	10.00
2	1.51	6.38	4.202	0.30(0.03)	0.10	0.4	30.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 1.51 Tc(MIN.) = 6.38
 EFFECTIVE AREA(ACRES) = 0.40 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 0.4
 LONGEST FLOWPATH FROM NODE 30.00 TO NODE 40.00 = 239.20 FEET.

FLOW PROCESS FROM NODE 40.00 TO NODE 70.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(Feet) = 178.80 DOWNSTREAM(Feet) = 177.26
 FLOW LENGTH(Feet) = 238.90 MANNING'S N = 0.013
 DEPTH OF FLOW IN 12.0 INCH PIPE IS 6.3 INCHES
 PIPE-FLOW VELOCITY(Feet/Sec.) = 3.62
 ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 1.51
 PIPE TRAVEL TIME(MIN.) = 1.10 Tc(MIN.) = 7.48
 LONGEST FLOWPATH FROM NODE 30.00 TO NODE 70.00 = 478.10 FEET.

FLOW PROCESS FROM NODE 70.00 TO NODE 70.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
 TIME OF CONCENTRATION(MIN.) = 7.48
 RAINFALL INTENSITY(INCH/HR) = 3.84
 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 0.40
 TOTAL STREAM AREA(ACRES) = 0.40
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 1.51

FLOW PROCESS FROM NODE 50.00 TO NODE 60.00 IS CODE = 21

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

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

=====

INITIAL SUBAREA FLOW-LENGTH(Feet) = 120.20
 ELEVATION DATA: UPSTREAM(Feet) = 185.68 DOWNSTREAM(Feet) = 183.43

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$
 SUBAREA ANALYSIS USED MINIMUM $T_c(MIN.) = 5.000$
 * 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.824
 SUBAREA T_c AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	F_p (INCH/HR)	A_p (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	B	0.09	0.30	0.100	56	5.00

 SUBAREA AVERAGE PERVIOUS LOSS RATE, $F_p(INCH/HR) = 0.30$
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, $A_p = 0.100$
 SUBAREA RUNOFF(CFS) = 0.39
 TOTAL AREA(ACRES) = 0.09 PEAK FLOW RATE(CFS) = 0.39

FLOW PROCESS FROM NODE 60.00 TO NODE 70.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(Feet) = 179.86 DOWNSTREAM(Feet) = 177.26
 FLOW LENGTH(Feet) = 25.50 MANNING'S N = 0.013
 DEPTH OF FLOW IN 6.0 INCH PIPE IS 1.9 INCHES
 PIPE-FLOW VELOCITY(Feet/Sec.) = 7.16
 ESTIMATED PIPE DIAMETER(INCH) = 6.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 0.39
 PIPE TRAVEL TIME(MIN.) = 0.06 $T_c(MIN.) = 5.06$
 LONGEST FLOWPATH FROM NODE 50.00 TO NODE 70.00 = 145.70 FEET.

FLOW PROCESS FROM NODE 70.00 TO NODE 70.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 5.06
 RAINFALL INTENSITY(INCH/HR) = 4.79
 AREA-AVERAGED $F_m(INCH/HR) = 0.03$
 AREA-AVERAGED $F_p(INCH/HR) = 0.30$
 AREA-AVERAGED $A_p = 0.10$
 EFFECTIVE STREAM AREA(ACRES) = 0.09
 TOTAL STREAM AREA(ACRES) = 0.09
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 0.39

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	T_c (MIN.)	Intensity (INCH/HR)	$F_p(F_m)$ (INCH/HR)	A_p	A_e (ACRES)	HEADWATER NODE
1	1.45	6.30	4.234	0.30(0.03)	0.10	0.3	10.00
1	1.51	7.48	3.840	0.30(0.03)	0.10	0.4	30.00
2	0.39	5.06	4.792	0.30(0.03)	0.10	0.1	50.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1.71	5.06	4.792	0.30(0.03)	0.10	0.4	50.00
2	1.80	6.30	4.234	0.30(0.03)	0.10	0.4	10.00
3	1.82	7.48	3.840	0.30(0.03)	0.10	0.5	30.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 1.82 Tc(MIN.) = 7.48
EFFECTIVE AREA(ACRES) = 0.49 AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 0.5
LONGEST FLOWPATH FROM NODE 30.00 TO NODE 70.00 = 478.10 FEET.

FLOW PROCESS FROM NODE 70.00 TO NODE 130.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

=====

ELEVATION DATA: UPSTREAM(Feet) = 177.26 DOWNSTREAM(Feet) = 176.84
FLOW LENGTH(Feet) = 74.10 MANNING'S N = 0.013
DEPTH OF FLOW IN 12.0 INCH PIPE IS 7.4 INCHES
PIPE-FLOW VELOCITY(Feet/Sec.) = 3.60
ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 1.82
PIPE TRAVEL TIME(MIN.) = 0.34 Tc(MIN.) = 7.82
LONGEST FLOWPATH FROM NODE 30.00 TO NODE 130.00 = 552.20 FEET.

FLOW PROCESS FROM NODE 130.00 TO NODE 130.00 IS CODE = 10

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

FLOW PROCESS FROM NODE 80.00 TO NODE 90.00 IS CODE = 21

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

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

=====

INITIAL SUBAREA FLOW-LENGTH(Feet) = 167.10
ELEVATION DATA: UPSTREAM(Feet) = 186.25 DOWNSTREAM(Feet) = 183.76

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

SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.463

* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.588
 SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	B	0.17	0.30	0.100	56	5.46

 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
 SUBAREA RUNOFF(CFS) = 0.70
 TOTAL AREA(ACRES) = 0.17 PEAK FLOW RATE(CFS) = 0.70

FLOW PROCESS FROM NODE 90.00 TO NODE 120.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 179.21 DOWNSTREAM(FEET) = 177.90
 FLOW LENGTH(FEET) = 262.10 MANNING'S N = 0.013
 DEPTH OF FLOW IN 9.0 INCH PIPE IS 5.1 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 2.72
 ESTIMATED PIPE DIAMETER(INCH) = 9.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 0.70
 PIPE TRAVEL TIME(MIN.) = 1.61 Tc(MIN.) = 7.07
 LONGEST FLOWPATH FROM NODE 80.00 TO NODE 120.00 = 429.20 FEET.

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

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

=====

TOTAL NUMBER OF STREAMS = 3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
 TIME OF CONCENTRATION(MIN.) = 7.07
 RAINFALL INTENSITY(INCH/HR) = 3.96
 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 0.17
 TOTAL STREAM AREA(ACRES) = 0.17
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 0.70

FLOW PROCESS FROM NODE 100.00 TO NODE 110.00 IS CODE = 21

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

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 245.00
 ELEVATION DATA: UPSTREAM(FEET) = 185.87 DOWNSTREAM(FEET) = 182.00

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION \ CHANGE)] ** 0.20$
 SUBAREA ANALYSIS USED MINIMUM $T_c(MIN.) = 6.293$
 * 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.235
 SUBAREA T_c AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	F_p (INCH/HR)	A_p (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	B	0.43	0.30	0.100	56	6.29

 SUBAREA AVERAGE PERVIOUS LOSS RATE, $F_p(INCH/HR) = 0.30$
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, $A_p = 0.100$
 SUBAREA RUNOFF(CFS) = 1.63
 TOTAL AREA(ACRES) = 0.43 PEAK FLOW RATE(CFS) = 1.63

FLOW PROCESS FROM NODE 110.00 TO NODE 120.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(Feet) = 178.11 DOWNSTREAM(Feet) = 177.90
 FLOW LENGTH(Feet) = 42.40 MANNING'S N = 0.013
 DEPTH OF FLOW IN 12.0 INCH PIPE IS 7.2 INCHES
 PIPE-FLOW VELOCITY(Feet/Sec.) = 3.33
 ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 1.63
 PIPE TRAVEL TIME(MIN.) = 0.21 $T_c(MIN.) = 6.50$
 LONGEST FLOWPATH FROM NODE 100.00 TO NODE 120.00 = 287.40 FEET.

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

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

TOTAL NUMBER OF STREAMS = 3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 6.50
 RAINFALL INTENSITY(INCH/HR) = 4.16
 AREA-AVERAGED $F_m(INCH/HR) = 0.03$
 AREA-AVERAGED $F_p(INCH/HR) = 0.30$
 AREA-AVERAGED $A_p = 0.10$
 EFFECTIVE STREAM AREA(ACRES) = 0.43
 TOTAL STREAM AREA(ACRES) = 0.43
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 1.63

FLOW PROCESS FROM NODE 118.00 TO NODE 119.00 IS CODE = 21

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

INITIAL SUBAREA FLOW-LENGTH(Feet) = 57.30

ELEVATION DATA: UPSTREAM(FEET) = 183.83 DOWNSTREAM(FEET) = 182.49

$T_c = K * [(LENGTH^{**} 3.00) / (ELEVATION \ CHANGE)]^{**} 0.20$

SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 5.000

* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.824

SUBAREA T_c AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	F_p (INCH/HR)	A_p (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	B	0.10	0.30	0.100	56	5.00

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

SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100

SUBAREA RUNOFF(CFS) = 0.43

TOTAL AREA(ACRES) = 0.10 PEAK FLOW RATE(CFS) = 0.43

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

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

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

=====

TOTAL NUMBER OF STREAMS = 3

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 3 ARE:

TIME OF CONCENTRATION(MIN.) = 5.00

RAINFALL INTENSITY(INCH/HR) = 4.82

AREA-AVERAGED F_m (INCH/HR) = 0.03

AREA-AVERAGED F_p (INCH/HR) = 0.30

AREA-AVERAGED A_p = 0.10

EFFECTIVE STREAM AREA(ACRES) = 0.10

TOTAL STREAM AREA(ACRES) = 0.10

PEAK FLOW RATE(CFS) AT CONFLUENCE = 0.43

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	T_c (MIN.)	Intensity (INCH/HR)	F_p (F_m) (INCH/HR)	A_p	A_e (ACRES)	HEADWATER NODE
1	0.70	7.07	3.965	0.30(0.03)	0.10	0.2	80.00
2	1.63	6.50	4.156	0.30(0.03)	0.10	0.4	100.00
3	0.43	5.00	4.824	0.30(0.03)	0.10	0.1	118.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO

CONFLUENCE FORMULA USED FOR 3 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	T_c (MIN.)	Intensity (INCH/HR)	F_p (F_m) (INCH/HR)	A_p	A_e (ACRES)	HEADWATER NODE
1	2.49	5.00	4.824	0.30(0.03)	0.10	0.6	118.00
2	2.67	6.50	4.156	0.30(0.03)	0.10	0.7	100.00
3	2.60	7.07	3.965	0.30(0.03)	0.10	0.7	80.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 2.67 T_c (MIN.) = 6.50

EFFECTIVE AREA(ACRES) = 0.69 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 0.7
 LONGEST FLOWPATH FROM NODE 80.00 TO NODE 120.00 = 429.20 FEET.

FLOW PROCESS FROM NODE 120.00 TO NODE 130.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 177.90 DOWNSTREAM(FEET) = 176.85
 FLOW LENGTH(FEET) = 100.60 MANNING'S N = 0.013
 DEPTH OF FLOW IN 12.0 INCH PIPE IS 7.8 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 4.96
 ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 2.67
 PIPE TRAVEL TIME(MIN.) = 0.34 Tc(MIN.) = 6.84
 LONGEST FLOWPATH FROM NODE 80.00 TO NODE 130.00 = 529.80 FEET.

FLOW PROCESS FROM NODE 130.00 TO NODE 130.00 IS CODE = 11

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

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2.49	5.34	4.646	0.30(0.03)	0.10	0.6	118.00
2	2.67	6.84	4.039	0.30(0.03)	0.10	0.7	100.00
3	2.60	7.41	3.861	0.30(0.03)	0.10	0.7	80.00

LONGEST FLOWPATH FROM NODE 80.00 TO NODE 130.00 = 529.80 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1.71	5.41	4.615	0.30(0.03)	0.10	0.4	50.00
2	1.80	6.64	4.108	0.30(0.03)	0.10	0.4	10.00
3	1.82	7.82	3.744	0.30(0.03)	0.10	0.5	30.00

LONGEST FLOWPATH FROM NODE 30.00 TO NODE 130.00 = 552.20 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	4.19	5.34	4.646	0.30(0.03)	0.10	0.9	118.00
2	4.20	5.41	4.615	0.30(0.03)	0.10	0.9	50.00
3	4.44	6.64	4.108	0.30(0.03)	0.10	1.1	10.00
4	4.47	6.84	4.039	0.30(0.03)	0.10	1.1	100.00
5	4.41	7.41	3.861	0.30(0.03)	0.10	1.2	80.00

6 4.34 7.82 3.744 0.30(0.03) 0.10 1.2 30.00
TOTAL AREA(ACRES) = 1.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 4.47 Tc(MIN.) = 6.843
EFFECTIVE AREA(ACRES) = 1.13 AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 1.2
LONGEST FLOWPATH FROM NODE 30.00 TO NODE 130.00 = 552.20 FEET.

FLOW PROCESS FROM NODE 130.00 TO NODE 180.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 176.84 DOWNSTREAM(FEET) = 176.48
FLOW LENGTH(FEET) = 64.80 MANNING'S N = 0.013
DEPTH OF FLOW IN 15.0 INCH PIPE IS 11.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 4.35
ESTIMATED PIPE DIAMETER(INCH) = 15.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 4.47
PIPE TRAVEL TIME(MIN.) = 0.25 Tc(MIN.) = 7.09
LONGEST FLOWPATH FROM NODE 30.00 TO NODE 180.00 = 617.00 FEET.

FLOW PROCESS FROM NODE 180.00 TO NODE 180.00 IS CODE = 10

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

=====

FLOW PROCESS FROM NODE 140.00 TO NODE 150.00 IS CODE = 21

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

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 153.10
ELEVATION DATA: UPSTREAM(FEET) = 182.92 DOWNSTREAM(FEET) = 181.10

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

SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.519

* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.562

SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	B	0.20	0.30	0.100	56	5.52

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

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100

SUBAREA RUNOFF(CFS) = 0.82

TOTAL AREA(ACRES) = 0.20 PEAK FLOW RATE(CFS) = 0.82

FLOW PROCESS FROM NODE 150.00 TO NODE 170.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 178.50 DOWNSTREAM(FEET) = 178.26
FLOW LENGTH(FEET) = 49.90 MANNING'S N = 0.013
DEPTH OF FLOW IN 9.0 INCH PIPE IS 5.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 2.77
ESTIMATED PIPE DIAMETER(INCH) = 9.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 0.82
PIPE TRAVEL TIME(MIN.) = 0.30 Tc(MIN.) = 5.82
LONGEST FLOWPATH FROM NODE 140.00 TO NODE 170.00 = 203.00 FEET.

FLOW PROCESS FROM NODE 170.00 TO NODE 170.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 5.82
RAINFALL INTENSITY(INCH/HR) = 4.43
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 0.20
TOTAL STREAM AREA(ACRES) = 0.20
PEAK FLOW RATE(CFS) AT CONFLUENCE = 0.82

FLOW PROCESS FROM NODE 160.00 TO NODE 170.00 IS CODE = 21

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

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

INITIAL SUBAREA FLOW-LENGTH(FEET) = 129.40
ELEVATION DATA: UPSTREAM(FEET) = 184.29 DOWNSTREAM(FEET) = 180.84

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

SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.000

* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.824

SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	B	0.13	0.30	0.100	56	5.00

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

SUBAREA AVERAGE PERVIOUS AREA FRACTION, $A_p = 0.100$
 SUBAREA RUNOFF(CFS) = 0.56
 TOTAL AREA(ACRES) = 0.13 PEAK FLOW RATE(CFS) = 0.56

FLOW PROCESS FROM NODE 170.00 TO NODE 170.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 5.00
 RAINFALL INTENSITY(INCH/HR) = 4.82
 AREA-AVERAGED F_m (INCH/HR) = 0.03
 AREA-AVERAGED F_p (INCH/HR) = 0.30
 AREA-AVERAGED $A_p = 0.10$
 EFFECTIVE STREAM AREA(ACRES) = 0.13
 TOTAL STREAM AREA(ACRES) = 0.13
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 0.56

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	0.82	5.82	4.427	0.30(0.03)	0.10	0.2	140.00
2	0.56	5.00	4.824	0.30(0.03)	0.10	0.1	160.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1.32	5.00	4.824	0.30(0.03)	0.10	0.3	160.00
2	1.33	5.82	4.427	0.30(0.03)	0.10	0.3	140.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 1.33 Tc(MIN.) = 5.82
 EFFECTIVE AREA(ACRES) = 0.33 AREA-AVERAGED F_m (INCH/HR) = 0.03
 AREA-AVERAGED F_p (INCH/HR) = 0.30 AREA-AVERAGED $A_p = 0.10$
 TOTAL AREA(ACRES) = 0.3
 LONGEST FLOWPATH FROM NODE 140.00 TO NODE 170.00 = 203.00 FEET.

FLOW PROCESS FROM NODE 170.00 TO NODE 180.00 IS CODE = 31

 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 178.26 DOWNSTREAM(FEET) = 176.48

FLOW LENGTH(FEET) = 35.80 MANNING'S N = 0.013
 DEPTH OF FLOW IN 9.0 INCH PIPE IS 3.8 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 7.55
 ESTIMATED PIPE DIAMETER(INCH) = 9.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 1.33
 PIPE TRAVEL TIME(MIN.) = 0.08 Tc(MIN.) = 5.90
 LONGEST FLOWPATH FROM NODE 140.00 TO NODE 180.00 = 238.80 FEET.

FLOW PROCESS FROM NODE 180.00 TO NODE 180.00 IS CODE = 11

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

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1.32	5.08	4.781	0.30(0.03)	0.10	0.3	160.00
2	1.33	5.90	4.393	0.30(0.03)	0.10	0.3	140.00

LONGEST FLOWPATH FROM NODE 140.00 TO NODE 180.00 = 238.80 FEET.

** MEMORY BANK # 2 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	4.19	5.59	4.527	0.30(0.03)	0.10	0.9	118.00
2	4.20	5.66	4.498	0.30(0.03)	0.10	0.9	50.00
3	4.44	6.89	4.024	0.30(0.03)	0.10	1.1	10.00
4	4.47	7.09	3.958	0.30(0.03)	0.10	1.1	100.00
5	4.41	7.66	3.789	0.30(0.03)	0.10	1.2	80.00
6	4.34	8.07	3.678	0.30(0.03)	0.10	1.2	30.00

LONGEST FLOWPATH FROM NODE 30.00 TO NODE 180.00 = 617.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	5.34	5.08	4.781	0.30(0.03)	0.10	1.1	160.00
2	5.52	5.59	4.527	0.30(0.03)	0.10	1.2	118.00
3	5.53	5.66	4.498	0.30(0.03)	0.10	1.2	50.00
4	5.58	5.90	4.393	0.30(0.03)	0.10	1.3	140.00
5	5.66	6.89	4.024	0.30(0.03)	0.10	1.4	10.00
6	5.67	7.09	3.958	0.30(0.03)	0.10	1.5	100.00
7	5.56	7.66	3.789	0.30(0.03)	0.10	1.5	80.00
8	5.46	8.07	3.678	0.30(0.03)	0.10	1.5	30.00

TOTAL AREA(ACRES) = 1.5

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 5.67 Tc(MIN.) = 7.091
 EFFECTIVE AREA(ACRES) = 1.46 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 1.5

LONGEST FLOWPATH FROM NODE 30.00 TO NODE 180.00 = 617.00 FEET.

FLOW PROCESS FROM NODE 180.00 TO NODE 210.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 176.48 DOWNSTREAM(FEET) = 176.21
FLOW LENGTH(FEET) = 47.60 MANNING'S N = 0.013
DEPTH OF FLOW IN 18.0 INCH PIPE IS 11.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 4.77
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 5.67
PIPE TRAVEL TIME(MIN.) = 0.17 Tc(MIN.) = 7.26
LONGEST FLOWPATH FROM NODE 30.00 TO NODE 210.00 = 664.60 FEET.

FLOW PROCESS FROM NODE 210.00 TO NODE 210.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 7.26
RAINFALL INTENSITY(INCH/HR) = 3.91
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 1.46
TOTAL STREAM AREA(ACRES) = 1.52
PEAK FLOW RATE(CFS) AT CONFLUENCE = 5.67

FLOW PROCESS FROM NODE 190.00 TO NODE 200.00 IS CODE = 21

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

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 156.00
ELEVATION DATA: UPSTREAM(FEET) = 182.23 DOWNSTREAM(FEET) = 180.50

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

SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.638

* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.507

SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	B	2.41	0.30	0.100	56	5.64

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

SUBAREA AVERAGE PERVIOUS AREA FRACTION, $A_p = 0.100$
 SUBAREA RUNOFF(CFS) = 9.71
 TOTAL AREA(ACRES) = 2.41 PEAK FLOW RATE(CFS) = 9.71

FLOW PROCESS FROM NODE 200.00 TO NODE 210.00 IS CODE = 31

 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 178.01 DOWNSTREAM(FEET) = 176.21
 FLOW LENGTH(FEET) = 39.50 MANNING'S N = 0.013
 DEPTH OF FLOW IN 15.0 INCH PIPE IS 9.4 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 11.93
 ESTIMATED PIPE DIAMETER(INCH) = 15.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 9.71
 PIPE TRAVEL TIME(MIN.) = 0.06 T_c (MIN.) = 5.69
 LONGEST FLOWPATH FROM NODE 190.00 TO NODE 210.00 = 195.50 FEET.

FLOW PROCESS FROM NODE 210.00 TO NODE 210.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 5.69
 RAINFALL INTENSITY(INCH/HR) = 4.48
 AREA-AVERAGED F_m (INCH/HR) = 0.03
 AREA-AVERAGED F_p (INCH/HR) = 0.30
 AREA-AVERAGED $A_p = 0.10$
 EFFECTIVE STREAM AREA(ACRES) = 2.41
 TOTAL STREAM AREA(ACRES) = 2.41
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 9.71

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	T_c (MIN.)	Intensity (INCH/HR)	$F_p(F_m)$ (INCH/HR)	A_p	A_e (ACRES)	HEADWATER NODE
1	5.34	5.25	4.693	0.30(0.03)	0.10	1.1	160.00
1	5.52	5.76	4.452	0.30(0.03)	0.10	1.2	118.00
1	5.53	5.82	4.425	0.30(0.03)	0.10	1.2	50.00
1	5.58	6.07	4.324	0.30(0.03)	0.10	1.3	140.00
1	5.66	7.06	3.970	0.30(0.03)	0.10	1.4	10.00
1	5.67	7.26	3.907	0.30(0.03)	0.10	1.5	100.00
1	5.56	7.83	3.743	0.30(0.03)	0.10	1.5	80.00
1	5.46	8.24	3.636	0.30(0.03)	0.10	1.5	30.00
2	9.71	5.69	4.482	0.30(0.03)	0.10	2.4	190.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO

CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14.72	5.25	4.693	0.30(0.03)	0.10	3.4	160.00
2	15.20	5.69	4.482	0.30(0.03)	0.10	3.6	190.00
3	15.16	5.76	4.452	0.30(0.03)	0.10	3.6	118.00
4	15.12	5.82	4.425	0.30(0.03)	0.10	3.7	50.00
5	14.95	6.07	4.324	0.30(0.03)	0.10	3.7	140.00
6	14.25	7.06	3.970	0.30(0.03)	0.10	3.8	10.00
7	14.12	7.26	3.907	0.30(0.03)	0.10	3.9	100.00
8	13.66	7.83	3.743	0.30(0.03)	0.10	3.9	80.00
9	13.32	8.24	3.636	0.30(0.03)	0.10	3.9	30.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 15.20 Tc(MIN.) = 5.69
 EFFECTIVE AREA(ACRES) = 3.63 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 3.9
 LONGEST FLOWPATH FROM NODE 30.00 TO NODE 210.00 = 664.60 FEET.

FLOW PROCESS FROM NODE 210.00 TO NODE 240.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

ELEVATION DATA: UPSTREAM(Feet) = 176.21 DOWNSTREAM(Feet) = 175.69
 FLOW LENGTH(Feet) = 91.00 MANNING'S N = 0.013
 DEPTH OF FLOW IN 24.0 INCH PIPE IS 18.0 INCHES
 PIPE-FLOW VELOCITY(Feet/Sec.) = 6.01
 ESTIMATED PIPE DIAMETER(INCH) = 24.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 15.20
 PIPE TRAVEL TIME(MIN.) = 0.25 Tc(MIN.) = 5.95
 LONGEST FLOWPATH FROM NODE 30.00 TO NODE 240.00 = 755.60 FEET.

FLOW PROCESS FROM NODE 240.00 TO NODE 240.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
 TIME OF CONCENTRATION(MIN.) = 5.95
 RAINFALL INTENSITY(INCH/HR) = 4.37
 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 3.63

TOTAL STREAM AREA(ACRES) = 3.93
PEAK FLOW RATE(CFS) AT CONFLUENCE = 15.20

FLOW PROCESS FROM NODE 220.00 TO NODE 230.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 184.00
ELEVATION DATA: UPSTREAM(FEET) = 182.22 DOWNSTREAM(FEET) = 180.50

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$
SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 6.232
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.258
SUBAREA T_c AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	F_p (INCH/HR)	A_p (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	B	1.27	0.30	0.100	56	6.23

SUBAREA AVERAGE PERVIOUS LOSS RATE, F_p (INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100
SUBAREA RUNOFF(CFS) = 4.83
TOTAL AREA(ACRES) = 1.27 PEAK FLOW RATE(CFS) = 4.83

FLOW PROCESS FROM NODE 230.00 TO NODE 240.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 177.51 DOWNSTREAM(FEET) = 175.69
FLOW LENGTH(FEET) = 39.50 MANNING'S N = 0.013
DEPTH OF FLOW IN 12.0 INCH PIPE IS 7.0 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 10.09
ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 4.83
PIPE TRAVEL TIME(MIN.) = 0.07 T_c (MIN.) = 6.30
LONGEST FLOWPATH FROM NODE 220.00 TO NODE 240.00 = 223.50 FEET.

FLOW PROCESS FROM NODE 240.00 TO NODE 240.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 6.30
RAINFALL INTENSITY(INCH/HR) = 4.23
AREA-AVERAGED F_m (INCH/HR) = 0.03

AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 1.27
 TOTAL STREAM AREA(ACRES) = 1.27
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 4.83

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14.72	5.50	4.570	0.30(0.03)	0.10	3.4	160.00
1	15.20	5.95	4.373	0.30(0.03)	0.10	3.6	190.00
1	15.16	6.01	4.346	0.30(0.03)	0.10	3.6	118.00
1	15.12	6.08	4.320	0.30(0.03)	0.10	3.7	50.00
1	14.95	6.32	4.225	0.30(0.03)	0.10	3.7	140.00
1	14.25	7.31	3.891	0.30(0.03)	0.10	3.8	10.00
1	14.12	7.51	3.831	0.30(0.03)	0.10	3.9	100.00
1	13.66	8.08	3.676	0.30(0.03)	0.10	3.9	80.00
1	13.32	8.50	3.573	0.30(0.03)	0.10	3.9	30.00
2	4.83	6.30	4.233	0.30(0.03)	0.10	1.3	220.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19.28	5.50	4.570	0.30(0.03)	0.10	4.5	160.00
2	19.92	5.95	4.373	0.30(0.03)	0.10	4.8	190.00
3	19.90	6.01	4.346	0.30(0.03)	0.10	4.9	118.00
4	19.88	6.08	4.320	0.30(0.03)	0.10	4.9	50.00
5	19.79	6.30	4.233	0.30(0.03)	0.10	5.0	220.00
6	19.77	6.32	4.225	0.30(0.03)	0.10	5.0	140.00
7	18.69	7.31	3.891	0.30(0.03)	0.10	5.1	10.00
8	18.49	7.51	3.831	0.30(0.03)	0.10	5.1	100.00
9	17.85	8.08	3.676	0.30(0.03)	0.10	5.2	80.00
10	17.39	8.50	3.573	0.30(0.03)	0.10	5.2	30.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 19.92 Tc(MIN.) = 5.95
 EFFECTIVE AREA(ACRES) = 4.83 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 5.2
 LONGEST FLOWPATH FROM NODE 30.00 TO NODE 240.00 = 755.60 FEET.

FLOW PROCESS FROM NODE 240.00 TO NODE 270.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 175.69 DOWNSTREAM(FEET) = 175.18
 FLOW LENGTH(FEET) = 91.00 MANNING'S N = 0.013
 DEPTH OF FLOW IN 27.0 INCH PIPE IS 19.7 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 6.41
 ESTIMATED PIPE DIAMETER(INCH) = 27.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 19.92
 PIPE TRAVEL TIME(MIN.) = 0.24 Tc(MIN.) = 6.18
 LONGEST FLOWPATH FROM NODE 30.00 TO NODE 270.00 = 846.60 FEET.

FLOW PROCESS FROM NODE 270.00 TO NODE 270.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
 TIME OF CONCENTRATION(MIN.) = 6.18
 RAINFALL INTENSITY(INCH/HR) = 4.28
 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 4.83
 TOTAL STREAM AREA(ACRES) = 5.20
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 19.92

FLOW PROCESS FROM NODE 250.00 TO NODE 260.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 188.60
 ELEVATION DATA: UPSTREAM(FEET) = 182.24 DOWNSTREAM(FEET) = 180.50

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 6.311
 * 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.228
 SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	B	1.27	0.30	0.100	56	6.31

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
 SUBAREA RUNOFF(CFS) = 4.80
 TOTAL AREA(ACRES) = 1.27 PEAK FLOW RATE(CFS) = 4.80

FLOW PROCESS FROM NODE 260.00 TO NODE 270.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 177.51 DOWNSTREAM(FEET) = 175.18
FLOW LENGTH(FEET) = 39.50 MANNING'S N = 0.013
DEPTH OF FLOW IN 12.0 INCH PIPE IS 6.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 11.08
ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 4.80
PIPE TRAVEL TIME(MIN.) = 0.06 Tc(MIN.) = 6.37
LONGEST FLOWPATH FROM NODE 250.00 TO NODE 270.00 = 228.10 FEET.

FLOW PROCESS FROM NODE 270.00 TO NODE 270.00 IS CODE = 1

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

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

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 6.37
RAINFALL INTENSITY(INCH/HR) = 4.21
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 1.27
TOTAL STREAM AREA(ACRES) = 1.27
PEAK FLOW RATE(CFS) AT CONFLUENCE = 4.80

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19.28	5.74	4.462	0.30(0.03)	0.10	4.5	160.00
1	19.92	6.18	4.278	0.30(0.03)	0.10	4.8	190.00
1	19.90	6.25	4.252	0.30(0.03)	0.10	4.9	118.00
1	19.88	6.31	4.227	0.30(0.03)	0.10	4.9	50.00
1	19.79	6.53	4.146	0.30(0.03)	0.10	5.0	220.00
1	19.77	6.55	4.138	0.30(0.03)	0.10	5.0	140.00
1	18.69	7.55	3.821	0.30(0.03)	0.10	5.1	10.00
1	18.49	7.75	3.764	0.30(0.03)	0.10	5.1	100.00
1	17.85	8.32	3.615	0.30(0.03)	0.10	5.2	80.00
1	17.39	8.74	3.517	0.30(0.03)	0.10	5.2	30.00
2	4.80	6.37	4.206	0.30(0.03)	0.10	1.3	250.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23.87	5.74	4.462	0.30(0.03)	0.10	5.6	160.00

2	24.65	6.18	4.278	0.30(0.03)	0.10	6.1	190.00
3	24.66	6.25	4.252	0.30(0.03)	0.10	6.1	118.00
4	24.66	6.31	4.227	0.30(0.03)	0.10	6.1	50.00
5	24.65	6.37	4.206	0.30(0.03)	0.10	6.2	250.00
6	24.52	6.53	4.146	0.30(0.03)	0.10	6.2	220.00
7	24.49	6.55	4.138	0.30(0.03)	0.10	6.2	140.00
8	23.05	7.55	3.821	0.30(0.03)	0.10	6.4	10.00
9	22.79	7.75	3.764	0.30(0.03)	0.10	6.4	100.00
10	21.97	8.32	3.615	0.30(0.03)	0.10	6.4	80.00
11	21.40	8.74	3.517	0.30(0.03)	0.10	6.5	30.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 24.66 Tc(MIN.) = 6.25
 EFFECTIVE AREA(ACRES) = 6.10 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 6.5
 LONGEST FLOWPATH FROM NODE 30.00 TO NODE 270.00 = 846.60 FEET.

FLOW PROCESS FROM NODE 270.00 TO NODE 280.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

=====

ELEVATION DATA: UPSTREAM(Feet) = 175.18 DOWNSTREAM(Feet) = 174.92
 FLOW LENGTH(Feet) = 45.50 MANNING'S N = 0.013
 DEPTH OF FLOW IN 30.0 INCH PIPE IS 20.6 INCHES
 PIPE-FLOW VELOCITY(Feet/Sec.) = 6.86
 ESTIMATED PIPE DIAMETER(INCH) = 30.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 24.66
 PIPE TRAVEL TIME(MIN.) = 0.11 Tc(MIN.) = 6.36
 LONGEST FLOWPATH FROM NODE 30.00 TO NODE 280.00 = 892.10 FEET.

FLOW PROCESS FROM NODE 280.00 TO NODE 280.00 IS CODE = 10

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

=====

FLOW PROCESS FROM NODE 290.00 TO NODE 300.00 IS CODE = 21

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

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

=====

INITIAL SUBAREA FLOW-LENGTH(Feet) = 288.30
 ELEVATION DATA: UPSTREAM(Feet) = 185.50 DOWNSTREAM(Feet) = 182.57

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

SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 7.335

* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 3.883
 SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	B	0.36	0.30	0.100	56	7.34

 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
 SUBAREA RUNOFF(CFS) = 1.25
 TOTAL AREA(ACRES) = 0.36 PEAK FLOW RATE(CFS) = 1.25

FLOW PROCESS FROM NODE 300.00 TO NODE 310.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(Feet) = 179.60 DOWNSTREAM(Feet) = 178.24
 FLOW LENGTH(Feet) = 286.10 MANNING'S N = 0.013
 DEPTH OF FLOW IN 12.0 INCH PIPE IS 6.2 INCHES
 PIPE-FLOW VELOCITY(Feet/Sec.) = 3.08
 ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 1.25
 PIPE TRAVEL TIME(Min.) = 1.55 Tc(Min.) = 8.88
 LONGEST FLOWPATH FROM NODE 290.00 TO NODE 310.00 = 574.40 FEET.

FLOW PROCESS FROM NODE 310.00 TO NODE 340.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(Feet) = 178.24 DOWNSTREAM(Feet) = 176.86
 FLOW LENGTH(Feet) = 291.00 MANNING'S N = 0.013
 DEPTH OF FLOW IN 12.0 INCH PIPE IS 6.2 INCHES
 PIPE-FLOW VELOCITY(Feet/Sec.) = 3.08
 ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 1.25
 PIPE TRAVEL TIME(Min.) = 1.58 Tc(Min.) = 10.46
 LONGEST FLOWPATH FROM NODE 290.00 TO NODE 340.00 = 865.40 FEET.

FLOW PROCESS FROM NODE 340.00 TO NODE 340.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
 TIME OF CONCENTRATION(Min.) = 10.46
 RAINFALL INTENSITY(INCH/HR) = 3.18
 AREA-AVERAGED Fm(INCH/HR) = 0.03

AREA-AVERAGED F_p (INCH/HR) = 0.30
 AREA-AVERAGED A_p = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 0.36
 TOTAL STREAM AREA(ACRES) = 0.36
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 1.25

 FLOW PROCESS FROM NODE 320.00 TO NODE 330.00 IS CODE = 21

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

=====
 INITIAL SUBAREA FLOW-LENGTH(FEET) = 202.60
 ELEVATION DATA: UPSTREAM(FEET) = 184.88 DOWNSTREAM(FEET) = 180.50

$T_c = K * [(LENGTH^{**} 3.00) / (ELEVATION CHANGE)]^{**0.20}$
 SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 5.477
 * 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.581
 SUBAREA T_c AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	F_p (INCH/HR)	A_p (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	B	1.63	0.30	0.100	56	5.48

 SUBAREA AVERAGE PERVIOUS LOSS RATE, F_p (INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100
 SUBAREA RUNOFF(CFS) = 6.68
 TOTAL AREA(ACRES) = 1.63 PEAK FLOW RATE(CFS) = 6.68

 FLOW PROCESS FROM NODE 330.00 TO NODE 340.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====
 ELEVATION DATA: UPSTREAM(FEET) = 177.51 DOWNSTREAM(FEET) = 176.86
 FLOW LENGTH(FEET) = 39.50 MANNING'S N = 0.013
 DEPTH OF FLOW IN 15.0 INCH PIPE IS 10.4 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 7.35
 ESTIMATED PIPE DIAMETER(INCH) = 15.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 6.68
 PIPE TRAVEL TIME(MIN.) = 0.09 T_c (MIN.) = 5.57
 LONGEST FLOWPATH FROM NODE 320.00 TO NODE 340.00 = 242.10 FEET.

 FLOW PROCESS FROM NODE 340.00 TO NODE 340.00 IS CODE = 1

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

=====
 TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:

TIME OF CONCENTRATION(MIN.) = 5.57
 RAINFALL INTENSITY(INCH/HR) = 4.54
 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 1.63
 TOTAL STREAM AREA(ACRES) = 1.63
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 6.68

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1.25	10.46	3.176	0.30(0.03)	0.10	0.4	290.00
2	6.68	5.57	4.539	0.30(0.03)	0.10	1.6	320.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	7.63	5.57	4.539	0.30(0.03)	0.10	1.8	320.00
2	5.91	10.46	3.176	0.30(0.03)	0.10	2.0	290.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 7.63 Tc(MIN.) = 5.57
 EFFECTIVE AREA(ACRES) = 1.82 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 2.0
 LONGEST FLOWPATH FROM NODE 290.00 TO NODE 340.00 = 865.40 FEET.

FLOW PROCESS FROM NODE 340.00 TO NODE 370.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 176.86 DOWNSTREAM(FEET) = 176.43

FLOW LENGTH(FEET) = 91.30 MANNING'S N = 0.013

DEPTH OF FLOW IN 21.0 INCH PIPE IS 13.2 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 4.80

ESTIMATED PIPE DIAMETER(INCH) = 21.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 7.63

PIPE TRAVEL TIME(MIN.) = 0.32 Tc(MIN.) = 5.88

LONGEST FLOWPATH FROM NODE 290.00 TO NODE 370.00 = 956.70 FEET.

FLOW PROCESS FROM NODE 370.00 TO NODE 370.00 IS CODE = 1

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

```

=====
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 5.88
RAINFALL INTENSITY(INCH/HR) = 4.40
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 1.82
TOTAL STREAM AREA(ACRES) = 1.99
PEAK FLOW RATE(CFS) AT CONFLUENCE = 7.63

*****
FLOW PROCESS FROM NODE 350.00 TO NODE 390.00 IS CODE = 21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
=====
INITIAL SUBAREA FLOW-LENGTH(FEET) = 152.70
ELEVATION DATA: UPSTREAM(FEET) = 181.75 DOWNSTREAM(FEET) = 180.50

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.940
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.376
SUBAREA Tc AND LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS Tc
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
COMMERCIAL B 0.75 0.30 0.100 56 5.94
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 2.93
TOTAL AREA(ACRES) = 0.75 PEAK FLOW RATE(CFS) = 2.93

*****
FLOW PROCESS FROM NODE 390.00 TO NODE 370.00 IS CODE = 31
-----
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 177.51 DOWNSTREAM(FEET) = 176.43
FLOW LENGTH(FEET) = 39.50 MANNING'S N = 0.013
DEPTH OF FLOW IN 12.0 INCH PIPE IS 6.1 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 7.35
ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 2.93
PIPE TRAVEL TIME(MIN.) = 0.09 Tc(MIN.) = 6.03
LONGEST FLOWPATH FROM NODE 350.00 TO NODE 370.00 = 192.20 FEET.

*****
FLOW PROCESS FROM NODE 370.00 TO NODE 370.00 IS CODE = 1

```

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

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 6.03
 RAINFALL INTENSITY(INCH/HR) = 4.34
 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 0.75
 TOTAL STREAM AREA(ACRES) = 0.75
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 2.93

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	7.63	5.88	4.399	0.30(0.03)	0.10	1.8	320.00
1	5.91	10.80	3.119	0.30(0.03)	0.10	2.0	290.00
2	2.93	6.03	4.339	0.30(0.03)	0.10	0.8	350.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	10.53	5.88	4.399	0.30(0.03)	0.10	2.6	320.00
2	10.51	6.03	4.339	0.30(0.03)	0.10	2.6	350.00
3	8.01	10.80	3.119	0.30(0.03)	0.10	2.7	290.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 10.53 Tc(MIN.) = 5.88
 EFFECTIVE AREA(ACRES) = 2.55 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 2.7
 LONGEST FLOWPATH FROM NODE 290.00 TO NODE 370.00 = 956.70 FEET.

FLOW PROCESS FROM NODE 370.00 TO NODE 420.00 IS CODE = 31

 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
 =====

ELEVATION DATA: UPSTREAM(FEET) = 176.43 DOWNSTREAM(FEET) = 176.00
 FLOW LENGTH(FEET) = 90.70 MANNING'S N = 0.013
 DEPTH OF FLOW IN 21.0 INCH PIPE IS 17.0 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 5.04
 ESTIMATED PIPE DIAMETER(INCH) = 21.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 10.53
PIPE TRAVEL TIME(MIN.) = 0.30 Tc(MIN.) = 6.18
LONGEST FLOWPATH FROM NODE 290.00 TO NODE 420.00 = 1047.40 FEET.

FLOW PROCESS FROM NODE 420.00 TO NODE 420.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 6.18
RAINFALL INTENSITY(INCH/HR) = 4.28
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 2.55
TOTAL STREAM AREA(ACRES) = 2.74
PEAK FLOW RATE(CFS) AT CONFLUENCE = 10.53

FLOW PROCESS FROM NODE 400.00 TO NODE 410.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 153.70
ELEVATION DATA: UPSTREAM(FEET) = 181.75 DOWNSTREAM(FEET) = 180.50

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.963
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.366
SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	B	0.75	0.30	0.100	56	5.96

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 2.93
TOTAL AREA(ACRES) = 0.75 PEAK FLOW RATE(CFS) = 2.93

FLOW PROCESS FROM NODE 410.00 TO NODE 420.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 177.51 DOWNSTREAM(FEET) = 176.00
FLOW LENGTH(FEET) = 39.50 MANNING'S N = 0.013
DEPTH OF FLOW IN 9.0 INCH PIPE IS 6.9 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 8.10
 ESTIMATED PIPE DIAMETER(INCH) = 9.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 2.93
 PIPE TRAVEL TIME(MIN.) = 0.08 Tc(MIN.) = 6.04
 LONGEST FLOWPATH FROM NODE 400.00 TO NODE 420.00 = 193.20 FEET.

FLOW PROCESS FROM NODE 420.00 TO NODE 420.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 6.04
 RAINFALL INTENSITY(INCH/HR) = 4.33
 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 0.75
 TOTAL STREAM AREA(ACRES) = 0.75
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 2.93

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	10.53	6.18	4.277	0.30(0.03)	0.10	2.6	320.00
1	10.51	6.33	4.221	0.30(0.03)	0.10	2.6	350.00
1	8.01	11.11	3.069	0.30(0.03)	0.10	2.7	290.00
2	2.93	6.04	4.333	0.30(0.03)	0.10	0.8	400.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13.36	6.04	4.333	0.30(0.03)	0.10	3.2	400.00
2	13.42	6.18	4.277	0.30(0.03)	0.10	3.3	320.00
3	13.36	6.33	4.221	0.30(0.03)	0.10	3.3	350.00
4	10.08	11.11	3.069	0.30(0.03)	0.10	3.5	290.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 13.42 Tc(MIN.) = 6.18
 EFFECTIVE AREA(ACRES) = 3.30 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 3.5
 LONGEST FLOWPATH FROM NODE 290.00 TO NODE 420.00 = 1047.40 FEET.

FLOW PROCESS FROM NODE 420.00 TO NODE 470.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 176.00 DOWNSTREAM(FEET) = 175.62
FLOW LENGTH(FEET) = 79.70 MANNING'S N = 0.013
DEPTH OF FLOW IN 24.0 INCH PIPE IS 17.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 5.47
ESTIMATED PIPE DIAMETER(INCH) = 24.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 13.42
PIPE TRAVEL TIME(MIN.) = 0.24 Tc(MIN.) = 6.43
LONGEST FLOWPATH FROM NODE 290.00 TO NODE 470.00 = 1127.10 FEET.

FLOW PROCESS FROM NODE 470.00 TO NODE 470.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 2 <<<<

FLOW PROCESS FROM NODE 470.00 TO NODE 470.00 IS CODE = 10

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

FLOW PROCESS FROM NODE 430.00 TO NODE 440.00 IS CODE = 21

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

INITIAL SUBAREA FLOW-LENGTH(FEET) = 140.50
ELEVATION DATA: UPSTREAM(FEET) = 186.19 DOWNSTREAM(FEET) = 184.47

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.301
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.667
SUBAREA Tc AND LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS Tc
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
COMMERCIAL B 0.21 0.30 0.100 56 5.30
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 0.88
TOTAL AREA(ACRES) = 0.21 PEAK FLOW RATE(CFS) = 0.88

FLOW PROCESS FROM NODE 440.00 TO NODE 460.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 180.97 DOWNSTREAM(FEET) = 176.27
FLOW LENGTH(FEET) = 438.20 MANNING'S N = 0.013
DEPTH OF FLOW IN 9.0 INCH PIPE IS 4.6 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 3.82
ESTIMATED PIPE DIAMETER(INCH) = 9.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 0.88
PIPE TRAVEL TIME(MIN.) = 1.91 Tc(MIN.) = 7.21
LONGEST FLOWPATH FROM NODE 430.00 TO NODE 460.00 = 578.70 FEET.

FLOW PROCESS FROM NODE 460.00 TO NODE 460.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 7.21
RAINFALL INTENSITY(INCH/HR) = 3.92
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 0.21
TOTAL STREAM AREA(ACRES) = 0.21
PEAK FLOW RATE(CFS) AT CONFLUENCE = 0.88

FLOW PROCESS FROM NODE 370.00 TO NODE 460.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 453.40
ELEVATION DATA: UPSTREAM(FEET) = 186.18 DOWNSTREAM(FEET) = 181.07

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 8.611
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 3.546
SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	B	0.49	0.30	0.100	56	8.61

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 1.55
TOTAL AREA(ACRES) = 0.49 PEAK FLOW RATE(CFS) = 1.55

FLOW PROCESS FROM NODE 460.00 TO NODE 460.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 8.61
RAINFALL INTENSITY(INCH/HR) = 3.55
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 0.49
TOTAL STREAM AREA(ACRES) = 0.49
PEAK FLOW RATE(CFS) AT CONFLUENCE = 1.55

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	0.88	7.21	3.920	0.30(0.03)	0.10	0.2	430.00
2	1.55	8.61	3.546	0.30(0.03)	0.10	0.5	370.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2.31	7.21	3.920	0.30(0.03)	0.10	0.6	430.00
2	2.34	8.61	3.546	0.30(0.03)	0.10	0.7	370.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 2.34 Tc(MIN.) = 8.61
EFFECTIVE AREA(ACRES) = 0.70 AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 0.7
LONGEST FLOWPATH FROM NODE 430.00 TO NODE 460.00 = 578.70 FEET.

FLOW PROCESS FROM NODE 460.00 TO NODE 470.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 176.27 DOWNSTREAM(FEET) = 175.62
FLOW LENGTH(FEET) = 63.90 MANNING'S N = 0.013
DEPTH OF FLOW IN 12.0 INCH PIPE IS 7.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 4.78
ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 2.34

PIPE TRAVEL TIME(MIN.) = 0.22 Tc(MIN.) = 8.83
LONGEST FLOWPATH FROM NODE 430.00 TO NODE 470.00 = 642.60 FEET.

FLOW PROCESS FROM NODE 470.00 TO NODE 470.00 IS CODE = 11

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

=====

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2.31	7.44	3.853	0.30(0.03)	0.10	0.6	430.00
2	2.34	8.83	3.495	0.30(0.03)	0.10	0.7	370.00

LONGEST FLOWPATH FROM NODE 430.00 TO NODE 470.00 = 642.60 FEET.

** MEMORY BANK # 2 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13.36	6.29	4.237	0.30(0.03)	0.10	3.2	400.00
2	13.42	6.43	4.185	0.30(0.03)	0.10	3.3	320.00
3	13.36	6.57	4.132	0.30(0.03)	0.10	3.3	350.00
4	10.08	11.38	3.029	0.30(0.03)	0.10	3.5	290.00

LONGEST FLOWPATH FROM NODE 290.00 TO NODE 470.00 = 1127.10 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	15.51	6.29	4.237	0.30(0.03)	0.10	3.8	400.00
2	15.59	6.43	4.185	0.30(0.03)	0.10	3.8	320.00
3	15.56	6.57	4.132	0.30(0.03)	0.10	3.9	350.00
4	15.08	7.44	3.853	0.30(0.03)	0.10	4.0	430.00
5	14.16	8.83	3.495	0.30(0.03)	0.10	4.1	370.00
6	12.11	11.38	3.029	0.30(0.03)	0.10	4.2	290.00

TOTAL AREA(ACRES) = 4.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 15.59 Tc(MIN.) = 6.427
EFFECTIVE AREA(ACRES) = 3.84 AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 4.2
LONGEST FLOWPATH FROM NODE 290.00 TO NODE 470.00 = 1127.10 FEET.

FLOW PROCESS FROM NODE 470.00 TO NODE 500.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 175.62 DOWNSTREAM(FEET) = 175.57

FLOW LENGTH(FEET) = 11.30 MANNING'S N = 0.013
 DEPTH OF FLOW IN 27.0 INCH PIPE IS 17.9 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 5.58
 ESTIMATED PIPE DIAMETER(INCH) = 27.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 15.59
 PIPE TRAVEL TIME(MIN.) = 0.03 Tc(MIN.) = 6.46
 LONGEST FLOWPATH FROM NODE 290.00 TO NODE 500.00 = 1138.40 FEET.

FLOW PROCESS FROM NODE 500.00 TO NODE 500.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
 TIME OF CONCENTRATION(MIN.) = 6.46
 RAINFALL INTENSITY(INCH/HR) = 4.17
 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 3.84
 TOTAL STREAM AREA(ACRES) = 4.19
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 15.59

FLOW PROCESS FROM NODE 480.00 TO NODE 490.00 IS CODE = 21

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

INITIAL SUBAREA FLOW-LENGTH(FEET) = 170.20
 ELEVATION DATA: UPSTREAM(FEET) = 182.23 DOWNSTREAM(FEET) = 180.50

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.941
 * 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.375
 SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	B	1.59	0.30	0.100	56	5.94

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
 SUBAREA RUNOFF(CFS) = 6.22
 TOTAL AREA(ACRES) = 1.59 PEAK FLOW RATE(CFS) = 6.22

FLOW PROCESS FROM NODE 490.00 TO NODE 500.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<


```

=====
ELEVATION DATA: UPSTREAM(FEET) = 177.51 DOWNSTREAM(FEET) = 175.57
FLOW LENGTH(FEET) = 39.50 MANNING'S N = 0.013
DEPTH OF FLOW IN 12.0 INCH PIPE IS 8.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 10.90
ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 6.22
PIPE TRAVEL TIME(MIN.) = 0.06 Tc(MIN.) = 6.00
LONGEST FLOWPATH FROM NODE 480.00 TO NODE 500.00 = 209.70 FEET.

```

```

FLOW PROCESS FROM NODE 500.00 TO NODE 500.00 IS CODE = 1

```

```

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

```

```

=====
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 6.00
RAINFALL INTENSITY(INCH/HR) = 4.35
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 1.59
TOTAL STREAM AREA(ACRES) = 1.59
PEAK FLOW RATE(CFS) AT CONFLUENCE = 6.22

```

**** CONFLUENCE DATA ****

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	15.51	6.32	4.224	0.30(0.03)	0.10	3.8	400.00
1	15.59	6.46	4.172	0.30(0.03)	0.10	3.8	320.00
1	15.56	6.61	4.120	0.30(0.03)	0.10	3.9	350.00
1	15.08	7.47	3.843	0.30(0.03)	0.10	4.0	430.00
1	14.16	8.87	3.487	0.30(0.03)	0.10	4.1	370.00
1	12.11	11.41	3.024	0.30(0.03)	0.10	4.2	290.00
2	6.22	6.00	4.350	0.30(0.03)	0.10	1.6	480.00

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

**** PEAK FLOW RATE TABLE ****

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21.38	6.00	4.350	0.30(0.03)	0.10	5.2	480.00
2	21.54	6.32	4.224	0.30(0.03)	0.10	5.4	400.00
3	21.55	6.46	4.172	0.30(0.03)	0.10	5.4	320.00
4	21.44	6.61	4.120	0.30(0.03)	0.10	5.5	350.00
5	20.57	7.47	3.843	0.30(0.03)	0.10	5.6	430.00
6	19.13	8.87	3.487	0.30(0.03)	0.10	5.7	370.00

7 16.41 11.41 3.024 0.30(0.03) 0.10 5.8 290.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 21.55 Tc(MIN.) = 6.46
EFFECTIVE AREA(ACRES) = 5.43 AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 5.8
LONGEST FLOWPATH FROM NODE 290.00 TO NODE 500.00 = 1138.40 FEET.

FLOW PROCESS FROM NODE 500.00 TO NODE 530.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 175.57 DOWNSTREAM(FEET) = 175.13
FLOW LENGTH(FEET) = 91.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 30.0 INCH PIPE IS 19.8 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 6.26
ESTIMATED PIPE DIAMETER(INCH) = 30.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 21.55
PIPE TRAVEL TIME(MIN.) = 0.24 Tc(MIN.) = 6.70
LONGEST FLOWPATH FROM NODE 290.00 TO NODE 530.00 = 1229.40 FEET.

FLOW PROCESS FROM NODE 530.00 TO NODE 530.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 6.70
RAINFALL INTENSITY(INCH/HR) = 4.09
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 5.43
TOTAL STREAM AREA(ACRES) = 5.78
PEAK FLOW RATE(CFS) AT CONFLUENCE = 21.55

FLOW PROCESS FROM NODE 510.00 TO NODE 520.00 IS CODE = 21

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

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 183.20
ELEVATION DATA: UPSTREAM(FEET) = 182.23 DOWNSTREAM(FEET) = 180.50

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

SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 6.209
 * 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.267
 SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	B	1.27	0.30	0.100	56	6.21

 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
 SUBAREA RUNOFF(CFS) = 4.84
 TOTAL AREA(ACRES) = 1.27 PEAK FLOW RATE(CFS) = 4.84

FLOW PROCESS FROM NODE 520.00 TO NODE 530.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 177.51 DOWNSTREAM(FEET) = 175.13
 FLOW LENGTH(FEET) = 39.50 MANNING'S N = 0.013
 DEPTH OF FLOW IN 12.0 INCH PIPE IS 6.5 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 11.20
 ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 4.84
 PIPE TRAVEL TIME(MIN.) = 0.06 Tc(MIN.) = 6.27
 LONGEST FLOWPATH FROM NODE 510.00 TO NODE 530.00 = 222.70 FEET.

FLOW PROCESS FROM NODE 530.00 TO NODE 530.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 6.27
 RAINFALL INTENSITY(INCH/HR) = 4.24
 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 1.27
 TOTAL STREAM AREA(ACRES) = 1.27
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 4.84

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21.38	6.24	4.254	0.30(0.03)	0.10	5.2	480.00
1	21.54	6.56	4.135	0.30(0.03)	0.10	5.4	400.00
1	21.55	6.70	4.086	0.30(0.03)	0.10	5.4	320.00
1	21.44	6.85	4.037	0.30(0.03)	0.10	5.5	350.00

1	20.57	7.72	3.772	0.30(0.03)	0.10	5.6	430.00
1	19.13	9.12	3.432	0.30(0.03)	0.10	5.7	370.00
1	16.41	11.67	2.985	0.30(0.03)	0.10	5.8	290.00
2	4.84	6.27	4.245	0.30(0.03)	0.10	1.3	510.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	26.22	6.24	4.254	0.30(0.03)	0.10	6.4	480.00
2	26.24	6.27	4.245	0.30(0.03)	0.10	6.5	510.00
3	26.26	6.56	4.135	0.30(0.03)	0.10	6.6	400.00
4	26.22	6.70	4.086	0.30(0.03)	0.10	6.7	320.00
5	26.05	6.85	4.037	0.30(0.03)	0.10	6.7	350.00
6	24.87	7.72	3.772	0.30(0.03)	0.10	6.8	430.00
7	23.04	9.12	3.432	0.30(0.03)	0.10	7.0	370.00
8	19.81	11.67	2.985	0.30(0.03)	0.10	7.1	290.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 26.26 Tc(MIN.) = 6.56
EFFECTIVE AREA(ACRES) = 6.63 AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 7.1
LONGEST FLOWPATH FROM NODE 290.00 TO NODE 530.00 = 1229.40 FEET.

FLOW PROCESS FROM NODE 530.00 TO NODE 280.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 175.13 DOWNSTREAM(FEET) = 174.92
FLOW LENGTH(FEET) = 45.50 MANNING'S N = 0.013
DEPTH OF FLOW IN 30.0 INCH PIPE IS 23.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 6.30
ESTIMATED PIPE DIAMETER(INCH) = 30.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 26.26
PIPE TRAVEL TIME(MIN.) = 0.12 Tc(MIN.) = 6.68
LONGEST FLOWPATH FROM NODE 290.00 TO NODE 280.00 = 1274.90 FEET.

FLOW PROCESS FROM NODE 280.00 TO NODE 280.00 IS CODE = 11

>>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<

** MAIN STREAM CONFLUENCE DATA **

STREAM	Q	Tc	Intensity	Fp(Fm)	Ap	Ae	HEADWATER
--------	---	----	-----------	--------	----	----	-----------

NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)		(ACRES)	NODE
1	26.22	6.36	4.208	0.30(0.03)	0.10	6.4	480.00
2	26.24	6.39	4.199	0.30(0.03)	0.10	6.5	510.00
3	26.26	6.68	4.093	0.30(0.03)	0.10	6.6	400.00
4	26.22	6.82	4.045	0.30(0.03)	0.10	6.7	320.00
5	26.05	6.97	3.997	0.30(0.03)	0.10	6.7	350.00
6	24.87	7.84	3.739	0.30(0.03)	0.10	6.8	430.00
7	23.04	9.25	3.406	0.30(0.03)	0.10	7.0	370.00
8	19.81	11.80	2.967	0.30(0.03)	0.10	7.1	290.00

LONGEST FLOWPATH FROM NODE 290.00 TO NODE 280.00 = 1274.90 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23.87	5.85	4.414	0.30(0.03)	0.10	5.6	160.00
2	24.65	6.29	4.235	0.30(0.03)	0.10	6.1	190.00
3	24.66	6.36	4.210	0.30(0.03)	0.10	6.1	118.00
4	24.66	6.42	4.186	0.30(0.03)	0.10	6.1	50.00
5	24.65	6.48	4.165	0.30(0.03)	0.10	6.2	250.00
6	24.52	6.64	4.106	0.30(0.03)	0.10	6.2	220.00
7	24.49	6.67	4.099	0.30(0.03)	0.10	6.2	140.00
8	23.05	7.66	3.789	0.30(0.03)	0.10	6.4	10.00
9	22.79	7.87	3.732	0.30(0.03)	0.10	6.4	100.00
10	21.97	8.44	3.587	0.30(0.03)	0.10	6.4	80.00
11	21.40	8.86	3.491	0.30(0.03)	0.10	6.5	30.00

LONGEST FLOWPATH FROM NODE 30.00 TO NODE 280.00 = 892.10 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	49.15	5.85	4.414	0.30(0.03)	0.10	11.5	160.00
2	50.75	6.29	4.235	0.30(0.03)	0.10	12.4	190.00
3	50.87	6.36	4.210	0.30(0.03)	0.10	12.5	118.00
4	50.88	6.36	4.208	0.30(0.03)	0.10	12.5	480.00
5	50.90	6.39	4.199	0.30(0.03)	0.10	12.6	510.00
6	50.90	6.42	4.186	0.30(0.03)	0.10	12.6	50.00
7	50.90	6.48	4.165	0.30(0.03)	0.10	12.7	250.00
8	50.78	6.64	4.106	0.30(0.03)	0.10	12.8	220.00
9	50.75	6.67	4.099	0.30(0.03)	0.10	12.9	140.00
10	50.73	6.68	4.093	0.30(0.03)	0.10	12.9	400.00
11	50.48	6.82	4.045	0.30(0.03)	0.10	13.0	320.00
12	50.10	6.97	3.997	0.30(0.03)	0.10	13.0	350.00
13	48.17	7.66	3.789	0.30(0.03)	0.10	13.2	10.00
14	47.69	7.84	3.739	0.30(0.03)	0.10	13.2	430.00
15	47.63	7.87	3.732	0.30(0.03)	0.10	13.2	100.00
16	46.07	8.44	3.587	0.30(0.03)	0.10	13.3	80.00
17	44.95	8.86	3.491	0.30(0.03)	0.10	13.4	30.00
18	43.92	9.25	3.406	0.30(0.03)	0.10	13.4	370.00
19	37.97	11.80	2.967	0.30(0.03)	0.10	13.5	290.00

TOTAL AREA(ACRES) = 13.5

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 50.90 Tc(MIN.) = 6.481
EFFECTIVE AREA(ACRES) = 12.68 AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 13.5
LONGEST FLOWPATH FROM NODE 290.00 TO NODE 280.00 = 1274.90 FEET.

FLOW PROCESS FROM NODE 280.00 TO NODE 540.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 174.92 DOWNSTREAM(FEET) = 174.70
FLOW LENGTH(FEET) = 43.90 MANNING'S N = 0.013
DEPTH OF FLOW IN 39.0 INCH PIPE IS 28.8 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 7.76
ESTIMATED PIPE DIAMETER(INCH) = 39.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 50.90
PIPE TRAVEL TIME(MIN.) = 0.09 Tc(MIN.) = 6.58
LONGEST FLOWPATH FROM NODE 290.00 TO NODE 540.00 = 1318.80 FEET.

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 13.5 TC(MIN.) = 6.58
EFFECTIVE AREA(ACRES) = 12.68 AREA-AVERAGED Fm(INCH/HR)= 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.100
PEAK FLOW RATE(CFS) = 50.90

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	49.15	5.94	4.374	0.30(0.03)	0.10	11.5	160.00
2	50.75	6.39	4.200	0.30(0.03)	0.10	12.4	190.00
3	50.87	6.45	4.175	0.30(0.03)	0.10	12.5	118.00
4	50.88	6.46	4.173	0.30(0.03)	0.10	12.5	480.00
5	50.90	6.48	4.164	0.30(0.03)	0.10	12.6	510.00
6	50.90	6.52	4.152	0.30(0.03)	0.10	12.6	50.00
7	50.90	6.58	4.131	0.30(0.03)	0.10	12.7	250.00
8	50.78	6.74	4.074	0.30(0.03)	0.10	12.8	220.00
9	50.75	6.76	4.067	0.30(0.03)	0.10	12.9	140.00
10	50.73	6.78	4.060	0.30(0.03)	0.10	12.9	400.00
11	50.48	6.92	4.014	0.30(0.03)	0.10	13.0	320.00
12	50.10	7.06	3.967	0.30(0.03)	0.10	13.0	350.00
13	48.17	7.76	3.763	0.30(0.03)	0.10	13.2	10.00
14	47.69	7.94	3.713	0.30(0.03)	0.10	13.2	430.00
15	47.63	7.96	3.707	0.30(0.03)	0.10	13.2	100.00
16	46.07	8.53	3.564	0.30(0.03)	0.10	13.3	80.00
17	44.95	8.95	3.469	0.30(0.03)	0.10	13.4	30.00
18	43.92	9.34	3.386	0.30(0.03)	0.10	13.4	370.00

19	37.97	11.90	2.953	0.30(0.03)	0.10	13.5	290.00
=====	=====	=====	=====	=====	=====	=====	=====
=====	=====	=====	=====	=====	=====	=====	=====

END OF RATIONAL METHOD ANALYSIS



RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
(c) Copyright 1983-2016 Advanced Engineering Software (aes)
Ver. 23.0 Release Date: 07/01/2016 License ID 1334

Analysis prepared by:

***** DESCRIPTION OF STUDY *****

* SP8454 - FULLERTON *
* GOODMAN LOGISTICS CENTER *
* BASIN C - 100 YEAR PEAK FLOW *

FILE NAME: GLC100C.DAT
TIME/DATE OF STUDY: 10:13 04/28/2021

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--*TIME-OF-CONCENTRATION MODEL*--

USER SPECIFIED STORM EVENT(YEAR) = 100.00
SPECIFIED MINIMUM PIPE SIZE(INCH) = 4.00
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
DATA BANK RAINFALL USED
ANTECEDENT MOISTURE CONDITION (AMC) III ASSUMED FOR RATIONAL METHOD

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

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL: IN- / OUT- / PARK- SIDE / SIDE / WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH LIP HIKE (FT) (FT) (FT)	MANNING FACTOR (n)
1	32.0	20.0	0.200/0.200/0.020	0.67	2.00 0.0313 0.167	0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

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

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

*USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

FLOW PROCESS FROM NODE 10.00 TO NODE 20.00 IS CODE = 21

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

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 77.00
ELEVATION DATA: UPSTREAM(FEET) = 183.96 DOWNSTREAM(FEET) = 181.73

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

SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 5.000

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 6.187

SUBAREA T_c AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	B	0.09	0.30	0.100	76	5.00

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

SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100

SUBAREA RUNOFF(CFS) = 0.50

TOTAL AREA(ACRES) = 0.09 PEAK FLOW RATE(CFS) = 0.50

FLOW PROCESS FROM NODE 20.00 TO NODE 40.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 178.90 DOWNSTREAM(FEET) = 178.80

FLOW LENGTH(FEET) = 24.20 MANNING'S N = 0.013

DEPTH OF FLOW IN 9.0 INCH PIPE IS 4.4 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 2.33

ESTIMATED PIPE DIAMETER(INCH) = 9.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 0.50

PIPE TRAVEL TIME(MIN.) = 0.17 T_c (MIN.) = 5.17

LONGEST FLOWPATH FROM NODE 10.00 TO NODE 40.00 = 101.20 FEET.

FLOW PROCESS FROM NODE 40.00 TO NODE 40.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:

TIME OF CONCENTRATION(MIN.) = 5.17

RAINFALL INTENSITY(INCH/HR) = 6.07

AREA-AVERAGED F_m (INCH/HR) = 0.03

AREA-AVERAGED F_p (INCH/HR) = 0.30

AREA-AVERAGED A_p = 0.10

EFFECTIVE STREAM AREA(ACRES) = 0.09

TOTAL STREAM AREA(ACRES) = 0.09

PEAK FLOW RATE(CFS) AT CONFLUENCE = 0.50

FLOW PROCESS FROM NODE 30.00 TO NODE 40.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 239.20
ELEVATION DATA: UPSTREAM(FEET) = 185.69 DOWNSTREAM(FEET) = 182.33

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

SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 6.381

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 5.381

SUBAREA T_c AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	F_p (INCH/HR)	A_p (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	B	0.31	0.30	0.100	76	6.38

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

SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100

SUBAREA RUNOFF(CFS) = 1.49

TOTAL AREA(ACRES) = 0.31 PEAK FLOW RATE(CFS) = 1.49

FLOW PROCESS FROM NODE 40.00 TO NODE 40.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 6.38
RAINFALL INTENSITY(INCH/HR) = 5.38
AREA-AVERAGED F_m (INCH/HR) = 0.03
AREA-AVERAGED F_p (INCH/HR) = 0.30
AREA-AVERAGED A_p = 0.10
EFFECTIVE STREAM AREA(ACRES) = 0.31
TOTAL STREAM AREA(ACRES) = 0.31
PEAK FLOW RATE(CFS) AT CONFLUENCE = 1.49

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	T_c (MIN.)	Intensity (INCH/HR)	$F_p(F_m)$ (INCH/HR)	A_p	A_e (ACRES)	HEADWATER NODE
1	0.50	5.17	6.068	0.30(0.03)	0.10	0.1	10.00
2	1.49	6.38	5.381	0.30(0.03)	0.10	0.3	30.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	T_c (MIN.)	Intensity (INCH/HR)	$F_p(F_m)$ (INCH/HR)	A_p	A_e (ACRES)	HEADWATER NODE
------------------	--------------	-----------------	------------------------	-------------------------	-------	------------------	-------------------

1	1.86	5.17	6.068	0.30(0.03)	0.10	0.3	10.00
2	1.93	6.38	5.381	0.30(0.03)	0.10	0.4	30.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 1.93 Tc(MIN.) = 6.38
 EFFECTIVE AREA(ACRES) = 0.40 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 0.4
 LONGEST FLOWPATH FROM NODE 30.00 TO NODE 40.00 = 239.20 FEET.

FLOW PROCESS FROM NODE 40.00 TO NODE 70.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 178.80 DOWNSTREAM(FEET) = 177.26
 FLOW LENGTH(FEET) = 238.90 MANNING'S N = 0.013
 DEPTH OF FLOW IN 12.0 INCH PIPE IS 7.4 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 3.83
 ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 1.93
 PIPE TRAVEL TIME(MIN.) = 1.04 Tc(MIN.) = 7.42
 LONGEST FLOWPATH FROM NODE 30.00 TO NODE 70.00 = 478.10 FEET.

FLOW PROCESS FROM NODE 70.00 TO NODE 70.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
 TIME OF CONCENTRATION(MIN.) = 7.42
 RAINFALL INTENSITY(INCH/HR) = 4.93
 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 0.40
 TOTAL STREAM AREA(ACRES) = 0.40
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 1.93

FLOW PROCESS FROM NODE 50.00 TO NODE 60.00 IS CODE = 21

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

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 120.20
 ELEVATION DATA: UPSTREAM(FEET) = 185.68 DOWNSTREAM(FEET) = 183.43

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$
 SUBAREA ANALYSIS USED MINIMUM $T_c(MIN.) = 5.000$
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 6.187
 SUBAREA T_c AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	F_p (INCH/HR)	A_p (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	B	0.09	0.30	0.100	76	5.00

 SUBAREA AVERAGE PERVIOUS LOSS RATE, $F_p(INCH/HR) = 0.30$
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, $A_p = 0.100$
 SUBAREA RUNOFF(CFS) = 0.50
 TOTAL AREA(ACRES) = 0.09 PEAK FLOW RATE(CFS) = 0.50

FLOW PROCESS FROM NODE 60.00 TO NODE 70.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(Feet) = 179.86 DOWNSTREAM(Feet) = 177.26
 FLOW LENGTH(Feet) = 25.50 MANNING'S N = 0.013
 DEPTH OF FLOW IN 6.0 INCH PIPE IS 2.2 INCHES
 PIPE-FLOW VELOCITY(Feet/Sec.) = 7.65
 ESTIMATED PIPE DIAMETER(INCH) = 6.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 0.50
 PIPE TRAVEL TIME(MIN.) = 0.06 $T_c(MIN.) = 5.06$
 LONGEST FLOWPATH FROM NODE 50.00 TO NODE 70.00 = 145.70 FEET.

FLOW PROCESS FROM NODE 70.00 TO NODE 70.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 5.06
 RAINFALL INTENSITY(INCH/HR) = 6.15
 AREA-AVERAGED $F_m(INCH/HR) = 0.03$
 AREA-AVERAGED $F_p(INCH/HR) = 0.30$
 AREA-AVERAGED $A_p = 0.10$
 EFFECTIVE STREAM AREA(ACRES) = 0.09
 TOTAL STREAM AREA(ACRES) = 0.09
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 0.50

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	T_c (MIN.)	Intensity (INCH/HR)	$F_p(F_m)$ (INCH/HR)	A_p	A_e (ACRES)	HEADWATER NODE
1	1.86	6.22	5.459	0.30(0.03)	0.10	0.3	10.00
1	1.93	7.42	4.935	0.30(0.03)	0.10	0.4	30.00
2	0.50	5.06	6.148	0.30(0.03)	0.10	0.1	50.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2.21	5.06	6.148	0.30(0.03)	0.10	0.4	50.00
2	2.31	6.22	5.459	0.30(0.03)	0.10	0.4	10.00
3	2.33	7.42	4.935	0.30(0.03)	0.10	0.5	30.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 2.33 Tc(MIN.) = 7.42
EFFECTIVE AREA(ACRES) = 0.49 AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 0.5
LONGEST FLOWPATH FROM NODE 30.00 TO NODE 70.00 = 478.10 FEET.

FLOW PROCESS FROM NODE 70.00 TO NODE 130.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 177.26 DOWNSTREAM(FEET) = 176.84
FLOW LENGTH(FEET) = 74.10 MANNING'S N = 0.013
DEPTH OF FLOW IN 12.0 INCH PIPE IS 8.8 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 3.76
ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 2.33
PIPE TRAVEL TIME(MIN.) = 0.33 Tc(MIN.) = 7.75
LONGEST FLOWPATH FROM NODE 30.00 TO NODE 130.00 = 552.20 FEET.

FLOW PROCESS FROM NODE 130.00 TO NODE 130.00 IS CODE = 10

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

FLOW PROCESS FROM NODE 80.00 TO NODE 90.00 IS CODE = 21

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

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

INITIAL SUBAREA FLOW-LENGTH(FEET) = 167.10
ELEVATION DATA: UPSTREAM(FEET) = 186.25 DOWNSTREAM(FEET) = 183.76

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

SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.463

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 5.881
 SUBAREA Tc AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	B	0.17	0.30	0.100	76	5.46

 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
 SUBAREA RUNOFF(CFS) = 0.90
 TOTAL AREA(ACRES) = 0.17 PEAK FLOW RATE(CFS) = 0.90

FLOW PROCESS FROM NODE 90.00 TO NODE 120.00 IS CODE = 31

 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(Feet)	=	179.21	DOWNSTREAM(Feet)	=	177.90
Flow Length(Feet)	=	262.10	Manning's N	=	0.013
Depth of Flow in 9.0 inch pipe	is	6.0 inches			
Pipe-Flow Velocity(Feet/Sec.)	=	2.86			
Estimated Pipe Diameter(Inch)	=	9.00	Number of Pipes	=	1
Pipe-Flow(CFS)	=	0.90			
Pipe Travel Time(Min.)	=	1.53	Tc(Min.)	=	6.99
Longest Flowpath from Node 80.00 to Node 120.00	=	429.20 feet			

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

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

=====

Total Number of Streams	=	3
Confluence values used for independent stream 1 are:		
Time of Concentration(Min.)	=	6.99
Rainfall Intensity(Inch/HR)	=	5.11
Area-Averaged Fm(Inch/HR)	=	0.03
Area-Averaged Fp(Inch/HR)	=	0.30
Area-Averaged Ap	=	0.10
Effective Stream Area(Acres)	=	0.17
Total Stream Area(Acres)	=	0.17
Peak Flow Rate(CFS) at Confluence	=	0.90

FLOW PROCESS FROM NODE 100.00 TO NODE 110.00 IS CODE = 21

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

=====

Initial Subarea Flow-Length(Feet)	=	245.00
Elevation Data: Upstream(Feet)	=	185.87
Downstream(Feet)	=	182.00

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION \ CHANGE)] ** 0.20$
 SUBAREA ANALYSIS USED MINIMUM $T_c(MIN.) = 6.293$
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 5.423
 SUBAREA T_c AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	F_p (INCH/HR)	A_p (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	B	0.43	0.30	0.100	76	6.29

 SUBAREA AVERAGE PERVIOUS LOSS RATE, $F_p(INCH/HR) = 0.30$
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, $A_p = 0.100$
 SUBAREA RUNOFF(CFS) = 2.09
 TOTAL AREA(ACRES) = 0.43 PEAK FLOW RATE(CFS) = 2.09

FLOW PROCESS FROM NODE 110.00 TO NODE 120.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(Feet) = 178.11 DOWNSTREAM(Feet) = 177.90
 FLOW LENGTH(Feet) = 42.40 MANNING'S N = 0.013
 DEPTH OF FLOW IN 12.0 INCH PIPE IS 8.5 INCHES
 PIPE-FLOW VELOCITY(Feet/Sec.) = 3.49
 ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 2.09
 PIPE TRAVEL TIME(MIN.) = 0.20 $T_c(MIN.) = 6.50$
 LONGEST FLOWPATH FROM NODE 100.00 TO NODE 120.00 = 287.40 FEET.

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

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

TOTAL NUMBER OF STREAMS = 3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 6.50
 RAINFALL INTENSITY(INCH/HR) = 5.33
 AREA-AVERAGED $F_m(INCH/HR) = 0.03$
 AREA-AVERAGED $F_p(INCH/HR) = 0.30$
 AREA-AVERAGED $A_p = 0.10$
 EFFECTIVE STREAM AREA(ACRES) = 0.43
 TOTAL STREAM AREA(ACRES) = 0.43
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 2.09

FLOW PROCESS FROM NODE 118.00 TO NODE 119.00 IS CODE = 21

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

INITIAL SUBAREA FLOW-LENGTH(Feet) = 57.30

ELEVATION DATA: UPSTREAM(FEET) = 183.83 DOWNSTREAM(FEET) = 182.49

$T_c = K * [(LENGTH^{**} 3.00) / (ELEVATION\ CHANGE)]^{**} 0.20$

SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 5.000

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 6.187

SUBAREA T_c AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	F_p (INCH/HR)	A_p (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	B	0.10	0.30	0.100	76	5.00

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

SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100

SUBAREA RUNOFF(CFS) = 0.55

TOTAL AREA(ACRES) = 0.10 PEAK FLOW RATE(CFS) = 0.55

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

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

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

=====

TOTAL NUMBER OF STREAMS = 3

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 3 ARE:

TIME OF CONCENTRATION(MIN.) = 5.00

RAINFALL INTENSITY(INCH/HR) = 6.19

AREA-AVERAGED F_m (INCH/HR) = 0.03

AREA-AVERAGED F_p (INCH/HR) = 0.30

AREA-AVERAGED A_p = 0.10

EFFECTIVE STREAM AREA(ACRES) = 0.10

TOTAL STREAM AREA(ACRES) = 0.10

PEAK FLOW RATE(CFS) AT CONFLUENCE = 0.55

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	T_c (MIN.)	Intensity (INCH/HR)	F_p (F_m) (INCH/HR)	A_p	A_e (ACRES)	HEADWATER NODE
1	0.90	6.99	5.107	0.30(0.03)	0.10	0.2	80.00
2	2.09	6.50	5.326	0.30(0.03)	0.10	0.4	100.00
3	0.55	5.00	6.187	0.30(0.03)	0.10	0.1	118.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO

CONFLUENCE FORMULA USED FOR 3 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	T_c (MIN.)	Intensity (INCH/HR)	F_p (F_m) (INCH/HR)	A_p	A_e (ACRES)	HEADWATER NODE
1	3.20	5.00	6.187	0.30(0.03)	0.10	0.6	118.00
2	3.43	6.50	5.326	0.30(0.03)	0.10	0.7	100.00
3	3.35	6.99	5.107	0.30(0.03)	0.10	0.7	80.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 3.43 T_c (MIN.) = 6.50

EFFECTIVE AREA(ACRES) = 0.69 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 0.7
 LONGEST FLOWPATH FROM NODE 80.00 TO NODE 120.00 = 429.20 FEET.

FLOW PROCESS FROM NODE 120.00 TO NODE 130.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 177.90 DOWNSTREAM(FEET) = 176.85
 FLOW LENGTH(FEET) = 100.60 MANNING'S N = 0.013
 DEPTH OF FLOW IN 12.0 INCH PIPE IS 9.5 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 5.15
 ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 3.43
 PIPE TRAVEL TIME(MIN.) = 0.33 Tc(MIN.) = 6.82
 LONGEST FLOWPATH FROM NODE 80.00 TO NODE 130.00 = 529.80 FEET.

FLOW PROCESS FROM NODE 130.00 TO NODE 130.00 IS CODE = 11

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

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	3.20	5.33	5.966	0.30(0.03)	0.10	0.6	118.00
2	3.43	6.82	5.179	0.30(0.03)	0.10	0.7	100.00
3	3.35	7.32	4.975	0.30(0.03)	0.10	0.7	80.00

LONGEST FLOWPATH FROM NODE 80.00 TO NODE 130.00 = 529.80 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2.21	5.39	5.929	0.30(0.03)	0.10	0.4	50.00
2	2.31	6.55	5.301	0.30(0.03)	0.10	0.4	10.00
3	2.33	7.75	4.814	0.30(0.03)	0.10	0.5	30.00

LONGEST FLOWPATH FROM NODE 30.00 TO NODE 130.00 = 552.20 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	5.40	5.33	5.966	0.30(0.03)	0.10	0.9	118.00
2	5.41	5.39	5.929	0.30(0.03)	0.10	0.9	50.00
3	5.70	6.55	5.301	0.30(0.03)	0.10	1.1	10.00
4	5.75	6.82	5.179	0.30(0.03)	0.10	1.1	100.00
5	5.68	7.32	4.975	0.30(0.03)	0.10	1.2	80.00

6 5.58 7.75 4.814 0.30(0.03) 0.10 1.2 30.00
TOTAL AREA(ACRES) = 1.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 5.75 Tc(MIN.) = 6.821
EFFECTIVE AREA(ACRES) = 1.13 AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 1.2
LONGEST FLOWPATH FROM NODE 30.00 TO NODE 130.00 = 552.20 FEET.

FLOW PROCESS FROM NODE 130.00 TO NODE 180.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 176.84 DOWNSTREAM(FEET) = 176.48
FLOW LENGTH(FEET) = 64.80 MANNING'S N = 0.013
DEPTH OF FLOW IN 18.0 INCH PIPE IS 11.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 4.74
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 5.75
PIPE TRAVEL TIME(MIN.) = 0.23 Tc(MIN.) = 7.05
LONGEST FLOWPATH FROM NODE 30.00 TO NODE 180.00 = 617.00 FEET.

FLOW PROCESS FROM NODE 180.00 TO NODE 180.00 IS CODE = 10

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

=====

FLOW PROCESS FROM NODE 140.00 TO NODE 150.00 IS CODE = 21

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

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 153.10
ELEVATION DATA: UPSTREAM(FEET) = 182.92 DOWNSTREAM(FEET) = 181.10

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

SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.519

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 5.847

SUBAREA Tc AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	B	0.20	0.30	0.100	76	5.52

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

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100

SUBAREA RUNOFF(CFS) = 1.05

TOTAL AREA(ACRES) = 0.20 PEAK FLOW RATE(CFS) = 1.05

FLOW PROCESS FROM NODE 150.00 TO NODE 170.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 178.50 DOWNSTREAM(FEET) = 178.26
FLOW LENGTH(FEET) = 49.90 MANNING'S N = 0.013
DEPTH OF FLOW IN 9.0 INCH PIPE IS 6.9 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 2.87
ESTIMATED PIPE DIAMETER(INCH) = 9.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 1.05
PIPE TRAVEL TIME(MIN.) = 0.29 Tc(MIN.) = 5.81
LONGEST FLOWPATH FROM NODE 140.00 TO NODE 170.00 = 203.00 FEET.

FLOW PROCESS FROM NODE 170.00 TO NODE 170.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 5.81
RAINFALL INTENSITY(INCH/HR) = 5.68
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 0.20
TOTAL STREAM AREA(ACRES) = 0.20
PEAK FLOW RATE(CFS) AT CONFLUENCE = 1.05

FLOW PROCESS FROM NODE 160.00 TO NODE 170.00 IS CODE = 21

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

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 129.40
ELEVATION DATA: UPSTREAM(FEET) = 184.29 DOWNSTREAM(FEET) = 180.84

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

SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.000

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 6.187

SUBAREA Tc AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	B	0.13	0.30	0.100	76	5.00

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

SUBAREA AVERAGE PERVIOUS AREA FRACTION, $A_p = 0.100$
 SUBAREA RUNOFF(CFS) = 0.72
 TOTAL AREA(ACRES) = 0.13 PEAK FLOW RATE(CFS) = 0.72

FLOW PROCESS FROM NODE 170.00 TO NODE 170.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 5.00
 RAINFALL INTENSITY(INCH/HR) = 6.19
 AREA-AVERAGED F_m (INCH/HR) = 0.03
 AREA-AVERAGED F_p (INCH/HR) = 0.30
 AREA-AVERAGED $A_p = 0.10$
 EFFECTIVE STREAM AREA(ACRES) = 0.13
 TOTAL STREAM AREA(ACRES) = 0.13
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 0.72

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	T _c (MIN.)	Intensity (INCH/HR)	F _p (F _m) (INCH/HR)	A _p	A _e (ACRES)	HEADWATER NODE
1	1.05	5.81	5.678	0.30(0.03)	0.10	0.2	140.00
2	0.72	5.00	6.187	0.30(0.03)	0.10	0.1	160.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	T _c (MIN.)	Intensity (INCH/HR)	F _p (F _m) (INCH/HR)	A _p	A _e (ACRES)	HEADWATER NODE
1	1.70	5.00	6.187	0.30(0.03)	0.10	0.3	160.00
2	1.71	5.81	5.678	0.30(0.03)	0.10	0.3	140.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 1.71 T_c(MIN.) = 5.81
 EFFECTIVE AREA(ACRES) = 0.33 AREA-AVERAGED F_m (INCH/HR) = 0.03
 AREA-AVERAGED F_p (INCH/HR) = 0.30 AREA-AVERAGED $A_p = 0.10$
 TOTAL AREA(ACRES) = 0.3
 LONGEST FLOWPATH FROM NODE 140.00 TO NODE 170.00 = 203.00 FEET.

FLOW PROCESS FROM NODE 170.00 TO NODE 180.00 IS CODE = 31

 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 178.26 DOWNSTREAM(FEET) = 176.48

FLOW LENGTH(FEET) = 35.80 MANNING'S N = 0.013
 DEPTH OF FLOW IN 9.0 INCH PIPE IS 4.4 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 8.03
 ESTIMATED PIPE DIAMETER(INCH) = 9.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 1.71
 PIPE TRAVEL TIME(MIN.) = 0.07 Tc(MIN.) = 5.88
 LONGEST FLOWPATH FROM NODE 140.00 TO NODE 180.00 = 238.80 FEET.

FLOW PROCESS FROM NODE 180.00 TO NODE 180.00 IS CODE = 11

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

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1.70	5.07	6.135	0.30(0.03)	0.10	0.3	160.00
2	1.71	5.88	5.637	0.30(0.03)	0.10	0.3	140.00

LONGEST FLOWPATH FROM NODE 140.00 TO NODE 180.00 = 238.80 FEET.

** MEMORY BANK # 2 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	5.40	5.56	5.823	0.30(0.03)	0.10	0.9	118.00
2	5.41	5.62	5.788	0.30(0.03)	0.10	0.9	50.00
3	5.70	6.78	5.198	0.30(0.03)	0.10	1.1	10.00
4	5.75	7.05	5.082	0.30(0.03)	0.10	1.1	100.00
5	5.68	7.54	4.888	0.30(0.03)	0.10	1.2	80.00
6	5.58	7.98	4.734	0.30(0.03)	0.10	1.2	30.00

LONGEST FLOWPATH FROM NODE 30.00 TO NODE 180.00 = 617.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	6.89	5.07	6.135	0.30(0.03)	0.10	1.1	160.00
2	7.10	5.56	5.823	0.30(0.03)	0.10	1.2	118.00
3	7.12	5.62	5.788	0.30(0.03)	0.10	1.2	50.00
4	7.19	5.88	5.637	0.30(0.03)	0.10	1.3	140.00
5	7.27	6.78	5.198	0.30(0.03)	0.10	1.4	10.00
6	7.28	7.05	5.082	0.30(0.03)	0.10	1.5	100.00
7	7.16	7.54	4.888	0.30(0.03)	0.10	1.5	80.00
8	7.01	7.98	4.734	0.30(0.03)	0.10	1.5	30.00

TOTAL AREA(ACRES) = 1.5

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 7.28 Tc(MIN.) = 7.048
 EFFECTIVE AREA(ACRES) = 1.46 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 1.5

LONGEST FLOWPATH FROM NODE 30.00 TO NODE 180.00 = 617.00 FEET.

FLOW PROCESS FROM NODE 180.00 TO NODE 210.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 176.48 DOWNSTREAM(FEET) = 176.21
FLOW LENGTH(FEET) = 47.60 MANNING'S N = 0.013
DEPTH OF FLOW IN 18.0 INCH PIPE IS 13.9 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 4.96
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 7.28
PIPE TRAVEL TIME(MIN.) = 0.16 Tc(MIN.) = 7.21
LONGEST FLOWPATH FROM NODE 30.00 TO NODE 210.00 = 664.60 FEET.

FLOW PROCESS FROM NODE 210.00 TO NODE 210.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 7.21
RAINFALL INTENSITY(INCH/HR) = 5.02
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 1.46
TOTAL STREAM AREA(ACRES) = 1.52
PEAK FLOW RATE(CFS) AT CONFLUENCE = 7.28

FLOW PROCESS FROM NODE 190.00 TO NODE 200.00 IS CODE = 21

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

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 156.00
ELEVATION DATA: UPSTREAM(FEET) = 182.23 DOWNSTREAM(FEET) = 180.50

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

SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.638

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 5.776

SUBAREA Tc AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	B	2.41	0.30	0.100	76	5.64

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

SUBAREA AVERAGE PERVIOUS AREA FRACTION, $A_p = 0.100$
 SUBAREA RUNOFF(CFS) = 12.46
 TOTAL AREA(ACRES) = 2.41 PEAK FLOW RATE(CFS) = 12.46

FLOW PROCESS FROM NODE 200.00 TO NODE 210.00 IS CODE = 31

 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) =	178.01	DOWNSTREAM(FEET) =	176.21
FLOW LENGTH(FEET) =	39.50	MANNING'S N =	0.013
DEPTH OF FLOW IN 15.0 INCH PIPE IS	11.4 INCHES		
PIPE-FLOW VELOCITY(FEET/SEC.) =	12.43		
ESTIMATED PIPE DIAMETER(INCH) =	15.00	NUMBER OF PIPES =	1
PIPE-FLOW(CFS) =	12.46		
PIPE TRAVEL TIME(MIN.) =	0.05	T_c (MIN.) =	5.69
LONGEST FLOWPATH FROM NODE 190.00 TO NODE 210.00 =	195.50 FEET.		

FLOW PROCESS FROM NODE 210.00 TO NODE 210.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS =	2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:	
TIME OF CONCENTRATION(MIN.) =	5.69
RAINFALL INTENSITY(INCH/HR) =	5.74
AREA-AVERAGED F_m (INCH/HR) =	0.03
AREA-AVERAGED F_p (INCH/HR) =	0.30
AREA-AVERAGED A_p =	0.10
EFFECTIVE STREAM AREA(ACRES) =	2.41
TOTAL STREAM AREA(ACRES) =	2.41
PEAK FLOW RATE(CFS) AT CONFLUENCE =	12.46

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	T_c (MIN.)	Intensity (INCH/HR)	$F_p(F_m)$ (INCH/HR)	A_p	A_e (ACRES)	HEADWATER NODE
1	6.89	5.24	6.027	0.30(0.03)	0.10	1.1	160.00
1	7.10	5.72	5.729	0.30(0.03)	0.10	1.2	118.00
1	7.12	5.78	5.696	0.30(0.03)	0.10	1.2	50.00
1	7.19	6.04	5.551	0.30(0.03)	0.10	1.3	140.00
1	7.27	6.94	5.129	0.30(0.03)	0.10	1.4	10.00
1	7.28	7.21	5.017	0.30(0.03)	0.10	1.5	100.00
1	7.16	7.70	4.830	0.30(0.03)	0.10	1.5	80.00
1	7.01	8.14	4.680	0.30(0.03)	0.10	1.5	30.00
2	12.46	5.69	5.745	0.30(0.03)	0.10	2.4	190.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO

CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18.92	5.24	6.027	0.30(0.03)	0.10	3.4	160.00
2	19.55	5.69	5.745	0.30(0.03)	0.10	3.6	190.00
3	19.53	5.72	5.729	0.30(0.03)	0.10	3.6	118.00
4	19.48	5.78	5.696	0.30(0.03)	0.10	3.7	50.00
5	19.23	6.04	5.551	0.30(0.03)	0.10	3.7	140.00
6	18.39	6.94	5.129	0.30(0.03)	0.10	3.8	10.00
7	18.16	7.21	5.017	0.30(0.03)	0.10	3.9	100.00
8	17.62	7.70	4.830	0.30(0.03)	0.10	3.9	80.00
9	17.15	8.14	4.680	0.30(0.03)	0.10	3.9	30.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 19.55 Tc(MIN.) = 5.69
EFFECTIVE AREA(ACRES) = 3.64 AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 3.9
LONGEST FLOWPATH FROM NODE 30.00 TO NODE 210.00 = 664.60 FEET.

FLOW PROCESS FROM NODE 210.00 TO NODE 240.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 176.21 DOWNSTREAM(FEET) = 175.69
FLOW LENGTH(FEET) = 91.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 27.0 INCH PIPE IS 19.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 6.45
ESTIMATED PIPE DIAMETER(INCH) = 27.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 19.55
PIPE TRAVEL TIME(MIN.) = 0.24 Tc(MIN.) = 5.93
LONGEST FLOWPATH FROM NODE 30.00 TO NODE 240.00 = 755.60 FEET.

FLOW PROCESS FROM NODE 240.00 TO NODE 240.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 5.93
RAINFALL INTENSITY(INCH/HR) = 5.61
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 3.64

TOTAL STREAM AREA(ACRES) = 3.93
PEAK FLOW RATE(CFS) AT CONFLUENCE = 19.55

FLOW PROCESS FROM NODE 220.00 TO NODE 230.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 184.00
ELEVATION DATA: UPSTREAM(FEET) = 182.22 DOWNSTREAM(FEET) = 180.50

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$
SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 6.232
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 5.453
SUBAREA T_c AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	F_p (INCH/HR)	A_p (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	B	1.27	0.30	0.100	76	6.23

SUBAREA AVERAGE PERVIOUS LOSS RATE, F_p (INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100
SUBAREA RUNOFF(CFS) = 6.20
TOTAL AREA(ACRES) = 1.27 PEAK FLOW RATE(CFS) = 6.20

FLOW PROCESS FROM NODE 230.00 TO NODE 240.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 177.51 DOWNSTREAM(FEET) = 175.69
FLOW LENGTH(FEET) = 39.50 MANNING'S N = 0.013
DEPTH OF FLOW IN 12.0 INCH PIPE IS 8.4 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 10.61
ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 6.20
PIPE TRAVEL TIME(MIN.) = 0.06 T_c (MIN.) = 6.29
LONGEST FLOWPATH FROM NODE 220.00 TO NODE 240.00 = 223.50 FEET.

FLOW PROCESS FROM NODE 240.00 TO NODE 240.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 6.29
RAINFALL INTENSITY(INCH/HR) = 5.42
AREA-AVERAGED F_m (INCH/HR) = 0.03

AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 1.27
 TOTAL STREAM AREA(ACRES) = 1.27
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 6.20

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18.92	5.47	5.876	0.30(0.03)	0.10	3.4	160.00
1	19.55	5.93	5.613	0.30(0.03)	0.10	3.6	190.00
1	19.53	5.95	5.598	0.30(0.03)	0.10	3.6	118.00
1	19.48	6.01	5.567	0.30(0.03)	0.10	3.7	50.00
1	19.23	6.28	5.430	0.30(0.03)	0.10	3.7	140.00
1	18.39	7.18	5.031	0.30(0.03)	0.10	3.8	10.00
1	18.16	7.45	4.925	0.30(0.03)	0.10	3.9	100.00
1	17.62	7.94	4.746	0.30(0.03)	0.10	3.9	80.00
1	17.15	8.38	4.603	0.30(0.03)	0.10	3.9	30.00
2	6.20	6.29	5.423	0.30(0.03)	0.10	1.3	220.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24.76	5.47	5.876	0.30(0.03)	0.10	4.5	160.00
2	25.59	5.93	5.613	0.30(0.03)	0.10	4.8	190.00
3	25.58	5.95	5.598	0.30(0.03)	0.10	4.8	118.00
4	25.56	6.01	5.567	0.30(0.03)	0.10	4.9	50.00
5	25.42	6.28	5.430	0.30(0.03)	0.10	5.0	140.00
6	25.41	6.29	5.423	0.30(0.03)	0.10	5.0	220.00
7	24.14	7.18	5.031	0.30(0.03)	0.10	5.1	10.00
8	23.79	7.45	4.925	0.30(0.03)	0.10	5.1	100.00
9	23.05	7.94	4.746	0.30(0.03)	0.10	5.2	80.00
10	22.41	8.38	4.603	0.30(0.03)	0.10	5.2	30.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 25.59 Tc(MIN.) = 5.93
 EFFECTIVE AREA(ACRES) = 4.84 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 5.2
 LONGEST FLOWPATH FROM NODE 30.00 TO NODE 240.00 = 755.60 FEET.

FLOW PROCESS FROM NODE 240.00 TO NODE 270.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 175.69 DOWNSTREAM(FEET) = 175.18
 FLOW LENGTH(FEET) = 91.00 MANNING'S N = 0.013
 DEPTH OF FLOW IN 30.0 INCH PIPE IS 21.3 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 6.85
 ESTIMATED PIPE DIAMETER(INCH) = 30.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 25.59
 PIPE TRAVEL TIME(MIN.) = 0.22 Tc(MIN.) = 6.15
 LONGEST FLOWPATH FROM NODE 30.00 TO NODE 270.00 = 846.60 FEET.

FLOW PROCESS FROM NODE 270.00 TO NODE 270.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
 TIME OF CONCENTRATION(MIN.) = 6.15
 RAINFALL INTENSITY(INCH/HR) = 5.50
 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 4.84
 TOTAL STREAM AREA(ACRES) = 5.20
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 25.59

FLOW PROCESS FROM NODE 250.00 TO NODE 260.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 188.60
 ELEVATION DATA: UPSTREAM(FEET) = 182.24 DOWNSTREAM(FEET) = 180.50

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 6.311
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 5.415
 SUBAREA Tc AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	B	1.27	0.30	0.100	76	6.31

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
 SUBAREA RUNOFF(CFS) = 6.15
 TOTAL AREA(ACRES) = 1.27 PEAK FLOW RATE(CFS) = 6.15

FLOW PROCESS FROM NODE 260.00 TO NODE 270.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 177.51 DOWNSTREAM(FEET) = 175.18
FLOW LENGTH(FEET) = 39.50 MANNING'S N = 0.013
DEPTH OF FLOW IN 12.0 INCH PIPE IS 7.6 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 11.72
ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 6.15
PIPE TRAVEL TIME(MIN.) = 0.06 Tc(MIN.) = 6.37
LONGEST FLOWPATH FROM NODE 250.00 TO NODE 270.00 = 228.10 FEET.

FLOW PROCESS FROM NODE 270.00 TO NODE 270.00 IS CODE = 1

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

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

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 6.37
RAINFALL INTENSITY(INCH/HR) = 5.39
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 1.27
TOTAL STREAM AREA(ACRES) = 1.27
PEAK FLOW RATE(CFS) AT CONFLUENCE = 6.15

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24.76	5.69	5.743	0.30(0.03)	0.10	4.5	160.00
1	25.59	6.15	5.496	0.30(0.03)	0.10	4.8	190.00
1	25.58	6.18	5.482	0.30(0.03)	0.10	4.8	118.00
1	25.56	6.23	5.453	0.30(0.03)	0.10	4.9	50.00
1	25.42	6.50	5.323	0.30(0.03)	0.10	5.0	140.00
1	25.41	6.52	5.316	0.30(0.03)	0.10	5.0	220.00
1	24.14	7.40	4.943	0.30(0.03)	0.10	5.1	10.00
1	23.79	7.67	4.842	0.30(0.03)	0.10	5.1	100.00
1	23.05	8.17	4.670	0.30(0.03)	0.10	5.2	80.00
1	22.41	8.61	4.531	0.30(0.03)	0.10	5.2	30.00
2	6.15	6.37	5.387	0.30(0.03)	0.10	1.3	250.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	30.63	5.69	5.743	0.30(0.03)	0.10	5.6	160.00

2	31.66	6.15	5.496	0.30(0.03)	0.10	6.1	190.00
3	31.66	6.18	5.482	0.30(0.03)	0.10	6.1	118.00
4	31.66	6.23	5.453	0.30(0.03)	0.10	6.1	50.00
5	31.64	6.37	5.387	0.30(0.03)	0.10	6.2	250.00
6	31.50	6.50	5.323	0.30(0.03)	0.10	6.2	140.00
7	31.48	6.52	5.316	0.30(0.03)	0.10	6.2	220.00
8	29.78	7.40	4.943	0.30(0.03)	0.10	6.4	10.00
9	29.31	7.67	4.842	0.30(0.03)	0.10	6.4	100.00
10	28.38	8.17	4.670	0.30(0.03)	0.10	6.4	80.00
11	27.58	8.61	4.531	0.30(0.03)	0.10	6.5	30.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 31.66 Tc(MIN.) = 6.18
EFFECTIVE AREA(ACRES) = 6.08 AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 6.5
LONGEST FLOWPATH FROM NODE 30.00 TO NODE 270.00 = 846.60 FEET.

FLOW PROCESS FROM NODE 270.00 TO NODE 280.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 175.18 DOWNSTREAM(FEET) = 174.92
FLOW LENGTH(FEET) = 45.50 MANNING'S N = 0.013
DEPTH OF FLOW IN 33.0 INCH PIPE IS 22.6 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 7.31
ESTIMATED PIPE DIAMETER(INCH) = 33.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 31.66
PIPE TRAVEL TIME(MIN.) = 0.10 Tc(MIN.) = 6.28
LONGEST FLOWPATH FROM NODE 30.00 TO NODE 280.00 = 892.10 FEET.

FLOW PROCESS FROM NODE 280.00 TO NODE 280.00 IS CODE = 10

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

FLOW PROCESS FROM NODE 290.00 TO NODE 300.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 288.30
ELEVATION DATA: UPSTREAM(FEET) = 185.50 DOWNSTREAM(FEET) = 182.57

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 7.335

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 4.967
 SUBAREA Tc AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	B	0.36	0.30	0.100	76	7.34

 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
 SUBAREA RUNOFF(CFS) = 1.60
 TOTAL AREA(ACRES) = 0.36 PEAK FLOW RATE(CFS) = 1.60

FLOW PROCESS FROM NODE 300.00 TO NODE 310.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(Feet) = 179.60 DOWNSTREAM(Feet) = 178.24
 FLOW LENGTH(Feet) = 286.10 MANNING'S N = 0.013
 DEPTH OF FLOW IN 12.0 INCH PIPE IS 7.2 INCHES
 PIPE-FLOW VELOCITY(Feet/Sec.) = 3.26
 ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 1.60
 PIPE TRAVEL TIME(Min.) = 1.46 Tc(Min.) = 8.80
 LONGEST FLOWPATH FROM NODE 290.00 TO NODE 310.00 = 574.40 FEET.

FLOW PROCESS FROM NODE 310.00 TO NODE 340.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(Feet) = 178.24 DOWNSTREAM(Feet) = 176.86
 FLOW LENGTH(Feet) = 291.00 MANNING'S N = 0.013
 DEPTH OF FLOW IN 12.0 INCH PIPE IS 7.2 INCHES
 PIPE-FLOW VELOCITY(Feet/Sec.) = 3.26
 ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 1.60
 PIPE TRAVEL TIME(Min.) = 1.49 Tc(Min.) = 10.28
 LONGEST FLOWPATH FROM NODE 290.00 TO NODE 340.00 = 865.40 FEET.

FLOW PROCESS FROM NODE 340.00 TO NODE 340.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
 TIME OF CONCENTRATION(Min.) = 10.28
 RAINFALL INTENSITY(INCH/HR) = 4.09
 AREA-AVERAGED Fm(INCH/HR) = 0.03

AREA-AVERAGED F_p (INCH/HR) = 0.30
AREA-AVERAGED A_p = 0.10
EFFECTIVE STREAM AREA(ACRES) = 0.36
TOTAL STREAM AREA(ACRES) = 0.36
PEAK FLOW RATE(CFS) AT CONFLUENCE = 1.60

FLOW PROCESS FROM NODE 320.00 TO NODE 330.00 IS CODE = 21

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

INITIAL SUBAREA FLOW-LENGTH(FEET) = 202.60
ELEVATION DATA: UPSTREAM(FEET) = 184.88 DOWNSTREAM(FEET) = 180.50

$T_c = K * [(LENGTH^{**} 3.00) / (ELEVATION CHANGE)]^{**0.20}$

SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 5.477

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 5.872

SUBAREA T_c AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	F_p (INCH/HR)	A_p (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	B	1.63	0.30	0.100	76	5.48

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

SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100

SUBAREA RUNOFF(CFS) = 8.57

TOTAL AREA(ACRES) = 1.63 PEAK FLOW RATE(CFS) = 8.57

FLOW PROCESS FROM NODE 330.00 TO NODE 340.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
=====

ELEVATION DATA: UPSTREAM(FEET) = 177.51 DOWNSTREAM(FEET) = 176.86

FLOW LENGTH(FEET) = 39.50 MANNING'S N = 0.013

DEPTH OF FLOW IN 18.0 INCH PIPE IS 10.6 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 7.92

ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 8.57

PIPE TRAVEL TIME(MIN.) = 0.08 T_c (MIN.) = 5.56

LONGEST FLOWPATH FROM NODE 320.00 TO NODE 340.00 = 242.10 FEET.

FLOW PROCESS FROM NODE 340.00 TO NODE 340.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 2

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:

TIME OF CONCENTRATION(MIN.) = 5.56
 RAINFALL INTENSITY(INCH/HR) = 5.82
 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 1.63
 TOTAL STREAM AREA(ACRES) = 1.63
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 8.57

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1.60	10.28	4.093	0.30(0.03)	0.10	0.4	290.00
2	8.57	5.56	5.822	0.30(0.03)	0.10	1.6	320.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	9.80	5.56	5.822	0.30(0.03)	0.10	1.8	320.00
2	7.61	10.28	4.093	0.30(0.03)	0.10	2.0	290.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 9.80 Tc(MIN.) = 5.56
 EFFECTIVE AREA(ACRES) = 1.82 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 2.0
 LONGEST FLOWPATH FROM NODE 290.00 TO NODE 340.00 = 865.40 FEET.

FLOW PROCESS FROM NODE 340.00 TO NODE 370.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 176.86 DOWNSTREAM(FEET) = 176.43

FLOW LENGTH(FEET) = 91.30 MANNING'S N = 0.013

DEPTH OF FLOW IN 21.0 INCH PIPE IS 15.9 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 5.00

ESTIMATED PIPE DIAMETER(INCH) = 21.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 9.80

PIPE TRAVEL TIME(MIN.) = 0.30 Tc(MIN.) = 5.86

LONGEST FLOWPATH FROM NODE 290.00 TO NODE 370.00 = 956.70 FEET.

FLOW PROCESS FROM NODE 370.00 TO NODE 370.00 IS CODE = 1

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


```

=====
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 5.86
RAINFALL INTENSITY(INCH/HR) = 5.65
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 1.82
TOTAL STREAM AREA(ACRES) = 1.99
PEAK FLOW RATE(CFS) AT CONFLUENCE = 9.80

*****
FLOW PROCESS FROM NODE 350.00 TO NODE 390.00 IS CODE = 21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
=====
INITIAL SUBAREA FLOW-LENGTH(FEET) = 152.70
ELEVATION DATA: UPSTREAM(FEET) = 181.75 DOWNSTREAM(FEET) = 180.50

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.940
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 5.606
SUBAREA Tc AND LOSS RATE DATA(AMC III):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS Tc
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
COMMERCIAL B 0.75 0.30 0.100 76 5.94
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 3.76
TOTAL AREA(ACRES) = 0.75 PEAK FLOW RATE(CFS) = 3.76

*****
FLOW PROCESS FROM NODE 390.00 TO NODE 370.00 IS CODE = 31
-----
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 177.51 DOWNSTREAM(FEET) = 176.43
FLOW LENGTH(FEET) = 39.50 MANNING'S N = 0.013
DEPTH OF FLOW IN 12.0 INCH PIPE IS 7.1 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 7.79
ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 3.76
PIPE TRAVEL TIME(MIN.) = 0.08 Tc(MIN.) = 6.02
LONGEST FLOWPATH FROM NODE 350.00 TO NODE 370.00 = 192.20 FEET.

*****
FLOW PROCESS FROM NODE 370.00 TO NODE 370.00 IS CODE = 1

```

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

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 6.02
 RAINFALL INTENSITY(INCH/HR) = 5.56
 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 0.75
 TOTAL STREAM AREA(ACRES) = 0.75
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 3.76

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	9.80	5.86	5.647	0.30(0.03)	0.10	1.8	320.00
1	7.61	10.60	4.022	0.30(0.03)	0.10	2.0	290.00
2	3.76	6.02	5.560	0.30(0.03)	0.10	0.8	350.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13.52	5.86	5.647	0.30(0.03)	0.10	2.6	320.00
2	13.49	6.02	5.560	0.30(0.03)	0.10	2.6	350.00
3	10.33	10.60	4.022	0.30(0.03)	0.10	2.7	290.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 13.52 Tc(MIN.) = 5.86
 EFFECTIVE AREA(ACRES) = 2.55 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 2.7
 LONGEST FLOWPATH FROM NODE 290.00 TO NODE 370.00 = 956.70 FEET.

FLOW PROCESS FROM NODE 370.00 TO NODE 420.00 IS CODE = 31

 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
 =====

ELEVATION DATA: UPSTREAM(FEET) = 176.43 DOWNSTREAM(FEET) = 176.00
 FLOW LENGTH(FEET) = 90.70 MANNING'S N = 0.013
 DEPTH OF FLOW IN 24.0 INCH PIPE IS 17.6 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 5.46
 ESTIMATED PIPE DIAMETER(INCH) = 24.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 13.52
PIPE TRAVEL TIME(MIN.) = 0.28 Tc(MIN.) = 6.14
LONGEST FLOWPATH FROM NODE 290.00 TO NODE 420.00 = 1047.40 FEET.

FLOW PROCESS FROM NODE 420.00 TO NODE 420.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 6.14
RAINFALL INTENSITY(INCH/HR) = 5.50
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 2.55
TOTAL STREAM AREA(ACRES) = 2.74
PEAK FLOW RATE(CFS) AT CONFLUENCE = 13.52

FLOW PROCESS FROM NODE 400.00 TO NODE 410.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 153.70
ELEVATION DATA: UPSTREAM(FEET) = 181.75 DOWNSTREAM(FEET) = 180.50

$T_c = K * [(LENGTH^{**} 3.00) / (ELEVATION\ CHANGE)]^{**0.20}$
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.963
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 5.593
SUBAREA Tc AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	B	0.75	0.30	0.100	76	5.96

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 3.76
TOTAL AREA(ACRES) = 0.75 PEAK FLOW RATE(CFS) = 3.76

FLOW PROCESS FROM NODE 410.00 TO NODE 420.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 177.51 DOWNSTREAM(FEET) = 176.00
FLOW LENGTH(FEET) = 39.50 MANNING'S N = 0.013
DEPTH OF FLOW IN 12.0 INCH PIPE IS 6.4 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 8.86
 ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 3.76
 PIPE TRAVEL TIME(MIN.) = 0.07 Tc(MIN.) = 6.04
 LONGEST FLOWPATH FROM NODE 400.00 TO NODE 420.00 = 193.20 FEET.

FLOW PROCESS FROM NODE 420.00 TO NODE 420.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 6.04
 RAINFALL INTENSITY(INCH/HR) = 5.55
 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 0.75
 TOTAL STREAM AREA(ACRES) = 0.75
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 3.76

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13.52	6.14	5.500	0.30(0.03)	0.10	2.6	320.00
1	13.49	6.30	5.419	0.30(0.03)	0.10	2.6	350.00
1	10.33	10.90	3.958	0.30(0.03)	0.10	2.7	290.00
2	3.76	6.04	5.554	0.30(0.03)	0.10	0.8	400.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	17.18	6.04	5.554	0.30(0.03)	0.10	3.3	400.00
2	17.24	6.14	5.500	0.30(0.03)	0.10	3.3	320.00
3	17.16	6.30	5.419	0.30(0.03)	0.10	3.3	350.00
4	13.00	10.90	3.958	0.30(0.03)	0.10	3.5	290.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 17.24 Tc(MIN.) = 6.14
 EFFECTIVE AREA(ACRES) = 3.30 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 3.5
 LONGEST FLOWPATH FROM NODE 290.00 TO NODE 420.00 = 1047.40 FEET.

FLOW PROCESS FROM NODE 420.00 TO NODE 470.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 176.00 DOWNSTREAM(FEET) = 175.62
FLOW LENGTH(FEET) = 79.70 MANNING'S N = 0.013
DEPTH OF FLOW IN 27.0 INCH PIPE IS 18.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 5.86
ESTIMATED PIPE DIAMETER(INCH) = 27.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 17.24
PIPE TRAVEL TIME(MIN.) = 0.23 Tc(MIN.) = 6.37
LONGEST FLOWPATH FROM NODE 290.00 TO NODE 470.00 = 1127.10 FEET.

FLOW PROCESS FROM NODE 470.00 TO NODE 470.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 2 <<<<

FLOW PROCESS FROM NODE 470.00 TO NODE 470.00 IS CODE = 10

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

FLOW PROCESS FROM NODE 430.00 TO NODE 440.00 IS CODE = 21

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

INITIAL SUBAREA FLOW-LENGTH(FEET) = 140.50
ELEVATION DATA: UPSTREAM(FEET) = 186.19 DOWNSTREAM(FEET) = 184.47

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.301
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 5.983
SUBAREA Tc AND LOSS RATE DATA(AMC III):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS Tc
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
COMMERCIAL B 0.21 0.30 0.100 76 5.30
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 1.13
TOTAL AREA(ACRES) = 0.21 PEAK FLOW RATE(CFS) = 1.13

FLOW PROCESS FROM NODE 440.00 TO NODE 460.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 180.97 DOWNSTREAM(FEET) = 176.27
FLOW LENGTH(FEET) = 438.20 MANNING'S N = 0.013
DEPTH OF FLOW IN 9.0 INCH PIPE IS 5.4 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 4.04
ESTIMATED PIPE DIAMETER(INCH) = 9.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 1.13
PIPE TRAVEL TIME(MIN.) = 1.81 Tc(MIN.) = 7.11
LONGEST FLOWPATH FROM NODE 430.00 TO NODE 460.00 = 578.70 FEET.

FLOW PROCESS FROM NODE 460.00 TO NODE 460.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 7.11
RAINFALL INTENSITY(INCH/HR) = 5.06
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 0.21
TOTAL STREAM AREA(ACRES) = 0.21
PEAK FLOW RATE(CFS) AT CONFLUENCE = 1.13

FLOW PROCESS FROM NODE 370.00 TO NODE 460.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 453.40
ELEVATION DATA: UPSTREAM(FEET) = 186.18 DOWNSTREAM(FEET) = 181.07

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 8.611
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 4.531
SUBAREA Tc AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	B	0.49	0.30	0.100	76	8.61

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 1.99
TOTAL AREA(ACRES) = 0.49 PEAK FLOW RATE(CFS) = 1.99

FLOW PROCESS FROM NODE 460.00 TO NODE 460.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 8.61
RAINFALL INTENSITY(INCH/HR) = 4.53
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 0.49
TOTAL STREAM AREA(ACRES) = 0.49
PEAK FLOW RATE(CFS) AT CONFLUENCE = 1.99

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1.13	7.11	5.058	0.30(0.03)	0.10	0.2	430.00
2	1.99	8.61	4.531	0.30(0.03)	0.10	0.5	370.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2.96	7.11	5.058	0.30(0.03)	0.10	0.6	430.00
2	2.99	8.61	4.531	0.30(0.03)	0.10	0.7	370.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 2.99 Tc(MIN.) = 8.61
EFFECTIVE AREA(ACRES) = 0.70 AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 0.7
LONGEST FLOWPATH FROM NODE 430.00 TO NODE 460.00 = 578.70 FEET.

FLOW PROCESS FROM NODE 460.00 TO NODE 470.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 176.27 DOWNSTREAM(FEET) = 175.62
FLOW LENGTH(FEET) = 63.90 MANNING'S N = 0.013
DEPTH OF FLOW IN 12.0 INCH PIPE IS 8.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 5.01
ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 2.99

PIPE TRAVEL TIME(MIN.) = 0.21 Tc(MIN.) = 8.82
LONGEST FLOWPATH FROM NODE 430.00 TO NODE 470.00 = 642.60 FEET.

FLOW PROCESS FROM NODE 470.00 TO NODE 470.00 IS CODE = 11

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

=====

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2.96	7.32	4.973	0.30(0.03)	0.10	0.6	430.00
2	2.99	8.82	4.468	0.30(0.03)	0.10	0.7	370.00

LONGEST FLOWPATH FROM NODE 430.00 TO NODE 470.00 = 642.60 FEET.

** MEMORY BANK # 2 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	17.18	6.26	5.437	0.30(0.03)	0.10	3.3	400.00
2	17.24	6.37	5.387	0.30(0.03)	0.10	3.3	320.00
3	17.16	6.53	5.310	0.30(0.03)	0.10	3.3	350.00
4	13.00	11.15	3.909	0.30(0.03)	0.10	3.5	290.00

LONGEST FLOWPATH FROM NODE 290.00 TO NODE 470.00 = 1127.10 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19.95	6.26	5.437	0.30(0.03)	0.10	3.8	400.00
2	20.03	6.37	5.387	0.30(0.03)	0.10	3.8	320.00
3	19.97	6.53	5.310	0.30(0.03)	0.10	3.9	350.00
4	19.40	7.32	4.973	0.30(0.03)	0.10	4.0	430.00
5	18.08	8.82	4.468	0.30(0.03)	0.10	4.1	370.00
6	15.61	11.15	3.909	0.30(0.03)	0.10	4.2	290.00

TOTAL AREA(ACRES) = 4.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 20.03 Tc(MIN.) = 6.368
EFFECTIVE AREA(ACRES) = 3.84 AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 4.2
LONGEST FLOWPATH FROM NODE 290.00 TO NODE 470.00 = 1127.10 FEET.

FLOW PROCESS FROM NODE 470.00 TO NODE 500.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 175.62 DOWNSTREAM(FEET) = 175.57

FLOW LENGTH(FEET) = 11.30 MANNING'S N = 0.013
 DEPTH OF FLOW IN 27.0 INCH PIPE IS 22.1 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 5.76
 ESTIMATED PIPE DIAMETER(INCH) = 27.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 20.03
 PIPE TRAVEL TIME(MIN.) = 0.03 Tc(MIN.) = 6.40
 LONGEST FLOWPATH FROM NODE 290.00 TO NODE 500.00 = 1138.40 FEET.

FLOW PROCESS FROM NODE 500.00 TO NODE 500.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
 TIME OF CONCENTRATION(MIN.) = 6.40
 RAINFALL INTENSITY(INCH/HR) = 5.37
 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 3.84
 TOTAL STREAM AREA(ACRES) = 4.19
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 20.03

FLOW PROCESS FROM NODE 480.00 TO NODE 490.00 IS CODE = 21

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

INITIAL SUBAREA FLOW-LENGTH(FEET) = 170.20
 ELEVATION DATA: UPSTREAM(FEET) = 182.23 DOWNSTREAM(FEET) = 180.50

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.941
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 5.605
 SUBAREA Tc AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	B	1.59	0.30	0.100	76	5.94

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
 SUBAREA RUNOFF(CFS) = 7.98
 TOTAL AREA(ACRES) = 1.59 PEAK FLOW RATE(CFS) = 7.98

FLOW PROCESS FROM NODE 490.00 TO NODE 500.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

```

=====
ELEVATION DATA: UPSTREAM(FEET) = 177.51 DOWNSTREAM(FEET) = 175.57
FLOW LENGTH(FEET) = 39.50 MANNING'S N = 0.013
DEPTH OF FLOW IN 15.0 INCH PIPE IS 8.1 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 11.74
ESTIMATED PIPE DIAMETER(INCH) = 15.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 7.98
PIPE TRAVEL TIME(MIN.) = 0.06 Tc(MIN.) = 6.00
LONGEST FLOWPATH FROM NODE 480.00 TO NODE 500.00 = 209.70 FEET.

```

```

FLOW PROCESS FROM NODE 500.00 TO NODE 500.00 IS CODE = 1

```

```

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

```

```

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 6.00
RAINFALL INTENSITY(INCH/HR) = 5.58
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 1.59
TOTAL STREAM AREA(ACRES) = 1.59
PEAK FLOW RATE(CFS) AT CONFLUENCE = 7.98

```

**** CONFLUENCE DATA ****

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19.95	6.30	5.421	0.30(0.03)	0.10	3.8	400.00
1	20.03	6.40	5.371	0.30(0.03)	0.10	3.8	320.00
1	19.97	6.56	5.295	0.30(0.03)	0.10	3.9	350.00
1	19.40	7.35	4.960	0.30(0.03)	0.10	4.0	430.00
1	18.08	8.86	4.459	0.30(0.03)	0.10	4.1	370.00
1	15.61	11.18	3.902	0.30(0.03)	0.10	4.2	290.00
2	7.98	6.00	5.575	0.30(0.03)	0.10	1.6	480.00

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

**** PEAK FLOW RATE TABLE ****

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	27.52	6.00	5.575	0.30(0.03)	0.10	5.2	480.00
2	27.71	6.30	5.421	0.30(0.03)	0.10	5.4	400.00
3	27.71	6.40	5.371	0.30(0.03)	0.10	5.4	320.00
4	27.55	6.56	5.295	0.30(0.03)	0.10	5.5	350.00
5	26.49	7.35	4.960	0.30(0.03)	0.10	5.6	430.00
6	24.45	8.86	4.459	0.30(0.03)	0.10	5.7	370.00

7 21.18 11.18 3.902 0.30(0.03) 0.10 5.8 290.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 27.71 Tc(MIN.) = 6.40
EFFECTIVE AREA(ACRES) = 5.43 AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 5.8
LONGEST FLOWPATH FROM NODE 290.00 TO NODE 500.00 = 1138.40 FEET.

FLOW PROCESS FROM NODE 500.00 TO NODE 530.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 175.57 DOWNSTREAM(FEET) = 175.13
FLOW LENGTH(FEET) = 91.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 30.0 INCH PIPE IS 24.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 6.46
ESTIMATED PIPE DIAMETER(INCH) = 30.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 27.71
PIPE TRAVEL TIME(MIN.) = 0.23 Tc(MIN.) = 6.64
LONGEST FLOWPATH FROM NODE 290.00 TO NODE 530.00 = 1229.40 FEET.

FLOW PROCESS FROM NODE 530.00 TO NODE 530.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 6.64
RAINFALL INTENSITY(INCH/HR) = 5.26
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 5.43
TOTAL STREAM AREA(ACRES) = 5.78
PEAK FLOW RATE(CFS) AT CONFLUENCE = 27.71

FLOW PROCESS FROM NODE 510.00 TO NODE 520.00 IS CODE = 21

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

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 183.20
ELEVATION DATA: UPSTREAM(FEET) = 182.23 DOWNSTREAM(FEET) = 180.50

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

SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 6.209
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 5.465
 SUBAREA Tc AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	B	1.27	0.30	0.100	76	6.21

 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
 SUBAREA RUNOFF(CFS) = 6.21
 TOTAL AREA(ACRES) = 1.27 PEAK FLOW RATE(CFS) = 6.21

FLOW PROCESS FROM NODE 520.00 TO NODE 530.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 177.51 DOWNSTREAM(FEET) = 175.13
 FLOW LENGTH(FEET) = 39.50 MANNING'S N = 0.013
 DEPTH OF FLOW IN 12.0 INCH PIPE IS 7.6 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 11.84
 ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 6.21
 PIPE TRAVEL TIME(MIN.) = 0.06 Tc(MIN.) = 6.26
 LONGEST FLOWPATH FROM NODE 510.00 TO NODE 530.00 = 222.70 FEET.

FLOW PROCESS FROM NODE 530.00 TO NODE 530.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 6.26
 RAINFALL INTENSITY(INCH/HR) = 5.44
 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 1.27
 TOTAL STREAM AREA(ACRES) = 1.27
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 6.21

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	27.52	6.23	5.454	0.30(0.03)	0.10	5.2	480.00
1	27.71	6.53	5.309	0.30(0.03)	0.10	5.4	400.00
1	27.71	6.64	5.261	0.30(0.03)	0.10	5.4	320.00
1	27.55	6.80	5.190	0.30(0.03)	0.10	5.5	350.00

1	26.49	7.59	4.872	0.30(0.03)	0.10	5.6	430.00
1	24.45	9.09	4.392	0.30(0.03)	0.10	5.7	370.00
1	21.18	11.42	3.854	0.30(0.03)	0.10	5.8	290.00
2	6.21	6.26	5.437	0.30(0.03)	0.10	1.3	510.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	33.72	6.23	5.454	0.30(0.03)	0.10	6.5	480.00
2	33.75	6.26	5.437	0.30(0.03)	0.10	6.5	510.00
3	33.77	6.53	5.309	0.30(0.03)	0.10	6.6	400.00
4	33.72	6.64	5.261	0.30(0.03)	0.10	6.7	320.00
5	33.48	6.80	5.190	0.30(0.03)	0.10	6.7	350.00
6	32.06	7.59	4.872	0.30(0.03)	0.10	6.8	430.00
7	29.46	9.09	4.392	0.30(0.03)	0.10	7.0	370.00
8	25.58	11.42	3.854	0.30(0.03)	0.10	7.1	290.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 33.77 Tc(MIN.) = 6.53
EFFECTIVE AREA(ACRES) = 6.65 AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 7.1
LONGEST FLOWPATH FROM NODE 290.00 TO NODE 530.00 = 1229.40 FEET.

FLOW PROCESS FROM NODE 530.00 TO NODE 280.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 175.13 DOWNSTREAM(FEET) = 174.92

FLOW LENGTH(FEET) = 45.50 MANNING'S N = 0.013

DEPTH OF FLOW IN 33.0 INCH PIPE IS 26.0 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 6.72

ESTIMATED PIPE DIAMETER(INCH) = 33.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 33.77

PIPE TRAVEL TIME(MIN.) = 0.11 Tc(MIN.) = 6.65

LONGEST FLOWPATH FROM NODE 290.00 TO NODE 280.00 = 1274.90 FEET.

FLOW PROCESS FROM NODE 280.00 TO NODE 280.00 IS CODE = 11

>>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<

** MAIN STREAM CONFLUENCE DATA **

STREAM	Q	Tc	Intensity	Fp(Fm)	Ap	Ae	HEADWATER
--------	---	----	-----------	--------	----	----	-----------

NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)		(ACRES)	NODE
1	33.72	6.34	5.398	0.30(0.03)	0.10	6.5	480.00
2	33.75	6.38	5.382	0.30(0.03)	0.10	6.5	510.00
3	33.77	6.65	5.257	0.30(0.03)	0.10	6.6	400.00
4	33.72	6.75	5.210	0.30(0.03)	0.10	6.7	320.00
5	33.48	6.91	5.141	0.30(0.03)	0.10	6.7	350.00
6	32.06	7.70	4.830	0.30(0.03)	0.10	6.8	430.00
7	29.46	9.21	4.360	0.30(0.03)	0.10	7.0	370.00
8	25.58	11.54	3.831	0.30(0.03)	0.10	7.1	290.00

LONGEST FLOWPATH FROM NODE 290.00 TO NODE 280.00 = 1274.90 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	30.63	5.80	5.684	0.30(0.03)	0.10	5.6	160.00
2	31.66	6.25	5.444	0.30(0.03)	0.10	6.1	190.00
3	31.66	6.28	5.430	0.30(0.03)	0.10	6.1	118.00
4	31.66	6.34	5.402	0.30(0.03)	0.10	6.1	50.00
5	31.64	6.47	5.337	0.30(0.03)	0.10	6.2	250.00
6	31.50	6.60	5.275	0.30(0.03)	0.10	6.2	140.00
7	31.48	6.62	5.268	0.30(0.03)	0.10	6.2	220.00
8	29.78	7.51	4.902	0.30(0.03)	0.10	6.4	10.00
9	29.31	7.78	4.803	0.30(0.03)	0.10	6.4	100.00
10	28.38	8.28	4.635	0.30(0.03)	0.10	6.4	80.00
11	27.58	8.72	4.498	0.30(0.03)	0.10	6.5	30.00

LONGEST FLOWPATH FROM NODE 30.00 TO NODE 280.00 = 892.10 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	63.09	5.80	5.684	0.30(0.03)	0.10	11.5	160.00
2	65.16	6.25	5.444	0.30(0.03)	0.10	12.4	190.00
3	65.23	6.28	5.430	0.30(0.03)	0.10	12.5	118.00
4	65.36	6.34	5.402	0.30(0.03)	0.10	12.6	50.00
5	65.37	6.34	5.398	0.30(0.03)	0.10	12.6	480.00
6	65.40	6.38	5.382	0.30(0.03)	0.10	12.6	510.00
7	65.40	6.47	5.337	0.30(0.03)	0.10	12.7	250.00
8	65.27	6.60	5.275	0.30(0.03)	0.10	12.9	140.00
9	65.25	6.62	5.268	0.30(0.03)	0.10	12.9	220.00
10	65.21	6.65	5.257	0.30(0.03)	0.10	12.9	400.00
11	64.96	6.75	5.210	0.30(0.03)	0.10	13.0	320.00
12	64.40	6.91	5.141	0.30(0.03)	0.10	13.0	350.00
13	62.19	7.51	4.902	0.30(0.03)	0.10	13.2	10.00
14	61.50	7.70	4.830	0.30(0.03)	0.10	13.2	430.00
15	61.24	7.78	4.803	0.30(0.03)	0.10	13.3	100.00
16	59.44	8.28	4.635	0.30(0.03)	0.10	13.3	80.00
17	57.88	8.72	4.498	0.30(0.03)	0.10	13.4	30.00
18	56.19	9.21	4.360	0.30(0.03)	0.10	13.4	370.00
19	49.04	11.54	3.831	0.30(0.03)	0.10	13.5	290.00

TOTAL AREA(ACRES) = 13.5

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 65.40 Tc(MIN.) = 6.377
EFFECTIVE AREA(ACRES) = 12.62 AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 13.5
LONGEST FLOWPATH FROM NODE 290.00 TO NODE 280.00 = 1274.90 FEET.

FLOW PROCESS FROM NODE 280.00 TO NODE 540.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 174.92 DOWNSTREAM(FEET) = 174.70
FLOW LENGTH(FEET) = 43.90 MANNING'S N = 0.013
DEPTH OF FLOW IN 42.0 INCH PIPE IS 32.4 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 8.21
ESTIMATED PIPE DIAMETER(INCH) = 42.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 65.40
PIPE TRAVEL TIME(MIN.) = 0.09 Tc(MIN.) = 6.47
LONGEST FLOWPATH FROM NODE 290.00 TO NODE 540.00 = 1318.80 FEET.

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 13.5 TC(MIN.) = 6.47
EFFECTIVE AREA(ACRES) = 12.62 AREA-AVERAGED Fm(INCH/HR)= 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.100
PEAK FLOW RATE(CFS) = 65.40

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	63.09	5.89	5.634	0.30(0.03)	0.10	11.5	160.00
2	65.16	6.34	5.400	0.30(0.03)	0.10	12.4	190.00
3	65.23	6.37	5.386	0.30(0.03)	0.10	12.5	118.00
4	65.36	6.43	5.358	0.30(0.03)	0.10	12.6	50.00
5	65.37	6.43	5.355	0.30(0.03)	0.10	12.6	480.00
6	65.40	6.47	5.339	0.30(0.03)	0.10	12.6	510.00
7	65.40	6.56	5.296	0.30(0.03)	0.10	12.7	250.00
8	65.27	6.69	5.235	0.30(0.03)	0.10	12.9	140.00
9	65.25	6.71	5.228	0.30(0.03)	0.10	12.9	220.00
10	65.21	6.73	5.217	0.30(0.03)	0.10	12.9	400.00
11	64.96	6.84	5.171	0.30(0.03)	0.10	13.0	320.00
12	64.40	7.00	5.103	0.30(0.03)	0.10	13.0	350.00
13	62.19	7.60	4.869	0.30(0.03)	0.10	13.2	10.00
14	61.50	7.79	4.798	0.30(0.03)	0.10	13.2	430.00
15	61.24	7.87	4.772	0.30(0.03)	0.10	13.3	100.00
16	59.44	8.37	4.606	0.30(0.03)	0.10	13.3	80.00
17	57.88	8.81	4.472	0.30(0.03)	0.10	13.4	30.00
18	56.19	9.30	4.335	0.30(0.03)	0.10	13.4	370.00

19	49.04	11.64	3.813	0.30(0.03)	0.10	13.5	290.00
=====	=====	=====	=====	=====	=====	=====	=====
=====	=====	=====	=====	=====	=====	=====	=====

END OF RATIONAL METHOD ANALYSIS



RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
(c) Copyright 1983-2016 Advanced Engineering Software (aes)
Ver. 23.0 Release Date: 07/01/2016 License ID 1334

Analysis prepared by:

***** DESCRIPTION OF STUDY *****
* SP8454 - FULLERTON *
* GOODMAN LOGISTICS CENTER *
* OUTLET 2 - 25 YEAR PEAK FLOW *

FILE NAME: GLC2502.DAT
TIME/DATE OF STUDY: 11:38 05/07/2021

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--*TIME-OF-CONCENTRATION MODEL*--

USER SPECIFIED STORM EVENT(YEAR) = 25.00
SPECIFIED MINIMUM PIPE SIZE(INCH) = 4.00
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
DATA BANK RAINFALL USED
ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD

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

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL: IN- / OUT-/PARK- SIDE / SIDE/ WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH LIP (FT) (FT)	HIKE (FT)	MANNING FACTOR (n)
1	32.0	20.0	0.200/0.200/0.020	0.67	2.00 0.0313	0.167	0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

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

*SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
*USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

FLOW PROCESS FROM NODE 150.00 TO NODE 180.00 IS CODE = 21

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

INITIAL SUBAREA FLOW-LENGTH(FEET) = 315.00
ELEVATION DATA: UPSTREAM(FEET) = 184.44 DOWNSTREAM(FEET) = 184.00

$T_c = K * [(LENGTH^{**} 3.00) / (ELEVATION\ CHANGE)]^{**} 0.20$
SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 17.957
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.339
SUBAREA T_c AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	T_c (MIN.)
PUBLIC PARK	B	0.59	0.30	0.850	56	17.96

SUBAREA AVERAGE PERVIOUS LOSS RATE, F_p (INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.850
SUBAREA RUNOFF(CFS) = 1.11
TOTAL AREA(ACRES) = 0.59 PEAK FLOW RATE(CFS) = 1.11

```

*****
FLOW PROCESS FROM NODE    180.00 TO NODE    180.00 IS CODE =    1
-----
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
=====
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 17.96
RAINFALL INTENSITY(INCH/HR) = 2.34
AREA-AVERAGED Fm(INCH/HR) = 0.26
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.85
EFFECTIVE STREAM AREA(ACRES) = 0.59
TOTAL STREAM AREA(ACRES) = 0.59
PEAK FLOW RATE(CFS) AT CONFLUENCE = 1.11

*****
FLOW PROCESS FROM NODE    160.00 TO NODE    170.00 IS CODE =   21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
=====
INITIAL SUBAREA FLOW-LENGTH(FEET) = 324.40
ELEVATION DATA: UPSTREAM(FEET) = 191.60 DOWNSTREAM(FEET) = 185.00

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 6.693
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.090
SUBAREA Tc AND LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/    SCS SOIL    AREA    Fp    Ap    SCS    Tc
LAND USE            GROUP    (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
COMMERCIAL          B        1.89    0.30    0.100    56    6.69
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 6.91
TOTAL AREA(ACRES) = 1.89 PEAK FLOW RATE(CFS) = 6.91

*****
FLOW PROCESS FROM NODE    170.00 TO NODE    180.00 IS CODE =   31
-----
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 182.50 DOWNSTREAM(FEET) = 182.07
FLOW LENGTH(FEET) = 87.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 18.0 INCH PIPE IS 14.1 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 4.64
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 6.91
PIPE TRAVEL TIME(MIN.) = 0.31 Tc(MIN.) = 7.01
LONGEST FLOWPATH FROM NODE 160.00 TO NODE 180.00 = 411.40 FEET.

*****
FLOW PROCESS FROM NODE    180.00 TO NODE    180.00 IS CODE =    1
-----
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
=====
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 7.01
RAINFALL INTENSITY(INCH/HR) = 3.99
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 1.89
TOTAL STREAM AREA(ACRES) = 1.89

```

PEAK FLOW RATE(CFS) AT CONFLUENCE = 6.91

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1.11	17.96	2.339	0.30(0.26)	0.85	0.6	150.00
2	6.91	7.01	3.985	0.30(0.03)	0.10	1.9	160.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	7.68	7.01	3.985	0.30(0.05)	0.18	2.1	160.00
2	5.14	17.96	2.339	0.30(0.08)	0.28	2.5	150.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 7.68 Tc(MIN.) = 7.01
EFFECTIVE AREA(ACRES) = 2.12 AREA-AVERAGED Fm(INCH/HR) = 0.05
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.18
TOTAL AREA(ACRES) = 2.5
LONGEST FLOWPATH FROM NODE 160.00 TO NODE 180.00 = 411.40 FEET.

FLOW PROCESS FROM NODE 180.00 TO NODE 190.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 182.07 DOWNSTREAM(FEET) = 176.39
FLOW LENGTH(FEET) = 1070.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 21.0 INCH PIPE IS 12.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 5.04
ESTIMATED PIPE DIAMETER(INCH) = 21.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 7.68
PIPE TRAVEL TIME(MIN.) = 3.54 Tc(MIN.) = 10.55
LONGEST FLOWPATH FROM NODE 160.00 TO NODE 190.00 = 1481.40 FEET.

FLOW PROCESS FROM NODE 190.00 TO NODE 190.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 10.55

* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 3.162

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	0.51	0.30	0.100	56

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

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100

SUBAREA AREA(ACRES) = 0.51 SUBAREA RUNOFF(CFS) = 1.44

EFFECTIVE AREA(ACRES) = 2.63 AREA-AVERAGED Fm(INCH/HR) = 0.05

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.17

TOTAL AREA(ACRES) = 3.0 PEAK FLOW RATE(CFS) = 7.68

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 3.0 TC(MIN.) = 10.55

EFFECTIVE AREA(ACRES) = 2.63 AREA-AVERAGED Fm(INCH/HR) = 0.05

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.166

PEAK FLOW RATE(CFS) = 7.68

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	7.68	10.55	3.162	0.30(0.05)	0.17	2.6	160.00

2	5.43	21.87	2.092	0.30(	0.07)	0.25	3.0	150.00
---	------	-------	-------	-------	-------	------	-----	--------

=====

=====

END OF RATIONAL METHOD ANALYSIS



RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
(c) Copyright 1983-2016 Advanced Engineering Software (aes)
Ver. 23.0 Release Date: 07/01/2016 License ID 1334

Analysis prepared by:

***** DESCRIPTION OF STUDY *****
* SP8454 - FULLERTON *
* GOODMAN LOGISTICS CENTER *
* OUTLET 2 - 100 YEAR PEAK FLOW *

FILE NAME: GLC10002.DAT
TIME/DATE OF STUDY: 11:40 05/07/2021

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--*TIME-OF-CONCENTRATION MODEL*--

USER SPECIFIED STORM EVENT(YEAR) = 100.00
SPECIFIED MINIMUM PIPE SIZE(INCH) = 4.00
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
DATA BANK RAINFALL USED
ANTECEDENT MOISTURE CONDITION (AMC) III ASSUMED FOR RATIONAL METHOD

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

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL: IN- / OUT-/PARK- SIDE / SIDE/ WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH LIP HIKE (FT) (FT) (FT)	MANNING FACTOR (n)
1	32.0	20.0	0.200/0.200/0.020	0.67	2.00 0.0313 0.167	0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

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

*SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
*USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

FLOW PROCESS FROM NODE 150.00 TO NODE 180.00 IS CODE = 21

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

INITIAL SUBAREA FLOW-LENGTH(FEET) = 315.00
ELEVATION DATA: UPSTREAM(FEET) = 184.44 DOWNSTREAM(FEET) = 184.00

$T_c = K * [(LENGTH^{**} 3.00) / (ELEVATION\ CHANGE)]^{**} 0.20$
SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 17.957
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.974
SUBAREA T_c AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	T_c (MIN.)
PUBLIC PARK	B	0.59	0.30	0.850	76	17.96

SUBAREA AVERAGE PERVIOUS LOSS RATE, F_p (INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.850
SUBAREA RUNOFF(CFS) = 1.44
TOTAL AREA(ACRES) = 0.59 PEAK FLOW RATE(CFS) = 1.44

```

*****
FLOW PROCESS FROM NODE    180.00 TO NODE    180.00 IS CODE =    1
-----
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
=====
TOTAL NUMBER OF STREAMS =    2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =   17.96
RAINFALL INTENSITY(INCH/HR) =    2.97
AREA-AVERAGED Fm(INCH/HR) =    0.26
AREA-AVERAGED Fp(INCH/HR) =    0.30
AREA-AVERAGED Ap =    0.85
EFFECTIVE STREAM AREA(ACRES) =         0.59
TOTAL STREAM AREA(ACRES) =         0.59
PEAK FLOW RATE(CFS) AT CONFLUENCE =         1.44

*****
FLOW PROCESS FROM NODE    160.00 TO NODE    170.00 IS CODE =   21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
=====
INITIAL SUBAREA FLOW-LENGTH(FEET) =   324.40
ELEVATION DATA: UPSTREAM(FEET) =   191.60  DOWNSTREAM(FEET) =   185.00

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.693
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =   5.235
SUBAREA Tc AND LOSS RATE DATA(AMC III):
DEVELOPMENT TYPE/      SCS SOIL  AREA      Fp      Ap      SCS  Tc
LAND USE              GROUP  (ACRES) (INCH/HR) (DECIMAL) CN  (MIN.)
COMMERCIAL            B      1.89    0.30    0.100    76    6.69
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   0.100
SUBAREA RUNOFF(CFS) =      8.85
TOTAL AREA(ACRES) =      1.89  PEAK FLOW RATE(CFS) =      8.85

*****
FLOW PROCESS FROM NODE    170.00 TO NODE    180.00 IS CODE =   31
-----
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) =   182.50  DOWNSTREAM(FEET) =   182.07
FLOW LENGTH(FEET) =    87.00  MANNING'S N =   0.013
DEPTH OF FLOW IN 21.0 INCH PIPE IS 14.4 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =    5.03
ESTIMATED PIPE DIAMETER(INCH) =   21.00  NUMBER OF PIPES =    1
PIPE-FLOW(CFS) =      8.85
PIPE TRAVEL TIME(MIN.) =    0.29  Tc(MIN.) =    6.98
LONGEST FLOWPATH FROM NODE    160.00 TO NODE    180.00 =   411.40 FEET.

*****
FLOW PROCESS FROM NODE    180.00 TO NODE    180.00 IS CODE =    1
-----
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
=====
TOTAL NUMBER OF STREAMS =    2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =    6.98
RAINFALL INTENSITY(INCH/HR) =    5.11
AREA-AVERAGED Fm(INCH/HR) =    0.03
AREA-AVERAGED Fp(INCH/HR) =    0.30
AREA-AVERAGED Ap =    0.10
EFFECTIVE STREAM AREA(ACRES) =         1.89
TOTAL STREAM AREA(ACRES) =         1.89

```

PEAK FLOW RATE(CFS) AT CONFLUENCE = 8.85

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1.44	17.96	2.974	0.30(0.26)	0.85	0.6	150.00
2	8.85	6.98	5.110	0.30(0.03)	0.10	1.9	160.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	9.86	6.98	5.110	0.30(0.05)	0.18	2.1	160.00
2	6.57	17.96	2.974	0.30(0.08)	0.28	2.5	150.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 9.86 Tc(MIN.) = 6.98
EFFECTIVE AREA(ACRES) = 2.12 AREA-AVERAGED Fm(INCH/HR) = 0.05
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.18
TOTAL AREA(ACRES) = 2.5
LONGEST FLOWPATH FROM NODE 160.00 TO NODE 180.00 = 411.40 FEET.

FLOW PROCESS FROM NODE 180.00 TO NODE 190.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 182.07 DOWNSTREAM(FEET) = 176.39
FLOW LENGTH(FEET) = 1070.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 21.0 INCH PIPE IS 15.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 5.27
ESTIMATED PIPE DIAMETER(INCH) = 21.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 9.86
PIPE TRAVEL TIME(MIN.) = 3.38 Tc(MIN.) = 10.36
LONGEST FLOWPATH FROM NODE 160.00 TO NODE 190.00 = 1481.40 FEET.

FLOW PROCESS FROM NODE 190.00 TO NODE 190.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 10.36
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 4.075
SUBAREA LOSS RATE DATA(AMC III):
DEVELOPMENT TYPE/SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
COMMERCIAL B 0.51 0.30 0.100 76
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA AREA(ACRES) = 0.51 SUBAREA RUNOFF(CFS) = 1.86
EFFECTIVE AREA(ACRES) = 2.63 AREA-AVERAGED Fm(INCH/HR) = 0.05
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.17
TOTAL AREA(ACRES) = 3.0 PEAK FLOW RATE(CFS) = 9.86
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 3.0 TC(MIN.) = 10.36
EFFECTIVE AREA(ACRES) = 2.63 AREA-AVERAGED Fm(INCH/HR) = 0.05
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.165
PEAK FLOW RATE(CFS) = 9.86

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	9.86	10.36	4.075	0.30(0.05)	0.17	2.6	160.00

2	6.98	21.70	2.668	0.30(	0.07)	0.25	3.0	150.00
---	------	-------	-------	-------	-------	------	-----	--------

=====

=====

END OF RATIONAL METHOD ANALYSIS



RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
(c) Copyright 1983-2016 Advanced Engineering Software (aes)
Ver. 23.0 Release Date: 07/01/2016 License ID 1334

Analysis prepared by:

***** DESCRIPTION OF STUDY *****
* SP8454 - FULLERTON *
* GOODMAN LOGISTICS CENTER *
* OUTLET 3 - 25 YEAR PEAK FLOW *

FILE NAME: GLC25E.DAT
TIME/DATE OF STUDY: 10:43 05/07/2021

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--*TIME-OF-CONCENTRATION MODEL*--

USER SPECIFIED STORM EVENT(YEAR) = 25.00
SPECIFIED MINIMUM PIPE SIZE(INCH) = 4.00
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
DATA BANK RAINFALL USED
ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD

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

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL: IN- / OUT- / PARK- SIDE / SIDE / WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH LIP HIKE (FT) (FT) (FT)	MANNING FACTOR (n)
1	32.0	20.0	0.200/0.200/0.020	0.67	2.00 0.0313 0.167	0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

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

*SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
*USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

FLOW PROCESS FROM NODE 800.00 TO NODE 810.00 IS CODE = 21

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

INITIAL SUBAREA FLOW-LENGTH(FEET) = 89.70
ELEVATION DATA: UPSTREAM(FEET) = 184.49 DOWNSTREAM(FEET) = 182.92

$T_c = K * [(LENGTH^{**} 3.00) / (ELEVATION CHANGE)]^{**} 0.20$
SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 5.000
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.824
SUBAREA T_c AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	B	0.07	0.30	0.100	56	5.00

SUBAREA AVERAGE PERVIOUS LOSS RATE, F_p (INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100
SUBAREA RUNOFF(CFS) = 0.30
TOTAL AREA(ACRES) = 0.07 PEAK FLOW RATE(CFS) = 0.30

FLOW PROCESS FROM NODE 820.00 TO NODE 830.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 194.40
ELEVATION DATA: UPSTREAM(FEET) = 185.72 DOWNSTREAM(FEET) = 182.80

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$
SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 5.794
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.437
SUBAREA T_c AND LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS T_c
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
COMMERCIAL B 0.27 0.30 0.100 56 5.79
SUBAREA AVERAGE PERVIOUS LOSS RATE, F_p (INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100
SUBAREA RUNOFF(CFS) = 1.07
TOTAL AREA(ACRES) = 0.27 PEAK FLOW RATE(CFS) = 1.07

FLOW PROCESS FROM NODE 840.00 TO NODE 850.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 205.50
ELEVATION DATA: UPSTREAM(FEET) = 185.75 DOWNSTREAM(FEET) = 182.47

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$
SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 5.853
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.412
SUBAREA T_c AND LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS T_c
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
COMMERCIAL B 0.42 0.30 0.100 56 5.85
SUBAREA AVERAGE PERVIOUS LOSS RATE, F_p (INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100
SUBAREA RUNOFF(CFS) = 1.66
TOTAL AREA(ACRES) = 0.42 PEAK FLOW RATE(CFS) = 1.66

FLOW PROCESS FROM NODE 860.00 TO NODE 870.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 214.90
ELEVATION DATA: UPSTREAM(FEET) = 184.68 DOWNSTREAM(FEET) = 181.77

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$
SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 6.158
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.287
SUBAREA T_c AND LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS T_c
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
COMMERCIAL B 0.84 0.30 0.100 56 6.16
SUBAREA AVERAGE PERVIOUS LOSS RATE, F_p (INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100
SUBAREA RUNOFF(CFS) = 3.22
TOTAL AREA(ACRES) = 0.84 PEAK FLOW RATE(CFS) = 3.22

FLOW PROCESS FROM NODE 880.00 TO NODE 890.00 IS CODE = 21

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

```

>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
=====
INITIAL SUBAREA FLOW-LENGTH(FEET) = 234.10
ELEVATION DATA: UPSTREAM(FEET) = 182.50 DOWNSTREAM(FEET) = 180.24

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 6.819
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.047
SUBAREA Tc AND LOSS RATE DATA(AMC II):
  DEVELOPMENT TYPE/    SCS SOIL  AREA      Fp        Ap      SCS  Tc
    LAND USE          GROUP  (ACRES) (INCH/HR) (DECIMAL) CN  (MIN.)
COMMERCIAL            B      0.62    0.30    0.100    56   6.82
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 2.24
TOTAL AREA(ACRES) = 0.62 PEAK FLOW RATE(CFS) = 2.24

*****
FLOW PROCESS FROM NODE 900.00 TO NODE 910.00 IS CODE = 21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
=====
INITIAL SUBAREA FLOW-LENGTH(FEET) = 200.80
ELEVATION DATA: UPSTREAM(FEET) = 182.50 DOWNSTREAM(FEET) = 180.23

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 6.213
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.266
SUBAREA Tc AND LOSS RATE DATA(AMC II):
  DEVELOPMENT TYPE/    SCS SOIL  AREA      Fp        Ap      SCS  Tc
    LAND USE          GROUP  (ACRES) (INCH/HR) (DECIMAL) CN  (MIN.)
COMMERCIAL            B      0.41    0.30    0.100    56   6.21
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 1.56
TOTAL AREA(ACRES) = 0.41 PEAK FLOW RATE(CFS) = 1.56

*****
FLOW PROCESS FROM NODE 920.00 TO NODE 930.00 IS CODE = 21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
=====
INITIAL SUBAREA FLOW-LENGTH(FEET) = 83.60
ELEVATION DATA: UPSTREAM(FEET) = 182.50 DOWNSTREAM(FEET) = 178.79

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.000
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.824
SUBAREA Tc AND LOSS RATE DATA(AMC II):
  DEVELOPMENT TYPE/    SCS SOIL  AREA      Fp        Ap      SCS  Tc
    LAND USE          GROUP  (ACRES) (INCH/HR) (DECIMAL) CN  (MIN.)
COMMERCIAL            B      0.11    0.30    0.100    56   5.00
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 0.47
TOTAL AREA(ACRES) = 0.11 PEAK FLOW RATE(CFS) = 0.47

*****
FLOW PROCESS FROM NODE 940.00 TO NODE 950.00 IS CODE = 21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
=====
INITIAL SUBAREA FLOW-LENGTH(FEET) = 116.10
ELEVATION DATA: UPSTREAM(FEET) = 180.03 DOWNSTREAM(FEET) = 178.48

```

```

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.000
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.824
SUBAREA Tc AND LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/    SCS SOIL  AREA      Fp        Ap      SCS  Tc
LAND USE             GROUP  (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
COMMERCIAL           B      0.14      0.30      0.100    56   5.00
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 0.60
TOTAL AREA(ACRES) = 0.14 PEAK FLOW RATE(CFS) = 0.60

```

```

*****
FLOW PROCESS FROM NODE 960.00 TO NODE 970.00 IS CODE = 21
-----

```

```

>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
=====
INITIAL SUBAREA FLOW-LENGTH(FEET) = 45.20
ELEVATION DATA: UPSTREAM(FEET) = 179.21 DOWNSTREAM(FEET) = 178.22

```

```

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.000
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.824
SUBAREA Tc AND LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/    SCS SOIL  AREA      Fp        Ap      SCS  Tc
LAND USE             GROUP  (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
COMMERCIAL           B      0.04      0.30      0.100    56   5.00
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 0.17
TOTAL AREA(ACRES) = 0.04 PEAK FLOW RATE(CFS) = 0.17

```

```

*****
FLOW PROCESS FROM NODE 980.00 TO NODE 990.00 IS CODE = 21
-----

```

```

>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
=====
INITIAL SUBAREA FLOW-LENGTH(FEET) = 93.60
ELEVATION DATA: UPSTREAM(FEET) = 179.84 DOWNSTREAM(FEET) = 178.04

```

```

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.000
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.824
SUBAREA Tc AND LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/    SCS SOIL  AREA      Fp        Ap      SCS  Tc
LAND USE             GROUP  (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
COMMERCIAL           B      0.07      0.30      0.100    56   5.00
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 0.30
TOTAL AREA(ACRES) = 0.07 PEAK FLOW RATE(CFS) = 0.30

```

```

*****
FLOW PROCESS FROM NODE 1000.00 TO NODE 1010.00 IS CODE = 21
-----

```

```

>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
=====
INITIAL SUBAREA FLOW-LENGTH(FEET) = 164.60
ELEVATION DATA: UPSTREAM(FEET) = 179.96 DOWNSTREAM(FEET) = 177.45

```

```

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.405
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.616
SUBAREA Tc AND LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/    SCS SOIL  AREA      Fp        Ap      SCS  Tc

```

```

      LAND USE          GROUP  (ACRES) (INCH/HR) (DECIMAL) CN  (MIN.)
COMMERCIAL              B      0.21    0.30    0.100   56   5.41
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) =      0.87
TOTAL AREA(ACRES) =      0.21  PEAK FLOW RATE(CFS) =      0.87

```

```

*****
FLOW PROCESS FROM NODE 1020.00 TO NODE 1030.00 IS CODE = 21
-----

```

```

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
=====
INITIAL SUBAREA FLOW-LENGTH(FEET) =      66.30
ELEVATION DATA: UPSTREAM(FEET) =      179.95  DOWNSTREAM(FEET) =      177.57

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =      5.000
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.824
SUBAREA Tc AND LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/      SCS SOIL  AREA      Fp      Ap      SCS  Tc
LAND USE              GROUP  (ACRES) (INCH/HR) (DECIMAL) CN  (MIN.)
COMMERCIAL              B      0.10    0.30    0.100   56   5.00
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) =      0.43
TOTAL AREA(ACRES) =      0.10  PEAK FLOW RATE(CFS) =      0.43

```

```

*****
FLOW PROCESS FROM NODE 1040.00 TO NODE 1050.00 IS CODE = 21
-----

```

```

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
=====
INITIAL SUBAREA FLOW-LENGTH(FEET) =      140.40
ELEVATION DATA: UPSTREAM(FEET) =      179.70  DOWNSTREAM(FEET) =      177.71

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =      5.147
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.745
SUBAREA Tc AND LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/      SCS SOIL  AREA      Fp      Ap      SCS  Tc
LAND USE              GROUP  (ACRES) (INCH/HR) (DECIMAL) CN  (MIN.)
COMMERCIAL              B      0.15    0.30    0.100   56   5.15
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) =      0.64
TOTAL AREA(ACRES) =      0.15  PEAK FLOW RATE(CFS) =      0.64

```

```

*****
FLOW PROCESS FROM NODE 1200.00 TO NODE 1210.00 IS CODE = 21
-----

```

```

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
=====
INITIAL SUBAREA FLOW-LENGTH(FEET) =      259.20
ELEVATION DATA: UPSTREAM(FEET) =      183.68  DOWNSTREAM(FEET) =      181.40

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =      11.496
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 3.011
SUBAREA Tc AND LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/      SCS SOIL  AREA      Fp      Ap      SCS  Tc
LAND USE              GROUP  (ACRES) (INCH/HR) (DECIMAL) CN  (MIN.)
PUBLIC PARK              B      0.12    0.30    0.850   56  11.50
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.850
SUBAREA RUNOFF(CFS) =      0.30

```

TOTAL AREA(ACRES) = 0.12 PEAK FLOW RATE(CFS) = 0.30

FLOW PROCESS FROM NODE 1220.00 TO NODE 1230.00 IS CODE = 21

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

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

INITIAL SUBAREA FLOW-LENGTH(FEET) = 1702.60

ELEVATION DATA: UPSTREAM(FEET) = 182.27 DOWNSTREAM(FEET) = 176.01

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

SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 29.060

* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.781

SUBAREA T_c AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	F_p (INCH/HR)	A_p (DECIMAL)	SCS CN	T_c (MIN.)
PUBLIC PARK	B	0.82	0.30	0.850	56	29.06

SUBAREA AVERAGE PVIOUS LOSS RATE, F_p (INCH/HR) = 0.30

SUBAREA AVERAGE PVIOUS AREA FRACTION, A_p = 0.850

SUBAREA RUNOFF(CFS) = 1.13

TOTAL AREA(ACRES) = 0.82 PEAK FLOW RATE(CFS) = 1.13

FLOW PROCESS FROM NODE 1240.00 TO NODE 1250.00 IS CODE = 21

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

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

INITIAL SUBAREA FLOW-LENGTH(FEET) = 1166.70

ELEVATION DATA: UPSTREAM(FEET) = 178.45 DOWNSTREAM(FEET) = 173.24

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

SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 24.030

* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.984

SUBAREA T_c AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	F_p (INCH/HR)	A_p (DECIMAL)	SCS CN	T_c (MIN.)
PUBLIC PARK	B	0.61	0.30	0.850	56	24.03

SUBAREA AVERAGE PVIOUS LOSS RATE, F_p (INCH/HR) = 0.30

SUBAREA AVERAGE PVIOUS AREA FRACTION, A_p = 0.850

SUBAREA RUNOFF(CFS) = 0.95

TOTAL AREA(ACRES) = 0.61 PEAK FLOW RATE(CFS) = 0.95

FLOW PROCESS FROM NODE 1260.00 TO NODE 1270.00 IS CODE = 21

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

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

INITIAL SUBAREA FLOW-LENGTH(FEET) = 1561.80

ELEVATION DATA: UPSTREAM(FEET) = 182.18 DOWNSTREAM(FEET) = 173.20

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

SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 25.672

* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.911

SUBAREA T_c AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	F_p (INCH/HR)	A_p (DECIMAL)	SCS CN	T_c (MIN.)
PUBLIC PARK	B	0.75	0.30	0.850	56	25.67

SUBAREA AVERAGE PVIOUS LOSS RATE, F_p (INCH/HR) = 0.30

SUBAREA AVERAGE PVIOUS AREA FRACTION, A_p = 0.850

SUBAREA RUNOFF(CFS) = 1.12

TOTAL AREA(ACRES) = 0.75 PEAK FLOW RATE(CFS) = 1.12

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 0.8 T_c (MIN.) = 25.67

EFFECTIVE AREA(ACRES) = 0.75 AREA-AVERAGED F_m (INCH/HR) = 0.26

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.850
PEAK FLOW RATE(CFS) = 1.12

=====
=====
END OF RATIONAL METHOD ANALYSIS



RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
(c) Copyright 1983-2016 Advanced Engineering Software (aes)
Ver. 23.0 Release Date: 07/01/2016 License ID 1334

Analysis prepared by:

***** DESCRIPTION OF STUDY *****
* SP8454 - FULLERTON *
* GOODMAN LOGISTICS CENTER *
* OUTLET 3 - 100 YEAR PEAK FLOW *

FILE NAME: GLC10003.DAT
TIME/DATE OF STUDY: 10:50 05/07/2021

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--*TIME-OF-CONCENTRATION MODEL*--

USER SPECIFIED STORM EVENT(YEAR) = 100.00
SPECIFIED MINIMUM PIPE SIZE(INCH) = 4.00
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
DATA BANK RAINFALL USED
ANTECEDENT MOISTURE CONDITION (AMC) III ASSUMED FOR RATIONAL METHOD

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

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL: IN- / OUT-/PARK- SIDE / SIDE/ WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH LIP (FT) (FT)	HIKE (FT)	MANNING FACTOR (n)
1	32.0	20.0	0.200/0.200/0.020	0.67	2.00 0.0313	0.167	0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

1. Relative Flow-Depth = 0.00 FEET
as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
2. (Depth)*(Velocity) Constraint = 6.0 (FT*FT/S)
*SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
*USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

FLOW PROCESS FROM NODE 800.00 TO NODE 810.00 IS CODE = 21

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

INITIAL SUBAREA FLOW-LENGTH(FEET) = 89.70
ELEVATION DATA: UPSTREAM(FEET) = 184.49 DOWNSTREAM(FEET) = 182.92

$T_c = K * [(LENGTH^{**} 3.00) / (ELEVATION CHANGE)]^{**} 0.20$
SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 5.000
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 6.187
SUBAREA T_c AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	B	0.07	0.30	0.100	76	5.00

SUBAREA AVERAGE PERVIOUS LOSS RATE, F_p (INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100
SUBAREA RUNOFF(CFS) = 0.39
TOTAL AREA(ACRES) = 0.07 PEAK FLOW RATE(CFS) = 0.39

FLOW PROCESS FROM NODE 820.00 TO NODE 830.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 194.40
ELEVATION DATA: UPSTREAM(FEET) = 185.72 DOWNSTREAM(FEET) = 182.80

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$
SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 5.794
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 5.686
SUBAREA T_c AND LOSS RATE DATA(AMC III):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS T_c
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
COMMERCIAL B 0.27 0.30 0.100 76 5.79
SUBAREA AVERAGE PERVIOUS LOSS RATE, F_p (INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100
SUBAREA RUNOFF(CFS) = 1.37
TOTAL AREA(ACRES) = 0.27 PEAK FLOW RATE(CFS) = 1.37

FLOW PROCESS FROM NODE 840.00 TO NODE 850.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 205.50
ELEVATION DATA: UPSTREAM(FEET) = 185.75 DOWNSTREAM(FEET) = 182.47

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$
SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 5.853
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 5.653
SUBAREA T_c AND LOSS RATE DATA(AMC III):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS T_c
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
COMMERCIAL B 0.42 0.30 0.100 76 5.85
SUBAREA AVERAGE PERVIOUS LOSS RATE, F_p (INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100
SUBAREA RUNOFF(CFS) = 2.13
TOTAL AREA(ACRES) = 0.42 PEAK FLOW RATE(CFS) = 2.13

FLOW PROCESS FROM NODE 860.00 TO NODE 870.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 214.90
ELEVATION DATA: UPSTREAM(FEET) = 184.68 DOWNSTREAM(FEET) = 181.77

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$
SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 6.158
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 5.491
SUBAREA T_c AND LOSS RATE DATA(AMC III):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS T_c
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
COMMERCIAL B 0.84 0.30 0.100 76 6.16
SUBAREA AVERAGE PERVIOUS LOSS RATE, F_p (INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100
SUBAREA RUNOFF(CFS) = 4.13
TOTAL AREA(ACRES) = 0.84 PEAK FLOW RATE(CFS) = 4.13

FLOW PROCESS FROM NODE 880.00 TO NODE 890.00 IS CODE = 21

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

```

>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
=====
INITIAL SUBAREA FLOW-LENGTH(FEET) = 234.10
ELEVATION DATA: UPSTREAM(FEET) = 182.50 DOWNSTREAM(FEET) = 180.24

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 6.819
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 5.180
SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/    SCS SOIL  AREA      Fp      Ap      SCS  Tc
    LAND USE          GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
COMMERCIAL            B      0.62    0.30    0.100    76   6.82
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 2.87
TOTAL AREA(ACRES) = 0.62 PEAK FLOW RATE(CFS) = 2.87

*****
FLOW PROCESS FROM NODE 900.00 TO NODE 910.00 IS CODE = 21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
=====
INITIAL SUBAREA FLOW-LENGTH(FEET) = 200.80
ELEVATION DATA: UPSTREAM(FEET) = 182.50 DOWNSTREAM(FEET) = 180.23

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 6.213
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 5.463
SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/    SCS SOIL  AREA      Fp      Ap      SCS  Tc
    LAND USE          GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
COMMERCIAL            B      0.41    0.30    0.100    76   6.21
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 2.00
TOTAL AREA(ACRES) = 0.41 PEAK FLOW RATE(CFS) = 2.00

*****
FLOW PROCESS FROM NODE 920.00 TO NODE 930.00 IS CODE = 21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
=====
INITIAL SUBAREA FLOW-LENGTH(FEET) = 83.60
ELEVATION DATA: UPSTREAM(FEET) = 182.50 DOWNSTREAM(FEET) = 178.79

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.000
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 6.187
SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/    SCS SOIL  AREA      Fp      Ap      SCS  Tc
    LAND USE          GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
COMMERCIAL            B      0.11    0.30    0.100    76   5.00
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 0.61
TOTAL AREA(ACRES) = 0.11 PEAK FLOW RATE(CFS) = 0.61

*****
FLOW PROCESS FROM NODE 940.00 TO NODE 950.00 IS CODE = 21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
=====
INITIAL SUBAREA FLOW-LENGTH(FEET) = 116.10
ELEVATION DATA: UPSTREAM(FEET) = 180.03 DOWNSTREAM(FEET) = 178.48

```

```

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.000
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 6.187
SUBAREA Tc AND LOSS RATE DATA(AMC III):
DEVELOPMENT TYPE/    SCS SOIL  AREA      Fp        Ap      SCS  Tc
LAND USE             GROUP  (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
COMMERCIAL           B      0.14      0.30      0.100    76   5.00
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 0.78
TOTAL AREA(ACRES) = 0.14 PEAK FLOW RATE(CFS) = 0.78

```

```

*****
FLOW PROCESS FROM NODE 960.00 TO NODE 970.00 IS CODE = 21
-----

```

```

>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
=====
INITIAL SUBAREA FLOW-LENGTH(FEET) = 45.20
ELEVATION DATA: UPSTREAM(FEET) = 179.21 DOWNSTREAM(FEET) = 178.22

```

```

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.000
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 6.187
SUBAREA Tc AND LOSS RATE DATA(AMC III):
DEVELOPMENT TYPE/    SCS SOIL  AREA      Fp        Ap      SCS  Tc
LAND USE             GROUP  (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
COMMERCIAL           B      0.04      0.30      0.100    76   5.00
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 0.22
TOTAL AREA(ACRES) = 0.04 PEAK FLOW RATE(CFS) = 0.22

```

```

*****
FLOW PROCESS FROM NODE 980.00 TO NODE 990.00 IS CODE = 21
-----

```

```

>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
=====
INITIAL SUBAREA FLOW-LENGTH(FEET) = 93.60
ELEVATION DATA: UPSTREAM(FEET) = 179.84 DOWNSTREAM(FEET) = 178.04

```

```

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.000
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 6.187
SUBAREA Tc AND LOSS RATE DATA(AMC III):
DEVELOPMENT TYPE/    SCS SOIL  AREA      Fp        Ap      SCS  Tc
LAND USE             GROUP  (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
COMMERCIAL           B      0.07      0.30      0.100    76   5.00
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 0.39
TOTAL AREA(ACRES) = 0.07 PEAK FLOW RATE(CFS) = 0.39

```

```

*****
FLOW PROCESS FROM NODE 1000.00 TO NODE 1010.00 IS CODE = 21
-----

```

```

>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
=====
INITIAL SUBAREA FLOW-LENGTH(FEET) = 164.60
ELEVATION DATA: UPSTREAM(FEET) = 179.96 DOWNSTREAM(FEET) = 177.45

```

```

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.405
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 5.917
SUBAREA Tc AND LOSS RATE DATA(AMC III):
DEVELOPMENT TYPE/    SCS SOIL  AREA      Fp        Ap      SCS  Tc

```

```

      LAND USE          GROUP  (ACRES) (INCH/HR) (DECIMAL) CN  (MIN.)
COMMERCIAL              B      0.21    0.30    0.100   76   5.41
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) =      1.11
TOTAL AREA(ACRES) =      0.21  PEAK FLOW RATE(CFS) =      1.11

```

```

*****
FLOW PROCESS FROM NODE 1020.00 TO NODE 1030.00 IS CODE = 21
-----

```

```

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
=====
INITIAL SUBAREA FLOW-LENGTH(FEET) =      66.30
ELEVATION DATA: UPSTREAM(FEET) =      179.95  DOWNSTREAM(FEET) =      177.57

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =      5.000
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 6.187
SUBAREA Tc AND LOSS RATE DATA(AMC III):
DEVELOPMENT TYPE/      SCS SOIL  AREA      Fp      Ap      SCS  Tc
LAND USE              GROUP  (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
COMMERCIAL              B      0.10    0.30    0.100   76   5.00
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) =      0.55
TOTAL AREA(ACRES) =      0.10  PEAK FLOW RATE(CFS) =      0.55

```

```

*****
FLOW PROCESS FROM NODE 1040.00 TO NODE 1050.00 IS CODE = 21
-----

```

```

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
=====
INITIAL SUBAREA FLOW-LENGTH(FEET) =      140.40
ELEVATION DATA: UPSTREAM(FEET) =      179.70  DOWNSTREAM(FEET) =      177.71

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =      5.147
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 6.086
SUBAREA Tc AND LOSS RATE DATA(AMC III):
DEVELOPMENT TYPE/      SCS SOIL  AREA      Fp      Ap      SCS  Tc
LAND USE              GROUP  (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
COMMERCIAL              B      0.15    0.30    0.100   76   5.15
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) =      0.82
TOTAL AREA(ACRES) =      0.15  PEAK FLOW RATE(CFS) =      0.82

```

```

*****
FLOW PROCESS FROM NODE 1200.00 TO NODE 1210.00 IS CODE = 21
-----

```

```

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
=====
INITIAL SUBAREA FLOW-LENGTH(FEET) =      259.20
ELEVATION DATA: UPSTREAM(FEET) =      183.68  DOWNSTREAM(FEET) =      181.40

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =      11.496
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.840
SUBAREA Tc AND LOSS RATE DATA(AMC III):
DEVELOPMENT TYPE/      SCS SOIL  AREA      Fp      Ap      SCS  Tc
LAND USE              GROUP  (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
PUBLIC PARK              B      0.12    0.30    0.850   76  11.50
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.850
SUBAREA RUNOFF(CFS) =      0.39

```

TOTAL AREA(ACRES) = 0.12 PEAK FLOW RATE(CFS) = 0.39

FLOW PROCESS FROM NODE 1220.00 TO NODE 1230.00 IS CODE = 21

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

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

INITIAL SUBAREA FLOW-LENGTH(FEET) = 1702.60

ELEVATION DATA: UPSTREAM(FEET) = 182.27 DOWNSTREAM(FEET) = 176.01

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

SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 29.060

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.257

SUBAREA T_c AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	F_p (INCH/HR)	A_p (DECIMAL)	SCS CN	T_c (MIN.)
PUBLIC PARK	B	0.82	0.30	0.850	76	29.06

SUBAREA AVERAGE PVIOUS LOSS RATE, F_p (INCH/HR) = 0.30

SUBAREA AVERAGE PVIOUS AREA FRACTION, A_p = 0.850

SUBAREA RUNOFF(CFS) = 1.48

TOTAL AREA(ACRES) = 0.82 PEAK FLOW RATE(CFS) = 1.48

FLOW PROCESS FROM NODE 1240.00 TO NODE 1250.00 IS CODE = 21

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

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

INITIAL SUBAREA FLOW-LENGTH(FEET) = 1166.70

ELEVATION DATA: UPSTREAM(FEET) = 178.45 DOWNSTREAM(FEET) = 173.24

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

SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 24.030

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.517

SUBAREA T_c AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	F_p (INCH/HR)	A_p (DECIMAL)	SCS CN	T_c (MIN.)
PUBLIC PARK	B	0.61	0.30	0.850	76	24.03

SUBAREA AVERAGE PVIOUS LOSS RATE, F_p (INCH/HR) = 0.30

SUBAREA AVERAGE PVIOUS AREA FRACTION, A_p = 0.850

SUBAREA RUNOFF(CFS) = 1.24

TOTAL AREA(ACRES) = 0.61 PEAK FLOW RATE(CFS) = 1.24

FLOW PROCESS FROM NODE 1260.00 TO NODE 1270.00 IS CODE = 21

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

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

INITIAL SUBAREA FLOW-LENGTH(FEET) = 1561.80

ELEVATION DATA: UPSTREAM(FEET) = 182.18 DOWNSTREAM(FEET) = 173.20

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

SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 25.672

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.423

SUBAREA T_c AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	F_p (INCH/HR)	A_p (DECIMAL)	SCS CN	T_c (MIN.)
PUBLIC PARK	B	0.75	0.30	0.850	76	25.67

SUBAREA AVERAGE PVIOUS LOSS RATE, F_p (INCH/HR) = 0.30

SUBAREA AVERAGE PVIOUS AREA FRACTION, A_p = 0.850

SUBAREA RUNOFF(CFS) = 1.46

TOTAL AREA(ACRES) = 0.75 PEAK FLOW RATE(CFS) = 1.46

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 0.8 T_c (MIN.) = 25.67

EFFECTIVE AREA(ACRES) = 0.75 AREA-AVERAGED F_m (INCH/HR) = 0.26

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.850
PEAK FLOW RATE(CFS) = 1.46

=====
=====
END OF RATIONAL METHOD ANALYSIS

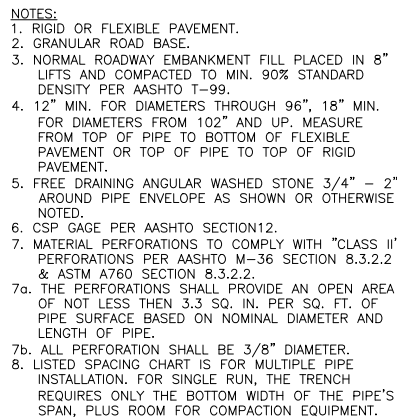
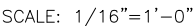


Appendix F – Detention Basin Design Calculations & Details

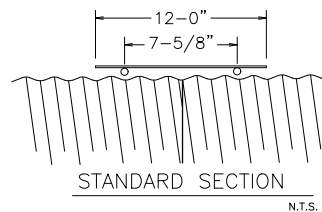
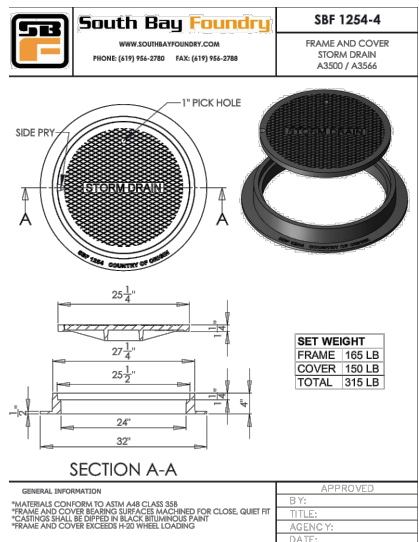
Outfall 1 Detention Basins

BASIN A

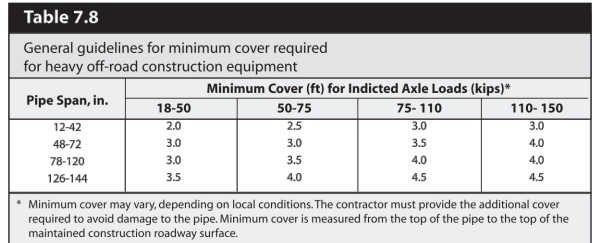
- MATERIAL FINISH = GALV.
- PIPE GAUGE = 16GA.
- PERFORATED = YES
- DIAMETER = 36"
- LOADING = H2O/H25
- SYSTEM INV. = 170.65



9. 4 oz. NON WOVEN GEOTEXTILE FABRIC.
10. RELATIVELY LOOSE GRANULAR BEDDING ROUGHLY SHAPED TO FIT BOTTOM OF PIPE, 4" TO 6" IN DEPTH. (#57 OR #8 OR OTHER SUITABLE GRANULAR).

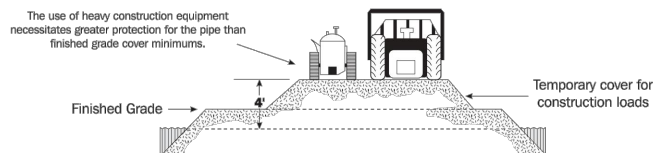


1. BANDS ARE FURNISHED AS FOLLOWS:
12" THRU 48" - 1-PIECE
54" THRU 96" - 2 PIECE
102" THRU 144" - 3 PIECE
2. GALV BAND ANGLES ARE ATTACHED WITH SPOT WELDS, RIVETS OR HAND WELDED.
3. DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES.
4. DIMPLE BANDS FOR ARCHED PIPE ARE THE SAME AS FOR EQUIVALENT ROUND PIPE DIAMETER.



PROJECT NAME: GOODMAN LOGISTICS CENTER		PROJECT #:
SIGN & DATE TO RELEASE FOR MANUFACTURE (SUBJECT TO PRICE VERIFICATION)		PLANS APPROVED ☐ (AS NOTED) ☐ (W/CHANGES)
DATE	SIGNATURE	
REV.	DESCRIPTION	DATE
1		

For temporary construction vehicle loads (100 kips/axle load), put at least four feet of compacted cover on top of the pipe (but not exceeding the maximum allowable cover over the pipe).



PACIFIC
CORRUGATED PIPE CO.®

13680 SLOVER AVENUE FONTANA, CA 92337
800.338.5858 * 909.829.4235
Ft: 909.829.8035
SOCAL@PCPIPE.COM

NOTE:
THE SUITABILITY OF
THE INFORMATION
PRESENTED FOR USE
ON ANY PARTICULAR
PROJECT SHOULD BE
DETERMINED BY THE
ENGINEER RESPONSIBLE
FOR THE DESIGN.

ITEM #70 - DIVERSION STRUCTURE, PLAN SHEET 29
BASIN A, STRUCTURE 1
STORMVAULT DIVERTER MANHOLE
MODEL: SVDMH-72

MANHOLE DATA :

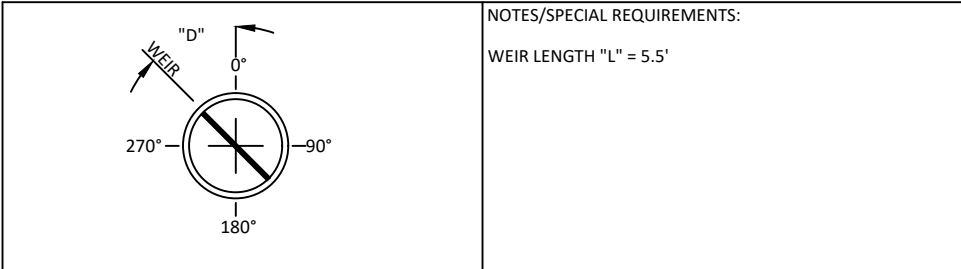
DIVERTED STORMWATER QUALITY DESIGN FLOW (SQDF)	45-CFS (20,197-GPM)
MANHOLE INTERNAL DIAMETER INCHES (Ø)	72"
RIM ELEVATION (FT)	176.19' ±

PIPE DATA	DIAMETER (Ø)	MATERIAL	INV. EL.	ORIENTATION
INLET PIPE	36"	CMP	170.15' ±	180°
WATER QUALITY FLOW INLET PIPE	6"	HDPE	170.15' ±	135°
WATER QUALITY FLOW OUTLET PIPE	18"	HDPE	170.15' ±	0°
OUTLET PIPE	36"	RCP	170.15' ±	315°

ADJUSTABLE WEIR ELEVATIONS AND HEIGHTS :

A	WEIR WALL ELEVATION	173.15' ±
B	FLOOR ELEVATION	170.15' ±
C	WEIR WALL TOTAL HEIGHT	3.00'
D	WEIR ORIENTATION (45° TYP.)	10°

(*) WEIR HEIGHT DIMENSION DETERMINED BY DESIGN ENGINEER'S HYDRAULIC ANALYSIS



GENERAL NOTES :

- THIS LAYOUT SKETCH IS PROVIDED IN A SCHEMATIC FORMAT. THIS SHEET IS IN ENGINEERING & CONSTRUCTION FORMATTED DETAIL. ENGINEERING & CONSTRUCTION DETAIL READILY AVAILABLE. CONTACT JENSEN PRECAST.
- PLAN VIEW FRAME AND COVER NOT SHOWN FOR CLARITY.
- 48" DIAMETER RCP/HDPE IS THE LARGEST SUGGESTED INLET/OUTLET PIPE SIZE FOR THIS DIVERSION STRUCTURE.
- INLET/OUTLET PIPE STUBS PROVIDED BY JENSEN PRECAST, PIPE TYPE ADAPTERS PROVIDED BY CUSTOMER.
- DESIGN LOAD: H-20 TRAFFIC FROM 1' TO 6' OF COVER PER ASTM C890 & C915 AND ASSHTO LOADING METHODS.
- CONTACT JENSEN PRECAST FOR OTHER INSTALLATION DEPTHS, INLET/OUTLET CONFIGURATIONS, AND/OR LOADING CONDITIONS FOR STRUCTURAL DESIGN REVISION TO MEET PROJECT SPECIFIC NEEDS.

CONSTRUCTION NOTES :

- CONTRACTOR TO VERIFY VERTICAL DIMENSIONS OF ALL PRECAST PIECES IN FIELD.
- VERIFY SUBBASE ELEVATION BEFORE PLACING PRECAST COMPONENTS OR BACKFILLING.
- APPLY BUTYL MASTIC AND/OR GROUT TO SEAL JOINTS OF STRUCTURE.
- CONTRACTOR TO GROUT ALL PIPE PENETRATIONS IN FIELD AS NECESSARY.
- CONTRACTOR TO ADJUST FRAME/COVER ELEVATION IN FIELD AS NECESSARY.
- ALL INTERNAL COMPONENTS INSTALLED BY MANUFACTURER.

MATERIALS :

- ALL DIMENSIONS ARE IN FEET OR DECIMAL INCHES
- PRECAST MATERIALS AND MANUFACTURING METHODS SHALL CONFORM TO ASTM C-857 & C-478.
- CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH F'c = 3,000-PSI AT 28-DAYS.
- THE PORTLAND CEMENT USED IN THE PRECAST SECTION SHALL MEET THE REQUIREMENTS OF TYPE II/V HIGH SULFATE RESISTANT CEMENT IN ACCORDANCE WITH ASTM CLASS M C-150.

LIFTING WEIGHTS :

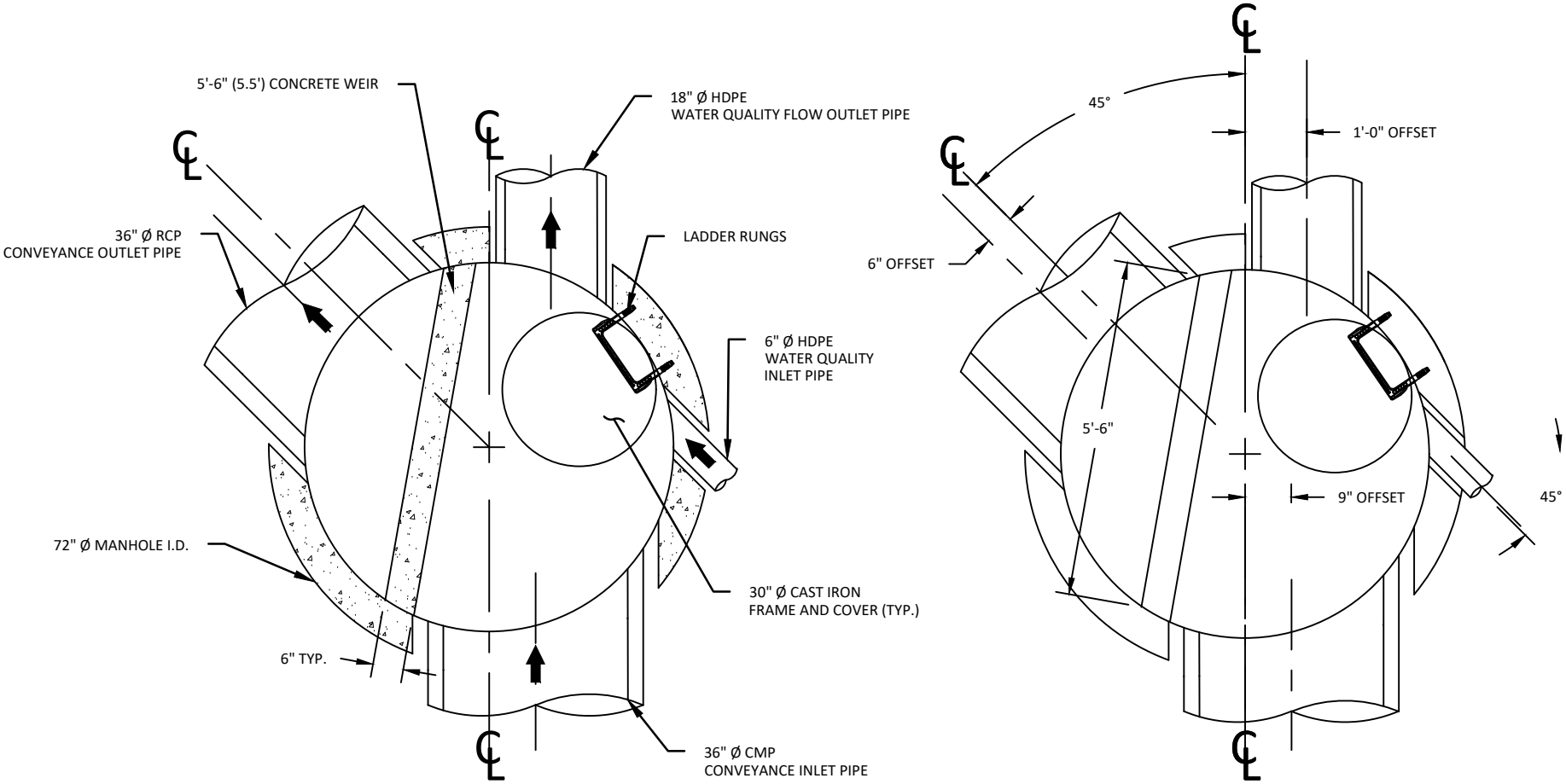
- HEAVIEST PICK WEIGHT IS 15,000-LBS.
- JENSEN CRANE TRUCK CAN SET A MAXIMUM OF 25,000-LBS AT 15-FT OFFSET DISTANCE FROM CENTER OF CRANE TRUNNION.

(**) REGIONAL MANUFACTURING DIFFERENCE :

THESE ARE TEMPLATE DRAWINGS. JOINTS, WALL, TOP AND BOTTOM SLAB THICKNESS VARY ACROSS JENSEN'S REGIONAL MANUFACTURING FACILITIES AND ALSO FOR SITE SPECIFIC LOADING CONDITIONS. CONFIRM FINAL THICKNESS, PIPING CONFIGURATION AND CONCRETE THICKNESS PER CONSTRUCTION SUBMITTAL DRAWINGS. ADJUST FINAL DIMENSIONS TO EXTERIOR INVERT AND SUBGRADE ELEVATION PER REGIONAL DIFFERENCES.

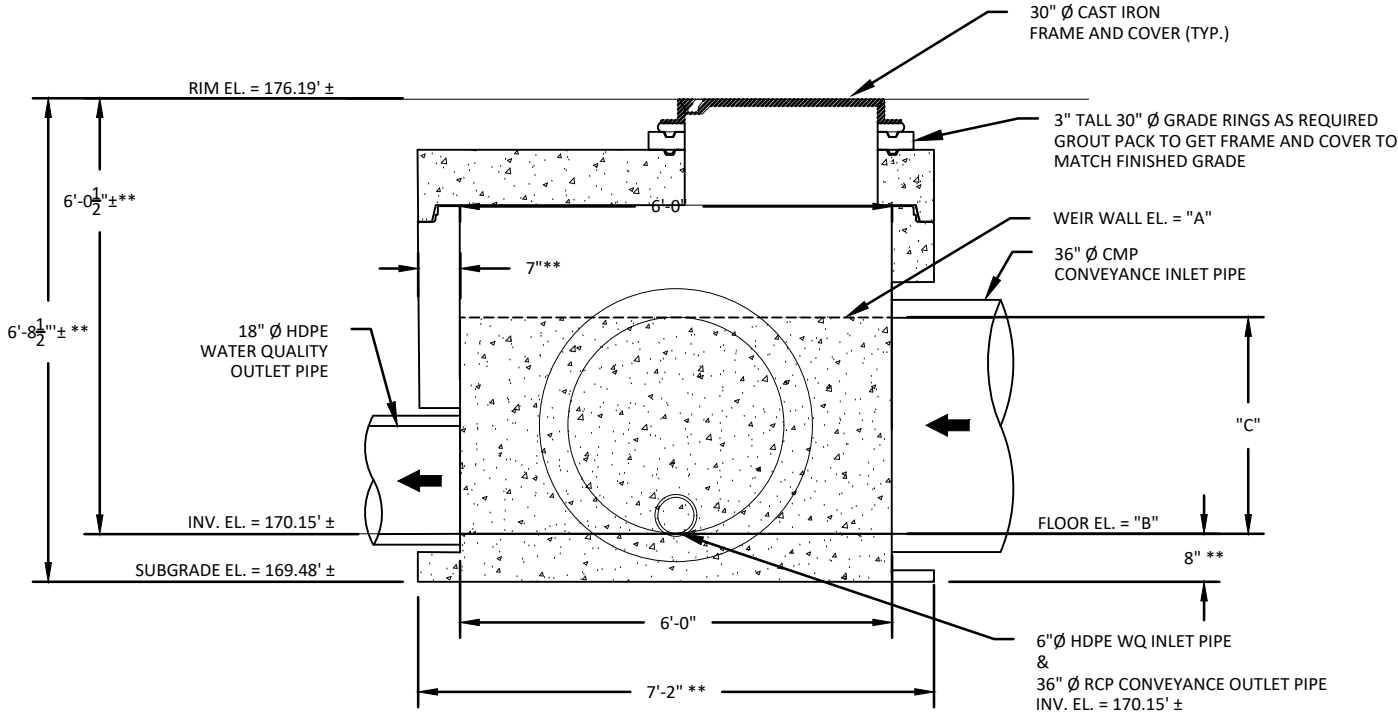
MODEL: SVDMH-72 STORMVAULT DIVERTER MANHOLE	PROJECT: GOODMAN LOGISTICS CENTER FULLERTON, CA			 521 DUNN CIRCLE, SPARKS, NV 89431-6312 (877) 649-0095 FAX (775) 440-2013	
	ORG. DWG. DATE 10/15/2021	SCALE: AS SHOWN	SHEET SIZE 11" X 17"	DRAWN BY T. SCHMALING & W. STEIN	SHEET NUMBER SVDMH-72

Copyright Information © 2011 Jensen Precast All Rights Reserved. All materials appearing as Jensen Precast documents and the like are propriety work product and are protected under U.S. copyright and other laws. Unless in conjunction with business conducted with Jensen Precast, any use of Jensen Precast work product without express, written consent is prohibited and recipient is prohibited from distributing any and all work product to non-approved third parties under penalty of civil action.



PLAN VIEW

PLAN VIEW



ELEVATION VIEW

SCALE: 1" = 32"

ITEM #70 - DIVERSION STRUCTURE, PLAN SHEET 29
BASIN A, STRUCTURE 2
STORMVAULT DIVERTER MANHOLE
MODEL: SVDMH-72

MANHOLE DATA :

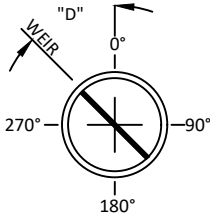
DIVERTED STORMWATER QUALITY DESIGN FLOW (SQDF)	45-CFS (20,197-GPM)
MANHOLE INTERNAL DIAMETER INCHES (Ø)	72"
RIM ELEVATION (FT)	176.19' ±

PIPE DATA	DIAMETER (Ø)	MATERIAL	INV. EL.	ORIENTATION
INLET PIPE	36"	CMP	170.15' ±	180°
OUTLET PIPE	36"	RCP	170.15' ±	0°

ADJUSTABLE WEIR ELEVATIONS AND HEIGHTS :

A	WEIR WALL ELEVATION	173.15' ±
B	FLOOR ELEVATION	170.15' ±
C	WEIR WALL TOTAL HEIGHT	3.00'
D	WEIR ORIENTATION (45° TYP.)	90°

(*) WEIR HEIGHT DIMENSION DETERMINED BY DESIGN ENGINEER'S HYDRAULIC ANALYSIS

	NOTES/SPECIAL REQUIREMENTS: WEIR LENGTH "L" = 5.5'
---	---

GENERAL NOTES :

- THIS LAYOUT SKETCH IS PROVIDED IN A SCHEMATIC FORMAT. THIS SHEET IS IN ENGINEERING & CONSTRUCTION FORMATTED DETAIL. ENGINEERING & CONSTRUCTION DETAIL READILY AVAILABLE. CONTACT JENSEN PRECAST.
- PLAN VIEW FRAME AND COVER NOT SHOWN FOR CLARITY.
- 48" DIAMETER RCP/HDPE IS THE LARGEST SUGGESTED INLET/OUTLET PIPE SIZE FOR THIS DIVERSION STRUCTURE.
- INLET/OUTLET PIPE STUBS PROVIDED BY JENSEN PRECAST, PIPE TYPE ADAPTERS PROVIDED BY CUSTOMER.
- DESIGN LOAD: H-20 TRAFFIC FROM 1' TO 6' OF COVER PER ASTM C890 & C915 AND ASSHTO LOADING METHODS.
- CONTACT JENSEN PRECAST FOR OTHER INSTALLATION DEPTHS, INLET/OUTLET CONFIGURATIONS, AND/OR LOADING CONDITIONS FOR STRUCTURAL DESIGN REVISION TO MEET PROJECT SPECIFIC NEEDS.

CONSTRUCTION NOTES :

- CONTRACTOR TO VERIFY VERTICAL DIMENSIONS OF ALL PRECAST PIECES IN FIELD.
- VERIFY SUBBASE ELEVATION BEFORE PLACING PRECAST COMPONENTS OR BACKFILLING.
- APPLY BUTYL MASTIC AND/OR GROUT TO SEAL JOINTS OF STRUCTURE.
- CONTRACTOR TO GROUT ALL PIPE PENETRATIONS IN FIELD AS NECESSARY.
- CONTRACTOR TO ADJUST FRAME/COVER ELEVATION IN FIELD AS NECESSARY.
- ALL INTERNAL COMPONENTS INSTALLED BY MANUFACTURER.

MATERIALS :

- ALL DIMENSIONS ARE IN FEET OR DECIMAL INCHES
- PRECAST MATERIALS AND MANUFACTURING METHODS SHALL CONFORM TO ASTM C-857 & C-478.
- CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH F'c = 3,000-PSI AT 28-DAYS.
- THE PORTLAND CEMENT USED IN THE PRECAST SECTION SHALL MEET THE REQUIREMENTS OF TYPE II/V HIGH SULFATE RESISTANT CEMENT IN ACCORDANCE WITH ASTM CLASS M C-150.

LIFTING WEIGHTS :

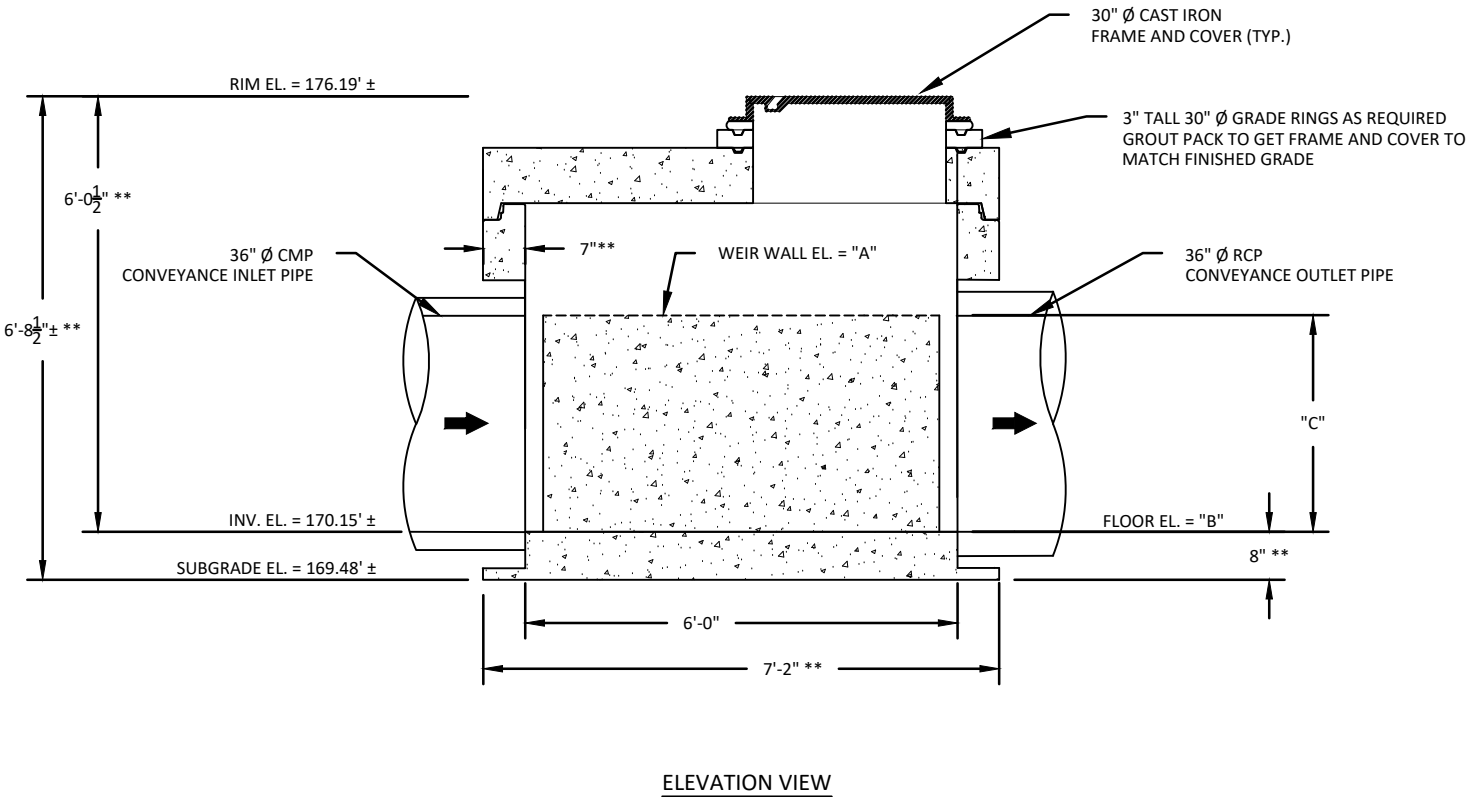
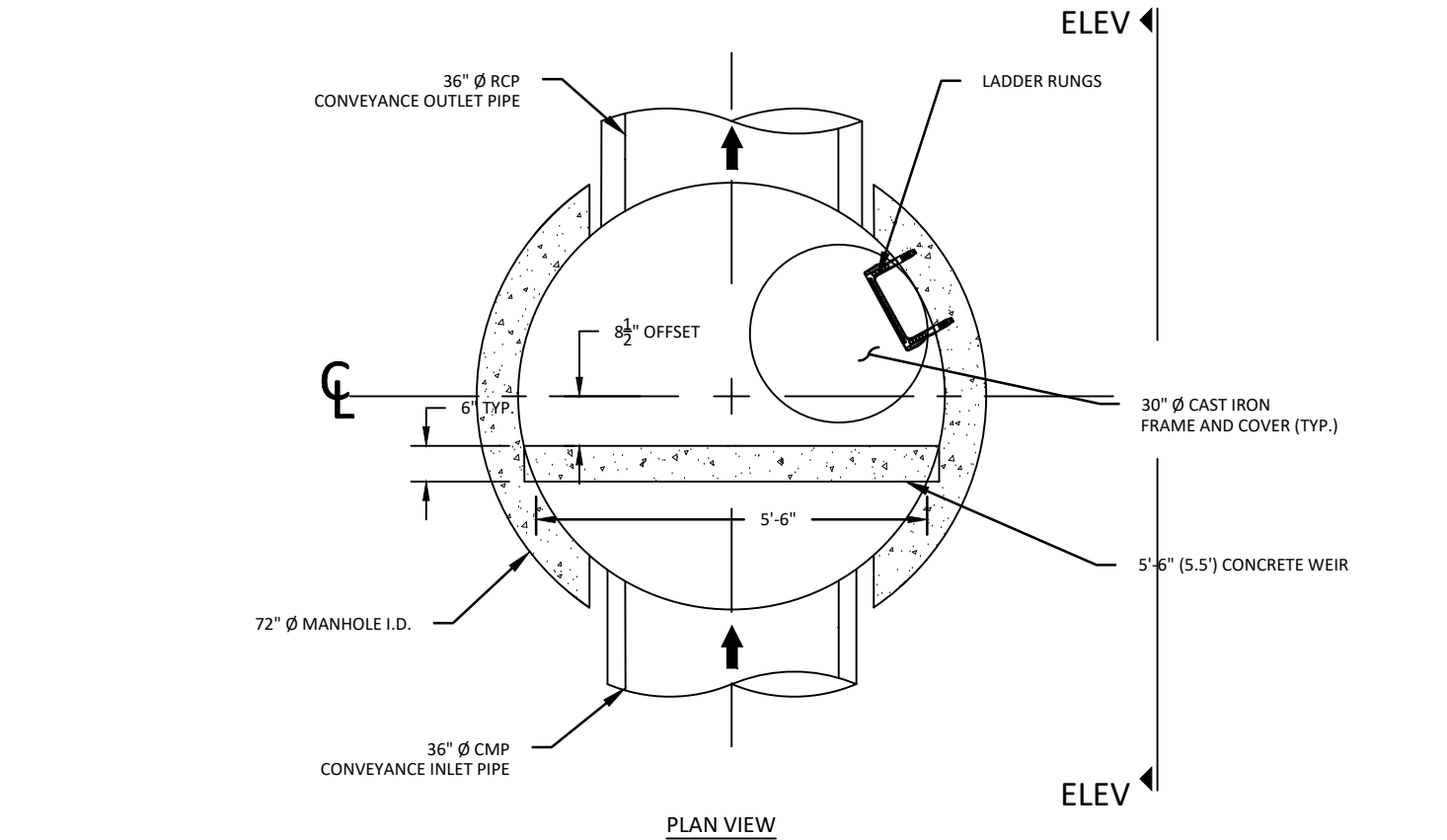
- HEAVIEST PICK WEIGHT IS 15,000-LBS.
- JENSEN CRANE TRUCK CAN SET A MAXIMUM OF 25,000-LBS AT 15-FT OFFSET DISTANCE FROM CENTER OF CRANE TRUNNION.

(**) REGIONAL MANUFACTURING DIFFERENCE :

THESE ARE TEMPLATE DRAWINGS. JOINTS, WALL, TOP AND BOTTOM SLAB THICKNESS VARY ACROSS JENSEN'S REGIONAL MANUFACTURING FACILITIES AND ALSO FOR SITE SPECIFIC LOADING CONDITIONS. CONFIRM FINAL THICKNESS, PIPING CONFIGURATION AND CONCRETE THICKNESS PER CONSTRUCTION SUBMITTAL DRAWINGS. ADJUST FINAL DIMENSIONS TO EXTERIOR INVERT AND SUBGRADE ELEVATION PER REGIONAL DIFFERENCES.

MODEL: SVDMH-72 STORMVAULT DIVERTER MANHOLE	PROJECT: GOODMAN LOGISTICS CENTER FULLERTON, CA			 521 DUNN CIRCLE, SPARKS, NV 89431-6312 (877) 649-0095 FAX (775) 440-2013
	ORG. DWG. DATE 10/15/2021	SCALE: AS SHOWN	SHEET SIZE 11" X 17"	
DRAWN BY T. SCHMALING & W. STEIN				SHEET NUMBER SVDMH-72

Copyright Information © 2011 Jensen Precast All Rights Reserved. All materials appearing as Jensen Precast documents and the like are propriety work product and are protected under U.S. copyright and other laws. Unless in conjunction with business conducted with Jensen Precast, any use of Jensen Precast work product without express, written consent is prohibited and recipient is prohibited from distributing any and all work product to non-approved third parties under penalty of civil action.



SCALE: 1" = 32"

AMC II
25 Year Storm - Proposed Condition

Rainfall	Depth (in)	Soil Group A	
5 min	0.40		
30 min	0.87	Fp	0.4
1 hr	1.15	Fm	ap*Fp
3 hr	1.94	ap	0.10
6 hr	2.71	Fm	0.04
24 hr	4.49		

Rainfall	Depth (in)	Soil Group	B
5 min	0.52	Fp	0.4
30 min	1.09	Fm	ap*Fp
1 hr	1.45	ap	0.10
3 hr	2.43	Fm	0.04
6 hr	3.36		
24 hr	5.63		

Is DCV met?	At what elevation?
YES	175.20

1000



DIVERSION MANHOLE BASIN A

DIVERSION MANHOLE A1

High Flow Orifice C =	0.6	Low Flow Orifice C =	0.6
High Flow Orifice Size (inch) =	36	Low Flow Orifice Size (inch) =	18
Centroid Elevation (ft) =	1.50	Centroid Elevation (ft) =	0.75
Weir Length (Feet) =	5.50	Diversion Manhole A1 RIM Elevation	176.92
Weir C =	3.087	Inside Manhole A1 Top Elevation	175.92

DIVERSION MANHOLE A2

High Flow Orifice C =	0.6	A2 RIM Elevation	175.97
High Flow Orifice Size (inch)	36	A2 Inside Top Elevation	174.97
Centroid Elevation (ft) =	1.50		
Weir Length (Feet) =	5.50		
Weir C =	3.087		

			SYSTEM VOLUME*						MANHOLE A1							MANHOLE A2					
Stage	Water Elevation at Basin (ft)	Head in Basin (ft)	Pipe Volume (per linear foot)*	Rock/voids volume (per linear foot)*	Cumulative Volume Storage (cu.ft)*	Cumulative Volume Storage (ace-ft)*	Water Elevation at Manhole (ft)	Head at Manhole (ft)	Head (Feet)	Low Flow Orifice (cfs)	Weir Head (Feet)	Weir Flow (cfs)	Head (Feet)	High Flow Orifice (cfs)	Flow Regime	Weir Head (Feet)	Weir Flow (cfs)	Head (Feet)	High Flow Orifice (cfs)	Flow Regime	Flow (cfs)
1	172.30	0	0	0.00	0	0.000	172.30	0.00	0.00				0.00					0.00			0.00
2	172.55	0.25	0	5.65	3469	0.080	172.55	0.25	0.25				0.25					0.25			0.00
3	172.80	0.50	0	5.65	6938	0.159	172.80	0.50	0.50				0.50					0.50			0.00
4	174.20	0.75	3.37	4.30	11649	0.267	174.20	0.75	0.75				0.75					0.75			0.00
5	173.30	1.00	5.92	3.28	17298	0.397	173.30	1.00	1.00	4.25			1.00					1.00			4.25
6	173.55	1.25	7.3	2.73	23455	0.538	173.55	1.25	1.25	6.02			1.25					1.25			6.02
7	173.80	1.50	8.17	2.38	29934	0.687	173.80	1.50	1.50	7.37			1.50	0.00				1.50	0.00		7.37
8	174.05	1.75	8.7	2.17	36608	0.840	174.05	1.75	1.75	8.51			1.75	17.02				1.75	17.02		8.51
9	174.30	2.00	8.96	2.06	43380	0.996	174.30	2.00	2.00	9.51			2.00	24.07				2.00	24.07		9.51
10	174.55	2.25	8.96	2.06	50151	1.151	174.55	2.25	2.25	10.42			2.25	29.48				2.25	29.48		10.42
11	174.80	2.50	8.7	2.17	56825	1.305	174.80	2.50	2.50	11.26			2.50	34.04	0.00			2.50	34.04	0.00	11.26
12	175.05	2.75	8.17	2.38	63305	1.453	175.05	2.75	2.75	12.03			2.75	38.05	0.00			2.75	38.05	0.00	12.03
13	175.30	3.00	7.3	2.73	69462	1.595	175.30	3.00	3.00	12.76	0.00	0.0	3.00	41.68	0.00	0.00	0.0	3.00	41.68	0.00	12.76
14	175.55	3.25	5.92	3.28	75111	1.724	175.55	3.25	3.25	13.45	0.25	2.1	3.25	45.02	2.12	0.25	2.1	3.25	45.02	2.12	17.70
15	175.80	3.50	3.37	4.30	79822	1.832	175.80	3.50	3.50	14.11	0.50	6.0	3.50	48.13	6.00	0.50	6.0	3.50	48.13	6.00	26.12
16	176.05	3.75	0	5.65	83291	1.912	176.05	3.75	3.75	14.74	0.75	11.0	3.75	51.05	11.03	0.75	11.0	3.75	51.05	11.03	36.79
17	176.30	4.00	0	5.65	86760	1.992	176.30	4.00	4.00	15.34	1.00	17.0	4.00	53.81	16.98	1.00	17.0	4.00	53.81	16.98	49.30
18	176.55	4.25	0	5.65	90229	2.071	176.55	4.25	4.25	15.92	1.25	23.7	4.25	56.44	23.73	1.25	23.7	4.25	56.44	23.73	63.37
19	176.80	4.50	0	5.65	93699	2.151	176.80	4.50	4.50	16.48	1.50	31.2	4.50	58.95	31.19	1.50	31.2	4.50	58.95	31.19	78.86

Notes:

$Q_o = KA\sqrt{2gH_o}$

Qo = Orifice Outflow (cfs)

Ho = Water height above orifice center (ft)

K = Orifice flow coef., 0.6

A = Cross sectional area of orifice (ft^2)

g = gravitational accel., 32.2 ft/sec^2

$Q_w = C_L W \frac{H^3}{2} \text{Outflow (CFS)}$

Qw = Weir flow Coef., 3.087

C = Length of Weir (Ft)

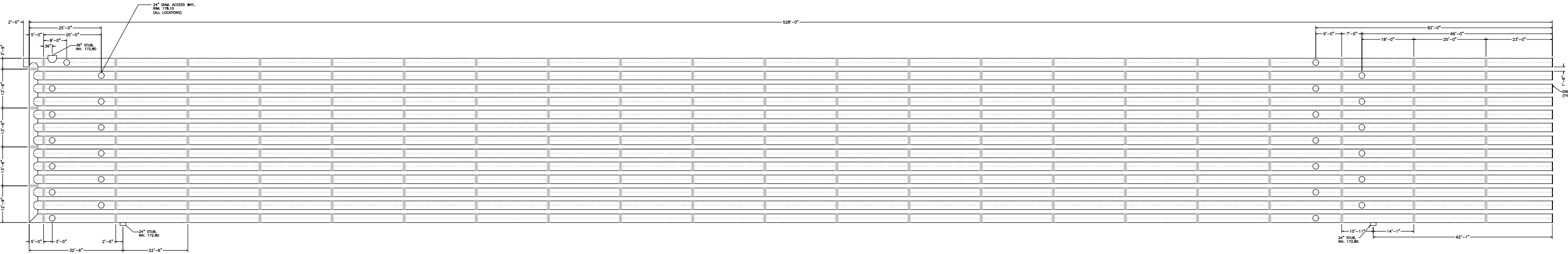
L = Water height above top of Weir (Ft)

H

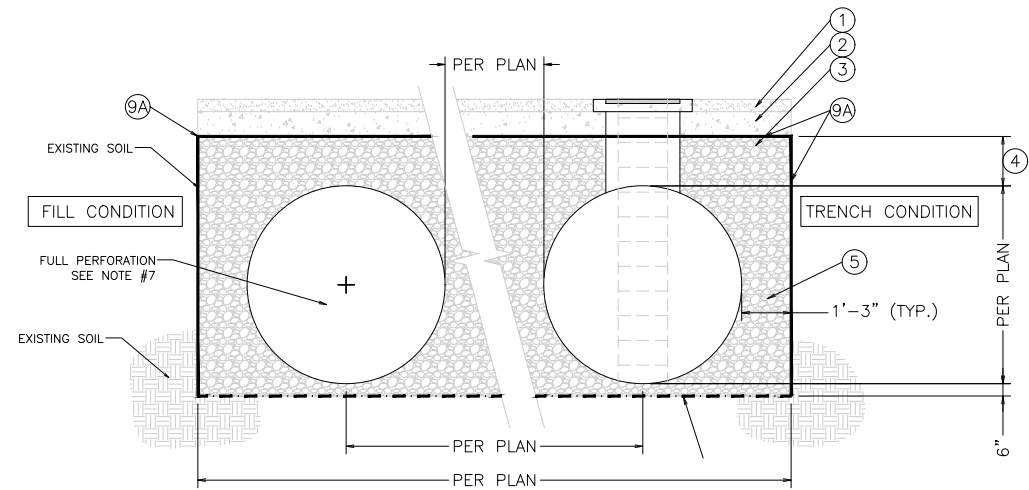
BASIN B

DESIGN INFORMATION (BASIN B)

- MATERIAL FINISH = GALV.
- PIPE GAUGE = 16GA.
- PERFORATED = YES
- DIAMETER = 36"
- LOADING = H2O/H25
- SYSTEM INV. = 172.80



SCALE: 1/16"=1'-0"

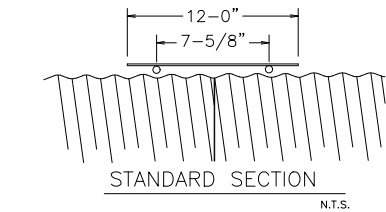
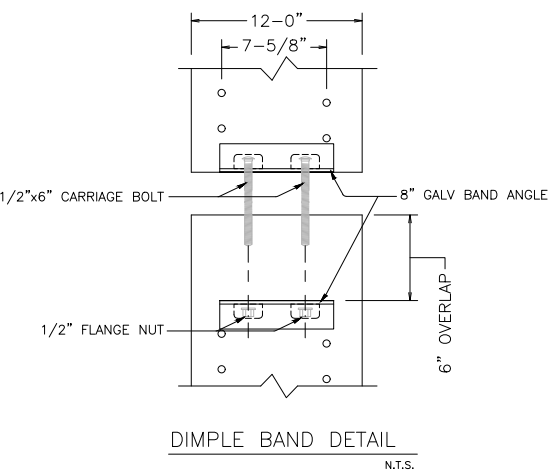
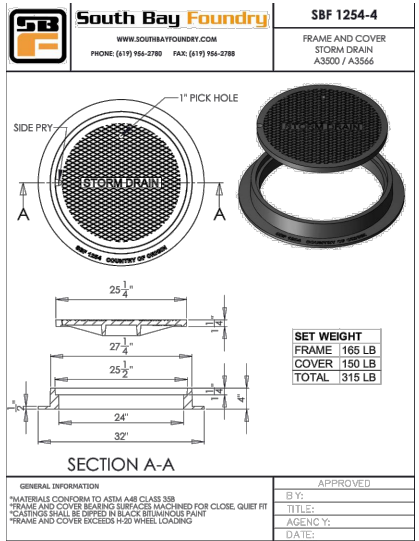
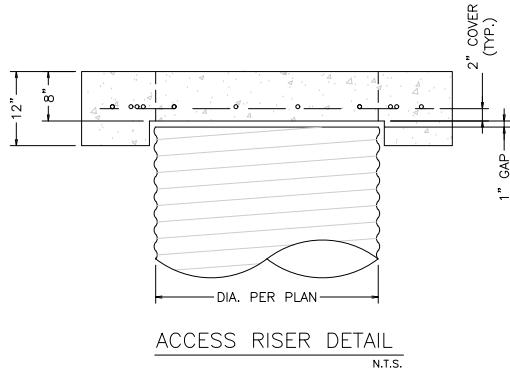
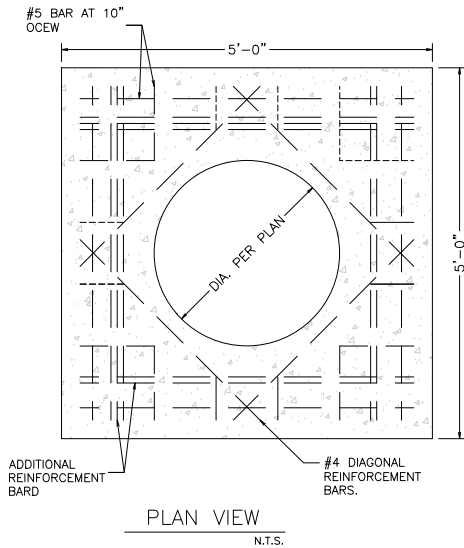


NOTES:

1. RIGID OR FLEXIBLE PAVEMENT.
2. GRANULAR ROAD BASE.
3. NORMAL ROADWAY EMBANKMENT FILL PLACED IN 8" LIFTS AND COMPACTED TO MIN. 90% STANDARD DENSITY PER AASHTO T-99.
4. 12" MIN. FOR DIAMETERS THROUGH 96", 18" MIN. FOR DIAMETERS FROM 102" AND UP. MEASURE FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TOP OF PIPE TO TOP OF RIGID PAVEMENT.
5. FREE DRAINING ANGULAR WASHED STONE 3/4" - 2" AROUND PIPE ENVELOPE AS SHOWN OR OTHERWISE NOTED.
6. CSP GAGE PER AASHTO SECTION12.
7. MATERIAL PERFORATIONS TO COMPLY WITH "CLASS II" PERFORATIONS PER AASHTO M-36 SECTION 8.3.2.2 & ASTM A760 SECTION 8.3.2.2.
- 7a. THE PERFORATIONS SHALL PROVIDE AN OPEN AREA OF NOT LESS THEN 3.3 SQ. IN. PER SQ. FT. OF PIPE SURFACE BASED ON NOMINAL DIAMETER AND LENGTH OF PIPE.
- 7b. ALL PERFORATION SHALL BE 3/8" DIAMETER.
8. LISTED SPACING CHART IS FOR MULTIPLE PIPE INSTALLATION. FOR SINGLE RUN, THE TRENCH REQUIRES ONLY THE BOTTOM WIDTH OF THE PIPE'S SPAN, PLUS ROOM FOR COMPACTION EQUIPMENT.

SPACING CHART PER AISI AND NCSPA GUIDELINES		
DIAMETER	REQUIRED SPACING	
UP TO 24"	12"	
24" - 72"	1/2 PIPE DIA.	
72" AND UP	36"	

9. 4 oz. NON WOVEN GEOTEXTILE FABRIC.
10. RELATIVELY LOOSE GRANULAR BEDDING ROUGHLY SHAPED TO FIT BOTTOM OF PIPE, 4" TO 6" IN DEPTH. (#57 OR #8 OR OTHER SUITABLE GRANULAR).



GENERAL NOTES:

1. BANDS ARE FURNISHED AS FOLLOWS:
12" THRU 48" - 1-PIECE
54" THRU 96" - 2-PIECE
102" THRU 144" - 3-PIECE
2. GALV BAND ANGLES ARE ATTACHED WITH SPOT WELDS, RIVETS OR HAND WELDED.
3. DIMMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES.
4. DIMPLE BANDS FOR ARCHED PIPE ARE THE SAME AS FOR EQUIVALENT ROUND PIPE DIAMETER.

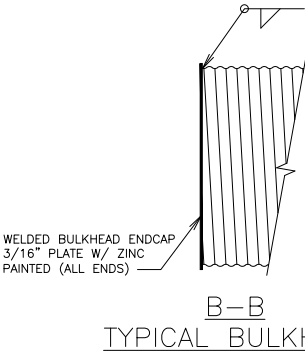
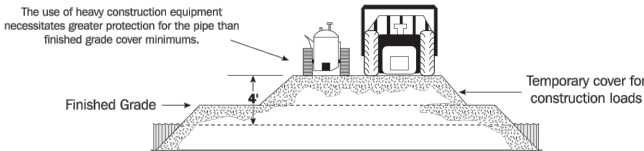


Table 7.8				
General guidelines for minimum cover required for heavy off-road construction equipment				
Pipe Span, in.	Minimum Cover (ft) for Indicted Axle Loads (kips)*			
	18-50	50-75	75-110	110-150
12-42	2.0	2.5	3.0	3.0
48-72	3.0	3.0	3.5	4.0
78-120	3.0	3.5	4.0	4.0
126-144	3.5	4.0	4.5	4.5

* Minimum cover may vary, depending on local conditions. The contractor must provide the additional cover required to avoid damage to the pipe. Minimum cover is measured from the top of the pipe to the top of the maintained construction roadway surface.

HEAVY CONSTRUCTION

For temporary construction vehicle loads (100 kips/axle load), put at least four feet of compacted cover on top of the pipe (but not exceeding the maximum allowable cover over the pipe).




PACIFIC
CORRUGATED PIPE CO.
13680 SLOVER AVENUE FONTANA, CA 92337
800.338.5858 * 909.829.4235
Fx: 909.829.8035
SOCAL@PCPIPE.COM

NOTE:
THE SUITABILITY OF THE INFORMATION PRESENTED FOR USE ON ANY PARTICULAR PROJECT SHOULD BE DETERMINED BY THE ENGINEER RESPONSIBLE FOR THE DESIGN.

PROJECT NAME: GOODMAN LOGISTICS CENTER		PROJECT #:	DRAWN BY: J. BROWN
SIGN & DATE TO RELEASE FOR MANUFACTURE (SUBJECT TO PRICE VERIFICATION)		SCALE: AS NOTED	
DATE		DATE: 08.02.21	
SIGNATURE		SHEET NO: 2 OF 3	
DESCRIPTION		DATE	
REV.		DATE	
1			

MANHOLE DATA :

PIPE DATA	DIAMETER (Ø)	MATERIAL	INV. EL.	ORIENTATION
INLET PIPE	36"	CMP	172.30' ±	180°
WATER QUALITY FLOW INLET PIPE	6"	HDPE	172.30' ±	225°
WATER QUALITY FLOW OUTLET PIPE	18"	HDPE	172.30' ±	315°
OUTLET PIPE	36"	RCP	172.30' ±	90°

WEIR ELEVATIONS AND HEIGHTS :

(*) WEIR HEIGHT DIMENSION DETERMINED BY DESIGN ENGINEER'S HYDRAULIC ANALYSIS

1. THIS SHEET IS IN ENGINEERING & CONSTRUCTION FORMATTED DETAIL.
2. PLAN VIEW FRAME AND COVER NOT SHOWN FOR CLARITY.
3. 48" DIAMETER RCP/HDPE IS THE LARGEST SUGGESTED INLET/OUTLET PIPE SIZE FOR THIS DIVERSION STRUCTURE.
4. INLET/OUTLET PIPE STUBS PROVIDED BY JENSEN PRECAST, PIPE TYPE ADAPTERS PROVIDED BY CUSTOMER.
5. DESIGN LOAD: H-20 TRAFFIC FROM 1' TO 6' OF COVER PER ASTM C890 & C915 AND ASSHTO LOADING METHODS.
6. CONTACT JENSEN PRECAST FOR OTHER INSTALLATION DEPTHS, INLET/OUTLET CONFIGURATIONS, AND/OR LOADING CONDITIONS FOR STRUCTURAL DESIGN REVISION TO MEET PROJECT SPECIFIC NEEDS.

CONSTRUCTION NOTES:

1. CONTRACTOR TO VERIFY VERTICAL DIMENSIONS OF ALL PRECAST PIECES IN FIELD.
2. VERIFY SUBBASE ELEVATION BEFORE PLACING PRECAST COMPONENTS OR BACKFILLING.
3. APPLY BUTYL MASTIC AND/OR GROUT TO SEAL JOINTS OF STRUCTURE.
4. CONTRACTOR TO GROUT ALL PIPE PENETRATIONS IN FIELD AS NECESSARY.
5. CONTRACTOR TO ADJUST FRAME/COVER ELEVATION IN FIELD AS NECESSARY.
6. ALL INTERNAL COMPONENTS INSTALLED BY MANUFACTURER.

MATERIALS :

1. ALL DIMENSIONS ARE IN FEET OR DECIMAL INCHES
2. PRECAST MATERIALS AND MANUFACTURING METHODS SHALL CONFORM TO ASTM C-857 & C-478.
3. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH F'c = 3,000-PSI AT 28-DAYS.
4. THE PORTLAND CEMENT USED IN THE PRECAST SECTION SHALL MEET THE REQUIREMENTS OF TYPE II/V HIGH SULFATE RESISTANT CEMENT IN ACCORDANCE WITH ASTM CLASS M C-150.

LIFTING WEIGHTS :

1. HEAVIEST PICK WEIGHT IS 15,000-LBS.
2. JENSEN CRANE TRUCK CAN SET A MAXIMUM OF 25,000-LBS AT 15-FT OFFSET DISTANCE FROM CENTER OF CRANE TRUNNION.

(**) REGIONAL MANUFACTURING DIFFERENCE :

MODEL: <i>SVDMH-72</i> <i>STORMVAULT</i> <i>DIVERTER MANHOLE</i>	PROJECT: GOODMAN LOGISTICS CENTER FULLERTON, CA			WATER RESOURCES 521 DUNN CIRCLE, SPARKS, NV 89431-6312 (877) 649-0095 FAX (775) 440-2013	
	ORG. DWG. DATE 10/15/2021	SCALE: AS SHOWN	SHEET SIZE 11" X 17"	DRAWN BY T. SCHMALING & W. STEIN SHEET NUMBER SVDMH-72	

SCALE: 1" = 32"

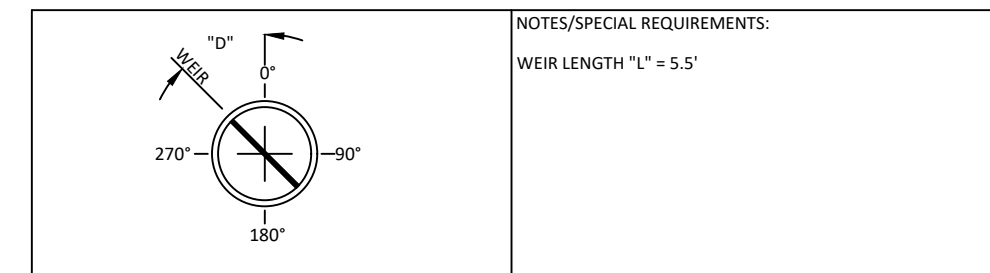
MANHOLE DATA :

PIPE DATA	DIAMETER (Ø)	MATERIAL	INV. EL.	ORIENTATION
INLET PIPE	36"	CMP	172.30' ±	270°
OUTLET PIPE	36"	RCP	172.30' ±	0°

ADJUSTABLE WEIR ELEVATIONS AND HEIGHTS:

A	WEIR WALL ELEVATION	175.30' ±
B	FLOOR ELEVATION	172.30' ±
C	WEIR WALL TOTAL HEIGHT	3.00'
D	WEIR ORIENTATION (45° TYP.)	65°

(*) WEIR HEIGHT DIMENSION DETERMINED BY DESIGN ENGINEER'S HYDRAULIC ANALYSIS



GENERAL NOTES:

1. THIS LAYOUT SKETCH IS PROVIDED IN A SCHEMATIC FORMAT. THIS SHEET IS IN ENGINEERING & CONSTRUCTION FORMATTED DETAIL. ENGINEERING & CONSTRUCTION DETAIL READILY AVAILABLE. CONTACT JENSEN PRECAST.
2. PLAN VIEW FRAME AND COVER NOT SHOWN FOR CLARITY.
3. 48" DIAMETER RCP/HDPE IS THE LARGEST SUGGESTED INLET/OUTLET PIPE SIZE FOR THIS DIVERSION STRUCTURE.
4. INLET/OUTLET PIPE STUBS PROVIDED BY JENSEN PRECAST, PIPE TYPE ADAPTERS PROVIDED BY CUSTOMER.
5. DESIGN LOAD: H-20 TRAFFIC FROM 1' TO 6' OF COVER PER ASTM C890 & C915 AND AASHTO LOADING METHODS.
6. CONTACT JENSEN PRECAST FOR OTHER INSTALLATION DEPTHS, INLET/OUTLET CONFIGURATIONS, AND/OR LOADING CONDITIONS FOR STRUCTURAL DESIGN REVISION TO MEET PROJECT SPECIFIC NEEDS.

CONSTRUCTION NOTES:

1. CONTRACTOR TO VERIFY VERTICAL DIMENSIONS OF ALL PRECAST PIECES IN FIELD.
2. VERIFY SUBBASE ELEVATION BEFORE PLACING PRECAST COMPONENTS OR BACKFILLING.
3. APPLY BUTYL MASTIC AND/OR GROUT TO SEAL JOINTS OF STRUCTURE.
4. CONTRACTOR TO GROUT ALL PIPE PENETRATIONS IN FIELD AS NECESSARY.
5. CONTRACTOR TO ADJUST FRAME/COVER ELEVATION IN FIELD AS NECESSARY.
6. ALL INTERNAL COMPONENTS INSTALLED BY MANUFACTURER.

MATERIALS:

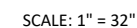
1. ALL DIMENSIONS ARE IN FEET OR DECIMAL INCHES
2. PRECAST MATERIALS AND MANUFACTURING METHODS SHALL CONFORM TO ASTM C-857 & C-478.
3. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH F'c = 3,000-PSI AT 28-DAYS.
4. THE PORTLAND CEMENT USED IN THE PRECAST SECTION SHALL MEET THE REQUIREMENTS OF TYPE II/V HIGH SULFATE RESISTANT CEMENT IN ACCORDANCE WITH ASTM CLASS M C-150.

LIFTING WEIGHTS :

1. HEAVIEST PICK WEIGHT IS 15,000-LBS.
2. JENSEN CRANE TRUCK CAN SET A MAXIMUM OF 25,000-LBS AT 15-FT OFFSET DISTANCE FROM CENTER OF CRANE TRUNNION.

(**) REGIONAL MANUFACTURING DIFFERENCE :

THESE ARE TEMPLATE DRAWINGS. JOINTS, WALL, TOP AND BOTTOM SLAB THICKNESS VARY ACROSS JENSEN'S REGIONAL MANUFACTURING FACILITIES AND ALSO FOR SITE SPECIFIC LOADING CONDITIONS. CONFIRM FINAL THICKNESS, PIPING CONFIGURATION AND CONCRETE THICKNESS PER CONSTRUCTION SUBMITTAL DRAWINGS. ADJUST FINAL DIMENSIONS TO EXTERIOR INVERT AND SUBGRADE ELEVATION PER REGIONAL DIFFERENCES.



MODEL: <i>SVDMH-72</i> <i>STORMVAULT</i> <i>DIVERTER MANHOLE</i>	PROJECT: GOODMAN LOGISTICS CENTER FULLERTON, CA			 521 DUNN CIRCLE, SPARKS, NV 89431-6312 (877) 649-0095 FAX (775) 440-2013	
	ORG. DWG. DATE 10/14/2021	SCALE: AS SHOWN	SHEET SIZE 11" X 17"	DRAWN BY T. SCHMALING & W. STEIN	SHEET NUMBER SVDMH-72

Copyright Information © 2011 Jensen Precast All Rights Reserved. All materials appearing as Jensen Precast documents and the like are propriety work product and are protected under U.S. copyright and other laws. Unless in conjunction with business conducted with Jensen Precast, any use of Jensen Precast work product without express, written consent is prohibited and recipient is prohibited from distributing any and all work product to non-approved third parties under penalty of civil action.

Basin - Area B (on-site flows)

AMC II

25 Year Storm - Proposed Condition

P25	4.49		in.									
CN	S	Ia	Y	Ybar	Total A		Fm	Tc	Calibration Co.			
90	1.11	0.22	0.75	0.25			21.5	0.03	8.52	0.9		

Rainfall	Depth (in)
5 min	0.40
30 min	0.87
1 hr	1.15
3 hr	1.94
6 hr	2.71
24 hr	4.49

Soil Group B

Fp	0.3
Fm	ap*Fp
ap	0.10
Fm	0.03

AMC III

100 Year Storm - Proposed Condition

P100	5.63 in.									
CN	S	Ia	Y	Ybar	Total A		Fm	Tc	Calibration Co.	
98	0.20	0.04	0.96	0.04			21.5	0.03	8.37	0.9

Rainfall	Depth (in)
5 min	0.52
30 min	1.09
1 hr	1.45
3 hr	2.43
6 hr	3.36
24 hr	5.63

Soil Group B

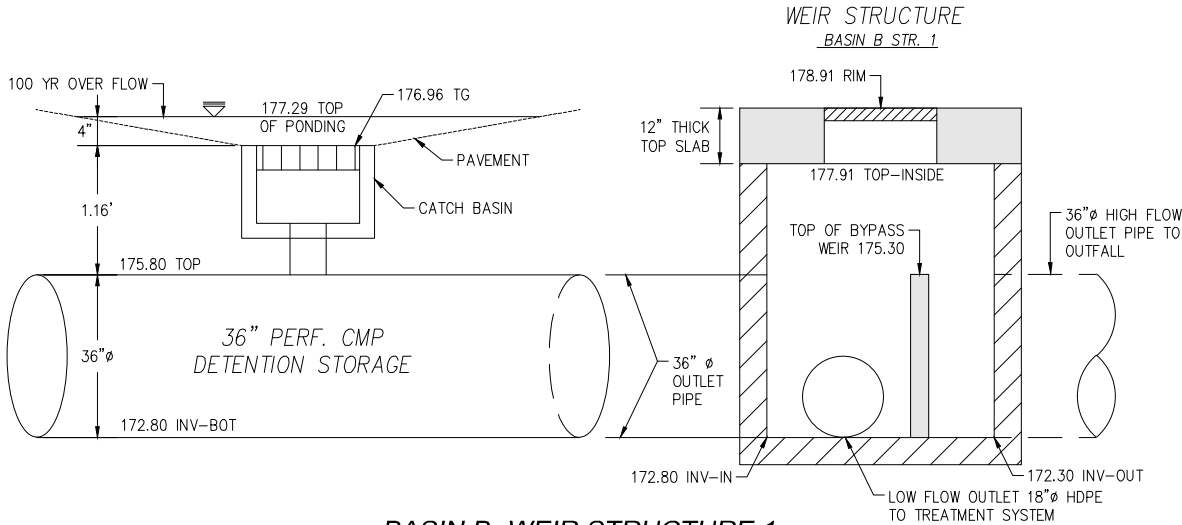
Fp	0.3
Fm	ap*Fp
ap	0.10
Fm	0.03

DVC Storage Vol (cf) =	62812	Is DCV met?	At what elevation?
		YES	175.19

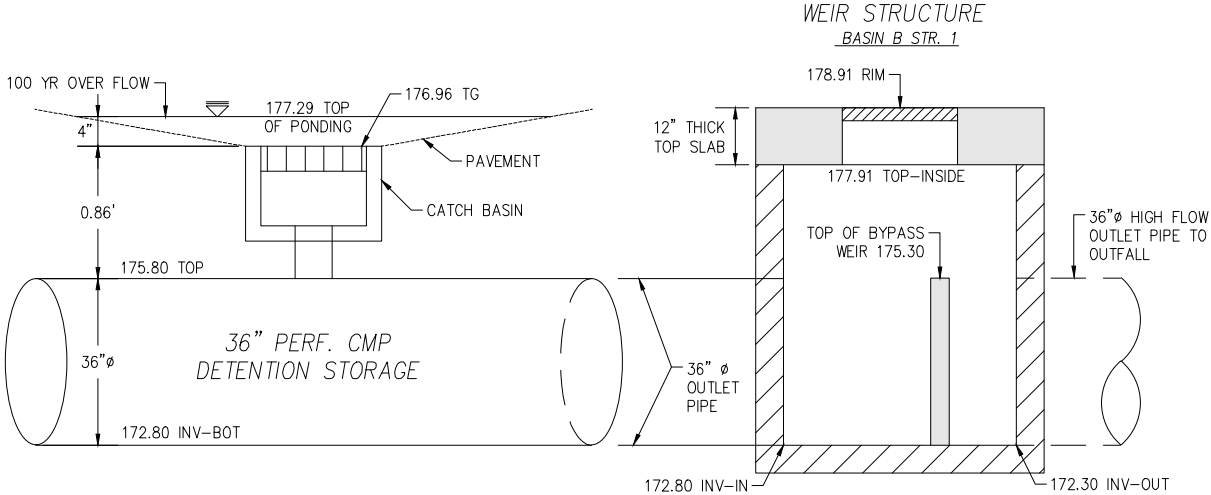
Stage (Feet)	Elevation (sys)	Head in Basin	Total. Vol (af)*	Total Flows (cfs)
1.000	172.30	0.00	0.000	0.000
2.000	172.55	0.25	0.074	0.000
3.000	172.80	0.50	0.149	0.000
4.000	174.20	0.75	0.250	0.000
5.000	173.30	1.00	0.372	4.254
6.000	173.55	1.25	0.504	6.017
7.000	173.80	1.50	0.644	7.369
8.000	174.05	1.75	0.787	8.509
9.000	174.30	2.00	0.933	9.513
10.000	174.55	2.25	1.078	10.421
11.000	174.80	2.50	1.222	11.256
12.000	175.05	2.75	1.361	12.033
13.000	175.30	3.00	1.586	12.763
14.000	175.55	3.25	1.615	17.698
15.000	175.80	3.50	1.716	26.116
16.000	176.05	3.75	1.791	36.793
17.000	176.30	4.00	1.865	49.296
18.000	176.55	4.25	1.940	63.375
19.000	176.80	4.50	2.014	78.860

WEIR

SEE NEXT SHEET FOR DETAILED CALCULATIONS



BASIN B- WEIR STRUCTURE 1



BASIN B- WEIR STRUCTURE 2

DIVERSION MANHOLE BASIN B

DIVERSION MANHOLE B1

High Flow Orifice C =	0.6	Low Flow Orifice C =	0.6
High Flow Orifice Size (inch) =	36	Low Flow Orifice Size (inches) =	18
Centroid Elevation (ft) =	1.50	Centroid Elevation (ft) =	0.75
Weir Length (Feet) =	5.50	Diversion Manhole B1 RIM Elevation	179
Weir C =	3.087	Inside Manhole B1 Top Elevation	178

DIVERSION MANHOLE B2

High Flow Orifice C =	0.6	B2 RIM Elevation	178.77
High Flow Orifice Size (inch) =	36	B2 Inside Top Elevation	177.77
Centroid Elevation (ft) =	1.50		
Weir Length (Feet) =	5.50		
Weir C =	3.087		

			SYSTEM VOLUME					MANHOLE B1							MANHOLE B2					
Stage (Feet)	Water Elevation at Manhole (ft)	Head in Basin (ft)	Pipe Volume (per linear foot)*	Rock/voids volume (per linear foot)*	Cumulative Volume Storage (cu.ft)*	Cumulative Volume Storage (ace-ft)*	Water Level at Manhole (ft)	Head (Feet)	Low Flow Orifice (cfs)	Weir Head (Feet)	Weir Flow (cfs)	Head (Feet)	High Flow Orifice (cfs)	Flow Regime	Weir Head (Feet)	Weir Flow (cfs)	Head (Feet)	High Flow Orifice (cfs)	Flow Regime	Flow (cfs)
1	172.30	0.00	0	0.00	0	0.000	0.00	0.00				0.00					0.00			0.00
2	172.55	0.25	0	6.10	3245	0.074	0.25	0.25				0.25					0.25			0.00
3	172.80	0.50	0	6.10	6490	0.149	0.50	0.50				0.50					0.50			0.00
4	174.20	0.75	3.65	4.64	10901	0.250	0.75	0.75	0.00			0.75					0.75			0.00
5	173.30	1.00	6.41	3.54	16192	0.372	1.00	1.00	4.25			1.00					1.00			4.25
6	173.55	1.25	7.9	2.94	21960	0.504	1.25	1.25	6.02			1.25					1.25			6.02
7	173.80	1.50	8.85	2.56	28031	0.644	1.50	1.50	7.37			1.50	0.00				1.50	0.00	0.00	7.37
8	174.05	1.75	9.43	2.33	34285	0.787	1.75	1.75	8.51			1.75	17.02	0.00			1.75	17.02	0.00	8.51
9	174.30	2.00	9.71	2.22	40630	0.933	2.00	2.00	9.51			2.00	24.07	0.00			2.00	24.07	0.00	9.51
10	174.55	2.25	9.71	2.22	46975	1.078	2.25	2.25	10.42			2.25	29.48	0.00			2.25	29.48	0.00	10.42
11	174.80	2.50	9.43	2.33	53229	1.222	2.50	2.50	11.26			2.50	34.04	0.00			2.50	34.04	0.00	11.26
12	175.05	2.75	8.85	2.56	59300	1.361	2.75	2.75	12.03			2.75	38.05	0.00			2.75	38.05	0.00	12.03
13	175.30	3.00	7.9	2.94	69068	1.586	3.00	3.00	12.76	0.00	0.0	3.00	41.68	0.00	0.00	0.0	3.00	41.68	0.00	12.76
14	175.55	3.25	6.41	3.54	70359	1.615	3.25	3.25	13.45	0.25	2.1	3.25	45.02	2.12	0.25	2.1	3.25	45.02	2.12	17.70
15	175.80	3.50	3.65	4.64	74770	1.716	3.50	3.50	14.11	0.50	6.0	3.50	48.13	6.00	0.50	6.0	3.50	48.13	6.00	26.12
16	176.05	3.75	0	6.10	78015	1.791	3.75	3.75	14.74	0.75	11.0	3.75	51.05	11.03	0.75	11.0	3.75	51.05	11.03	36.79
17	176.30	4.00	0	6.10	81260	1.865	4.00	4.00	15.34	1.00	17.0	4.00	53.81	16.98	1.00	17.0	4.00	53.81	16.98	49.30
18	176.55	4.25	0	6.10	84506	1.940	4.25	4.25	15.92	1.25	23.7	4.25	56.44	23.73	1.25	23.7	4.25	56.44	23.73	63.37
19	176.80	4.50	0	6.10	87751	2.014	4.50	4.50	16.48	1.50	31.2	4.50	58.95	31.19	1.50	31.2	4.50	58.95	31.19	78.86

Notes:

$Q_o = KA\sqrt{2gH_o}$

Qo = Orifice Outflow (cfs)

Ho = Water height above orifice center (ft)

K = Orifice flow coef., 0.6

A = Cross sectional area of orifice (ft^2)

g = gravitational accel., 32.2 ft/sec^2

$Q_w = Q_{weir} H^{3/2}$

Qw = Weir flow Coef., 3.087

C = Length of Weir (Ft)

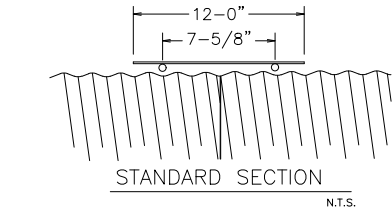
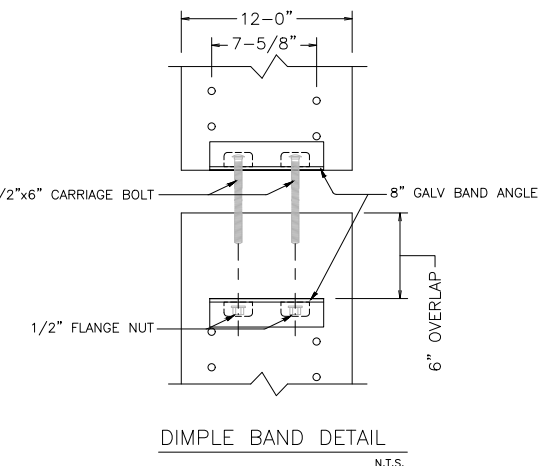
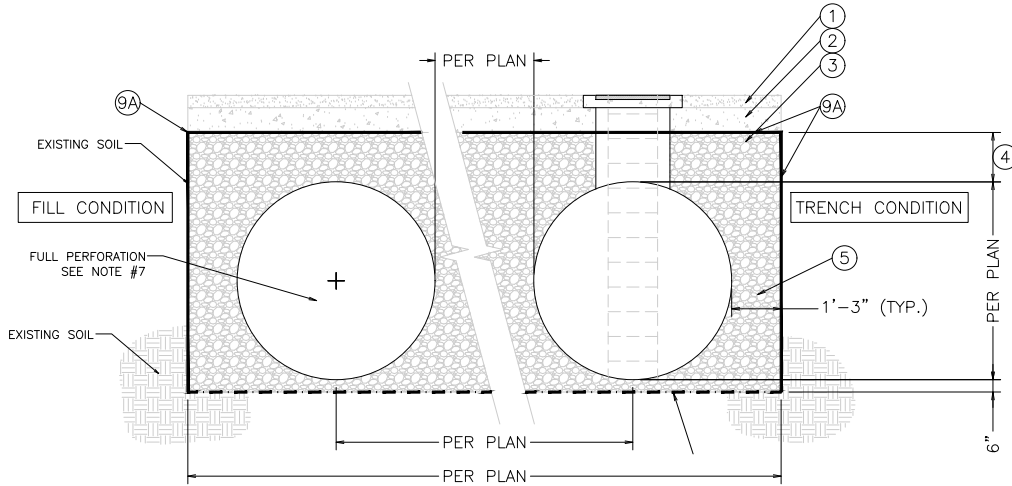
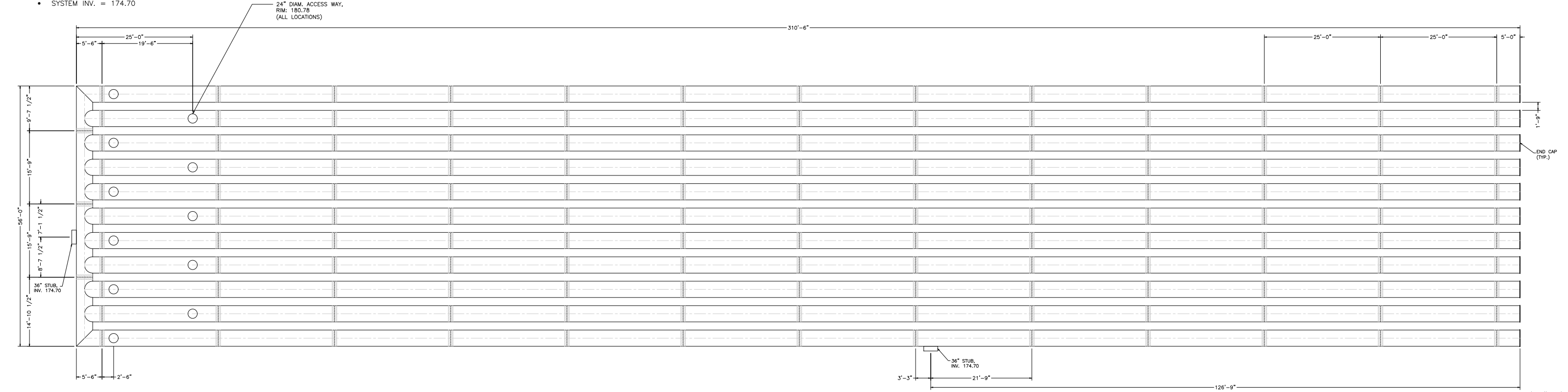
L = Water height above top of Weir (Ft)

H

BASIN C

DESIGN INFORMATION (BASIN C)

- MATERIAL FINISH = GALV.
- PIPE GAUGE = 16GA.
- PERFORATED = YES
- DIAMETER = 42"
- LOADING = H20/H25
- SYSTEM INV. = 174.70



GENERAL NOTES:

1. BANDS ARE FURNISHED AS FOLLOWS:
12" THRU 48" - 1-PIECE
54" THRU 96" - 2-PIECE
102" THRU 144" - 3-PIECE
2. GALV BAND ANGLES ARE ATTACHED WITH SPOT WELDS, RIVETS OR HAND WELDED.
3. DIMMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES.
4. DIMPLE BANDS FOR ARCHED PIPE ARE THE SAME AS FOR EQUIVALENT ROUND PIPE DIAMETER.

NOTES:

1. RIGID OR FLEXIBLE PAVEMENT.
2. GRANULAR ROAD BASE.
3. NORMAL ROADWAY EMBANKMENT FILL PLACED IN 8" LIFTS AND COMPACTED TO MIN. 90% STANDARD DENSITY PER AASHTO T-99.
4. 12" MIN. FOR DIAMETERS THROUGH 96", 18" MIN. FOR DIAMETERS FROM 102" AND UP. MEASURE FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TOP OF PIPE TO TOP OF RIGID PAVEMENT.
5. FREE DRAINING ANGULAR WASHED STONE 3/4" - 2" AROUND PIPE ENVELOPE AS SHOWN OR OTHERWISE NOTED.
6. CSP GAGE PER AASHTO SECTION12.
7. MATERIAL PERFORATIONS TO COMPLY WITH "CLASS II" PERFORATIONS PER AASHTO M-36 SECTION 8.3.2.2 & ASTM A760 SECTION 8.3.2.2.
- 7a. THE PERFORATIONS SHALL PROVIDE AN OPEN AREA OF NOT LESS THEN 3.3 SQ. IN. PER SQ. FT. OF PIPE SURFACE BASED ON NOMINAL DIAMETER AND LENGTH OF PIPE.
- 7b. ALL PERFORATION SHALL BE 3/8" DIAMETER.
8. LISTED SPACING CHART IS FOR MULTIPLE PIPE INSTALLATION. FOR SINGLE RUN, THE TRENCH REQUIRES ONLY THE BOTTOM WIDTH OF THE PIPE'S SPAN, PLUS ROOM FOR COMPACTION EQUIPMENT.

SPACING CHART PER AISI AND NCSPA GUIDELINES		
DIAMETER	REQUIRED SPACING	
UP TO 24"	12"	
24" - 72"	1 1/2 PIPE DIA.	
72" AND UP	36"	

9. 4 oz. NON WOVEN GEOTEXTILE FABRIC.
10. RELATIVELY LOOSE GRANULAR BEDDING ROUGHLY SHAPED TO FIT BOTTOM OF PIPE, 4" TO 6" IN DEPTH. (#57 OR #8 OR OTHER SUITABLE GRANULAR).

WELDED BULKHEAD ENDCAP
3/16" PLATE W/ ZINC
PAINTED (ALL ENDS)

B-B
TYPICAL BULKHEAD

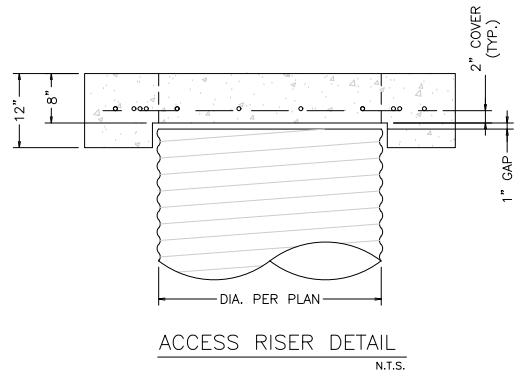
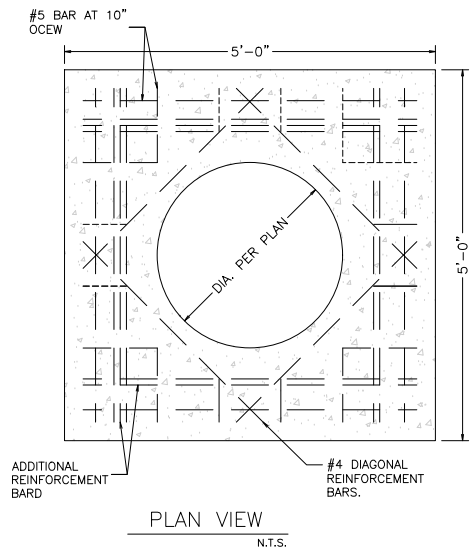
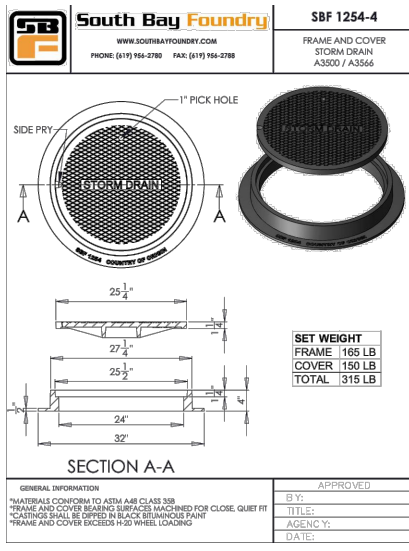


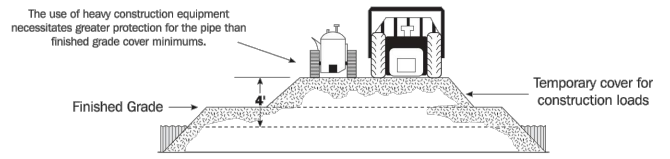
Table 7.8					
General guidelines for minimum cover required for heavy off-road construction equipment					
Pipe Span, in.	Minimum Cover (ft) for Indicted Axle Loads (kips)*				
	18-50	50-75	75-110	110-150	
12-42	2.0	2.5	3.0	3.0	
48-72	3.0	3.0	3.5	4.0	
78-120	3.0	3.5	4.0	4.0	
126-144	3.5	4.0	4.5	4.5	

* Minimum cover may vary, depending on local conditions. The contractor must provide the additional cover required to avoid damage to the pipe. Minimum cover is measured from the top of the pipe to the top of the maintained construction roadway surface.



HEAVY CONSTRUCTION

For temporary construction vehicle loads (100 kips/axle load), put at least four feet of compacted cover on top of the pipe (but not exceeding the maximum allowable cover over the pipe).




PACIFIC
CORRUGATED PIPE CO.®
13680 SLOVER AVENUE FONTANA, CA 92337
800.338.5858 * 909.829.4235
Fx: 909.829.8035
SOCAL@PCPIPE.COM

NOTE:
THE SUITABILITY OF THE INFORMATION PRESENTED FOR USE ON ANY PARTICULAR PROJECT SHOULD BE DETERMINED BY THE ENGINEER RESPONSIBLE FOR THE DESIGN.

PROJECT NAME: GOODMAN LOGISTICS CENTER		PROJECT #:		DRAWN BY: J. BROWN	
SIGN & DATE TO RELEASE FOR MANUFACTURE (SUBJECT TO PRICE VERIFICATION)		PLANS APPROVED ☐ (AS NOTED) ☐ (W/CHANGES)		SCALE: AS NOTED	
DATE		SIGNATURE		DATE: 08.02.21	
REV.	DESCRIPTION	DATE		SHEET NO: 3 OF 3	
1					

ITEM #70 - DIVERSION STRUCTURE, PLAN SHEET 31
BASIN C -
STORMVAULT DIVERTER MANHOLE - MODEL: SVDMH-96

MANHOLE DATA :

DIVERTED STORMWATER QUALITY DESIGN FLOW (SQDF)	66-CFS (29,622-GPM)
MANHOLE INTERNAL DIAMETER INCHES (Ø)	96"
RIM ELEVATION (FT)	180.9'

PIPE DATA	DIAMETER (Ø)	MATERIAL	INV. EL.	ORIENTATION
INLET PIPE	36"	CMP	174.16' ±	180°
WATER QUALITY FLOW INLET PIPE	6"	HDPE	174.16' ±	135°
WATER QUALITY FLOW OUTLET PIPE	18"	HDPE	174.16' ±	0°
OUTLET PIPE	36"	RCP	174.16' ±	270°

WEIR ELEVATIONS AND HEIGHTS - PHASE I VOLUME CONTROL :

A	5'-6" LONG STEPPED WEIR WALL ELEVATION - PHASE I	178.20' ±
B	FLOOR ELEVATION	174.20' ±
C	STEPPED WEIR WALL TOTAL HEIGHT - PHASE I	4.0'

WEIR ELEVATIONS AND HEIGHTS - PHASE II VOLUME CONTROL :

D	5'-6" LONG STEPPED WEIR WALL ELEVATION - PHASE II	178.50' ±
-	STEPPED WEIR WALL TOTAL HEIGHT - PHASE II	4.3'

(*) WEIR HEIGHT DIMENSION DETERMINED BY DESIGN ENGINEER'S HYDRAULIC ANALYSIS

PIPE AND WEIR ORIENTATION KEY:	NOTES/SPECIAL REQUIREMENTS:
	WEIR LENGTH "L" = 5.5'

GENERAL NOTES :

- THIS SHEET IS IN ENGINEERING & CONSTRUCTION FORMATTED DETAIL.
- PLAN VIEW FRAME AND COVER NOT SHOWN FOR CLARITY.
- 66" DIAMETER RCP/HDPE IS THE LARGEST SUGGESTED INLET/OUTLET PIPE SIZE FOR THIS DIVERSION STRUCTURE.
- DESIGN LOAD: H-20 TRAFFIC FROM 1' TO 6' OF COVER PER ASTM C890 & C915 AND ASSHTO LOADING METHODS.

CONSTRUCTION NOTES :

- CONTRACTOR TO VERIFY VERTICAL DIMENSIONS OF ALL PRECAST PIECES IN FIELD.
- VERIFY SUBBASE ELEVATION BEFORE PLACING PRECAST COMPONENTS OR BACKFILLING.
- APPLY BUTYL MASTIC AND/OR GROUT TO SEAL JOINTS OF STRUCTURE.
- CONTRACTOR TO GROUT ALL PIPE PENETRATIONS IN FIELD AS NECESSARY.
- CONTRACTOR TO ADJUST FRAME/COVER ELEVATION IN FIELD AS NECESSARY.
- CONCRETE WEIR INSTALLED BY MANUFACTURER.

MATERIALS :

- ALL DIMENSIONS ARE IN FEET OR DECIMAL INCHES
- PRECAST MATERIALS AND MANUFACTURING METHODS SHALL CONFORM TO ASTM C-857 & C-478.
- CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH F'c = 3,000-PSI AT 28-DAYS.
- THE PORTLAND CEMENT USED IN THE PRECAST SECTION SHALL MEET THE REQUIREMENTS OF TYPE II/V HIGH SULFATE RESISTANT CEMENT IN ACCORDANCE WITH ASTM CLASS M C-150.

LIFTING WEIGHTS :

- HEAVIEST PICK WEIGHT IS 30,500-LBS.
- JENSEN CRANE TRUCK CAN SET A MAXIMUM OF 25,000-LBS AT 15-FT OFFSET DISTANCE FROM CENTER OF CRANE TRUNNION.

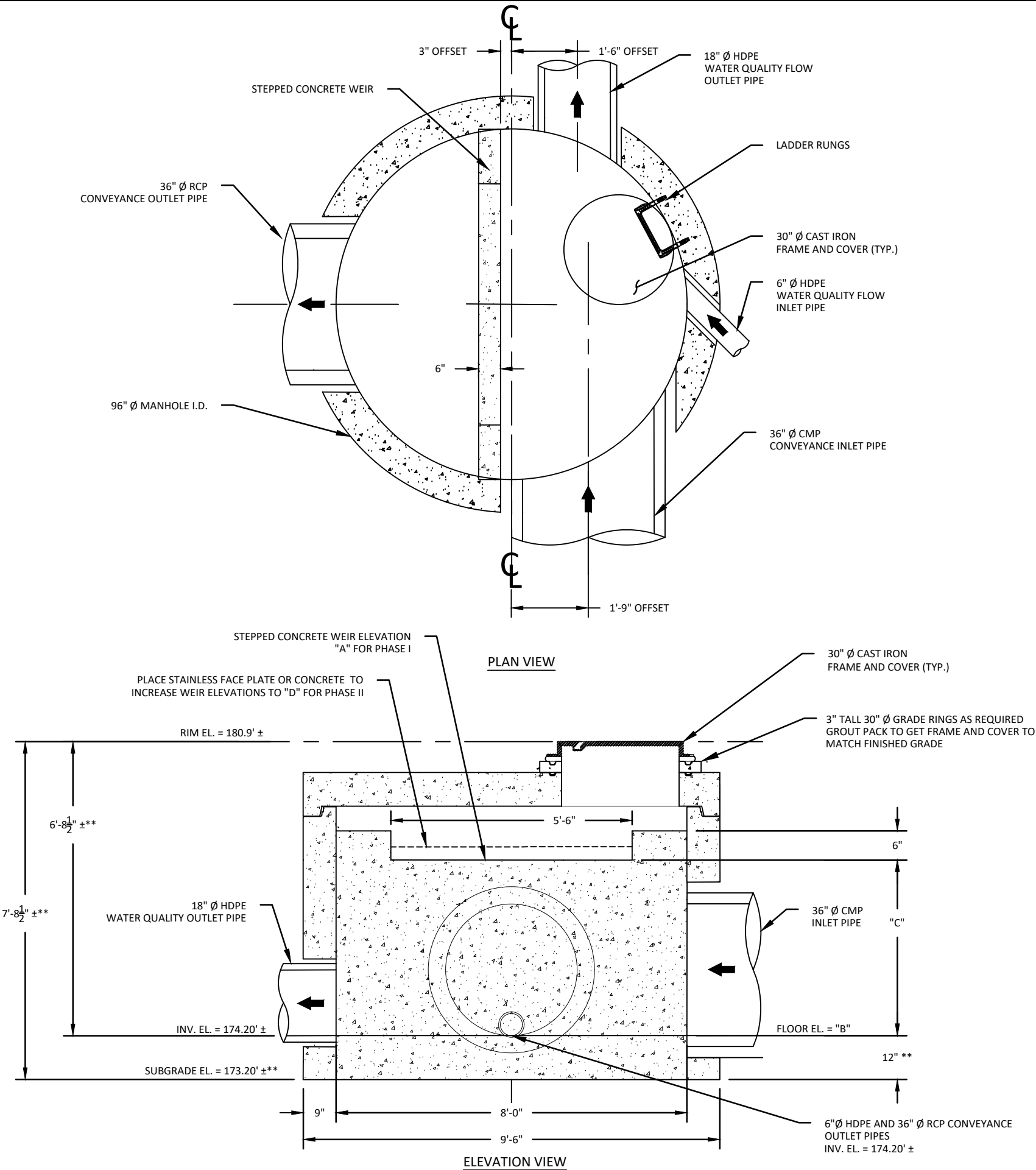
[**] REGIONAL MANUFACTURING DIFFERENCE :

THESE ARE TEMPLATE DRAWINGS. JOINTS, WALL, TOP AND BOTTOM SLAB THICKNESS VARY ACROSS JENSEN'S REGIONAL MANUFACTURING FACILITIES AND ALSO FOR SITE SPECIFIC LOADING CONDITIONS. CONFIRM FINAL THICKNESS, PIPING CONFIGURATION AND CONCRETE THICKNESS PER CONSTRUCTION SUBMITTAL DRAWINGS. ADJUST FINAL DIMENSIONS TO EXTERIOR INVERT AND SUBGRADE ELEVATION PER REGIONAL DIFFERENCES.

MODEL: SVDMH-96 STORMVAULT DIVERTER MANHOLE	PROJECT: GOODMAN LOGISTICS CENTER FULLERTON, CA			 521 DUNN CIRCLE, SPARKS, NV 89431-6312 (877) 649-0095 FAX (775) 440-2013	
	ORG. DWG. DATE 10/15/2021	SCALE: AS SHOWN	SHEET SIZE 11" X 17"	DRAWN BY T.SCHMALING & W. STEIN	SHEET NUMBER SVDMH-96

Copyright Information © 2011 Jensen Precast All Rights Reserved. All materials appearing as Jensen Precast documents and the like are propriety work product and are protected under U.S. copyright and other laws. Unless in conjunction with business conducted with Jensen Precast, any use of Jensen Precast work product without express, written consent is prohibited and recipient is prohibited from distributing any and all work product to non-approved third parties under penalty of civil action.

SCALE: 1" = 32"



Basin - Area C (on-site flows)

AMC II

25 Year Storm - Proposed Condition

P25	4.49 in.							
CN	S	Ia	Y	Ybar				
90	1.11	0.22	0.75	0.25			Total A13.51	Fm0.03Tc11.9Calibration Co.0.9

Rainfall	Depth (in)
5 min	0.40
30 min	0.87
1 hr	1.15
3 hr	1.94
6 hr	2.71
24 hr	4.49

Soil Group	B
Fp	0.3
Fm	ap*Fp
ap	0.10
Fm	0.03

AMC III

100 Year Storm - Proposed Condition

P100	5.63 in.							
CN	S	Ia	Y	Ybar				
98	0.20	0.04	0.96	0.04			Total A13.51	Fm0.03Tc11.64Calibration Co.0.9

Rainfall	Depth (in)
5 min	0.52
30 min	1.09
1 hr	1.45
3 hr	2.43
6 hr	3.36
24 hr	5.63

Soil Group	B
Fp	0.3
Fm	ap*Fp
ap	0.10
Fm	0.03

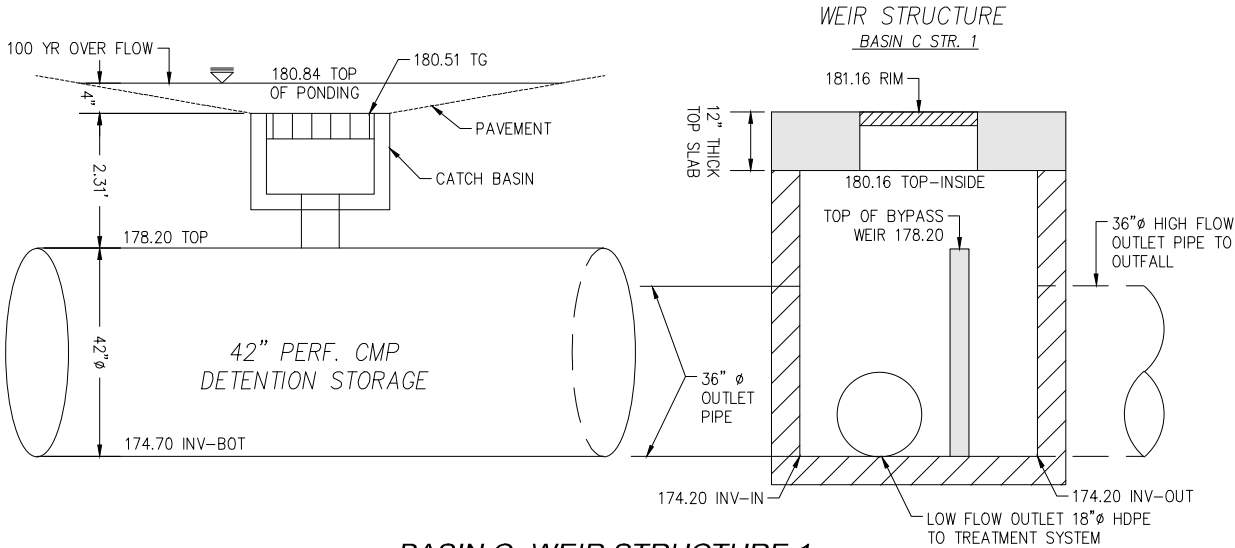
DVC Storage Vol (cf) =				Is DCV met?	At what elevation?
44199				YES	177.67

Stage	Elevation (sys)	Head in Basin	Total. Vol (af)*	Total Flows (cfs)
1.000	174.20	0.00	0.000	0.000
2.000	174.45	0.25	0.043	0.000
3.000	174.70	0.50	0.087	0.000
4.000	174.95	0.75	0.144	0.000
5.000	175.20	1.00	0.213	4.254
6.000	175.45	1.25	0.289	6.017
7.000	175.70	1.50	0.368	7.369
8.000	175.95	1.75	0.450	8.509
9.000	176.20	2.00	0.534	9.513
10.000	176.45	2.25	0.619	10.421
11.000	176.70	2.50	0.704	11.256
12.000	176.95	2.75	0.788	12.033
13.000	177.20	3.00	0.870	12.763
14.000	177.45	3.25	0.950	13.454
15.000	177.70	3.50	1.025	14.110
16.000	177.95	3.75	1.094	14.738
17.000	178.20	4.00	1.152	15.339
18.000	178.45	4.25	1.195	18.041
19.000	178.70	4.50	1.238	22.480
20.000	178.95	4.75	1.282	28.045
21.000	179.20	5.00	1.325	34.520

*

WEIR

SEE NEXT SHEET FOR DETAILED CALCULATIONS



BASIN C- WEIR STRUCTURE 1

DIVERSION MANHOLE C

High Flow Orifice C =	0.6	Low Flow Orifice C =	0.6
High Flow Orifice Size (inch) =	36	Low Flow Orifice Size (inch) =	18
Centroid Elevation (ft) =	1.50	Centroid Elevation (ft) =	0.75
Weir Length (Feet) =	5.50	Diversion Manhole C RIM Elevation	181.11
Weir C =	3.087	Inside Manhole C Top Elevation	180.11

172.3			SYSTEM VOLUME				MANHOLE C								
Stage (Feet)	Water Elevation at Manhole (ft)	Head in Basin (ft)	Pipe Volume (per linear foot)*	Rock/voids volume (per linear foot)*	Cumulative Volume Storage (cu.ft)*	Cumulative Volume Storage (ace-ft)*	Water Level at Manhole (ft)	Head (Feet)	Low Flow Orifice (cfs)	Weir Head (Feet)	Weir Flow (cfs)	Head (Feet)	High Flow Orifice (cfs)	Flow Regime	Flow (cfs)
1	174.20	0.00	0	0.00	0	0.000	0.00	0.00				0.00			0.00
2	174.45	0.25	0	6.00	1887	0.043	0.25	0.25				0.25			0.00
3	174.70	0.50	0	6.00	3774	0.087	0.50	0.50				0.50			0.00
4	174.95	0.75	3.36	4.66	6294	0.144	0.75	0.75	0.00			0.75			0.00
5	175.20	1.00	5.92	3.63	9297	0.213	1.00	1.00	4.25			1.00			4.25
6	175.45	1.25	7.36	3.06	12573	0.289	1.25	1.25	6.02			1.25		0.00	6.02
7	175.70	1.50	8.33	2.67	16031	0.368	1.50	1.50	7.37			1.50	0.00	0.00	7.37
8	175.95	1.75	8.98	2.41	19612	0.450	1.75	1.75	8.51			1.75	17.02	0.00	8.51
9	176.20	2.00	9.39	2.24	23272	0.534	2.00	2.00	9.51			2.00	24.07	0.00	9.51
10	176.45	2.25	9.59	2.16	26969	0.619	2.25	2.25	10.42			2.25	29.48	0.00	10.42
11	176.70	2.50	9.59	2.16	30666	0.704	2.50	2.50	11.26			2.50	34.04	0.00	11.26
12	176.95	2.75	9.39	3.28	34325	0.788	2.75	2.75	12.03			2.75	38.05	0.00	12.03
13	177.20	3.00	8.98	4.30	37906	0.870	3.00	3.00	12.76			3.00	41.68	0.00	12.76
14	177.45	3.25	8.33	2.67	41364	0.950	3.25	3.25	13.45			3.25	45.02	0.00	13.45
15	177.70	3.50	7.36	3.06	44640	1.025	3.50	3.50	14.11			3.50	48.13	0.00	14.11
16	177.95	3.75	5.92	3.63	47644	1.094	3.75	3.75	14.74			3.75	51.05	0.00	14.74
17	178.20	4.00	3.36	4.66	50164	1.152	4.00	4.00	15.34	0.00	0.0	4.00	53.81	0.00	15.34
18	178.45	4.25	0	6.00	52051	1.195	4.25	4.25	15.92	0.25	2.1	4.25	56.44	2.12	18.04
19	178.70	4.50	0	6.00	53938	1.238	4.50	4.50	16.48	0.50	6.0	4.50	58.95	6.00	22.48
20	178.95	4.75	0	6.00	55825	1.282	4.75	4.75	17.02	0.75	11.0	4.75	61.36	11.03	28.05
21	179.20	5.00	0	6.00	57712	1.325	5.00	5.00	17.54	1.00	17.0	5.00	63.67	16.98	34.52

WEIR

Notes:

$Q_o = KA\sqrt{2gH_o}$

Qo = Orifice Outflow (cfs)

Ho = Water height above orifice center (ft)

K = Orifice flow coef., 0.6

A = Cross sectional area of orifice (ft^2)

g = gravitational accel., 32.2 ft/sec^2

$Q_w = \frac{CWL^3}{2}$

Qw = Weir Outflow (CFS)

Cw = Weir flow Coef., 3.087

C = Length of Weir (Ft)

L = Water height above top of Weir (Ft)

H

FLOOD ROUTING ANALYSIS
USING COUNTY HYDROLOGY MANUAL OF ORANGE(1986)
(c) Copyright 1989-2016 Advanced Engineering Software (aes)
Ver. 23.0 Release Date: 07/01/2016 License ID 1334

Analysis prepared by:

***** DESCRIPTION OF STUDY *****
* SP8454 - GOODMAN LOGISTICS CENTER FULLERTON *
* PROPOSED SMALL AREA UNIT HYDROGRAPH *
* 25-YEAR STORM *

FILE NAME: GL25HP.DAT
TIME/DATE OF STUDY: 11:27 10/15/2021

The Small Area Unit Hydrograph Procedures in Section J
of the Hydrology Manual provides estimates of runoff
hydrograph and runoff volume for watersheds whose time of
concentration is less than 25 minutes. The PROGRAM User
should check the applicability of using the small area unit
hydrograph procedures, and follow the guidelines in
Sections J and K.5 in complex watershed modeling.

FLOW PROCESS FROM NODE 100.00 TO NODE 580.00 IS CODE = 1.2

>>>>SUBAREA RUNOFF (SMALL AREA UNIT-HYDROGRAPH ANALYSIS) <<<<
=====

(SMALL AREA UNIT-HYDROGRAPH ADDED TO STREAM #1)

RATIONAL METHOD CALIBRATION COEFFICIENT = 0.90
TOTAL CATCHMENT AREA(ACRES) = 22.00
SOIL-LOSS RATE, Fm,(INCH/HR) = 0.040
LOW LOSS FRACTION = 0.250
TIME OF CONCENTRATION(MIN.) = 6.31
SMALL AREA PEAK Q COMPUTED USING PEAK FLOW RATE FORMULA
ORANGE COUNTY "VALLEY" RAINFALL VALUES ARE USED:
RETURN FREQUENCY(YEARS) = 25
5-MINUTE POINT RAINFALL VALUE(INCHES) = 0.40

30-MINUTE POINT RAINFALL VALUE(INCHES) = 0.87
1-HOUR POINT RAINFALL VALUE(INCHES) = 1.15
3-HOUR POINT RAINFALL VALUE(INCHES) = 1.94
6-HOUR POINT RAINFALL VALUE(INCHES) = 2.71
24-HOUR POINT RAINFALL VALUE(INCHES) = 4.49

TOTAL CATCHMENT RUNOFF VOLUME(ACRE-FEET) = 6.24
TOTAL CATCHMENT SOIL-LOSS VOLUME(ACRE-FEET) = 1.99

▲

=====

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

=====

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

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	20.6	41.3	61.9	82.5
10.000	1.0916	1.87	Q	V	.	.	.
10.017	1.0942	1.88	Q	V	.	.	.
10.033	1.0968	1.88	Q	V	.	.	.
10.050	1.0994	1.88	Q	V	.	.	.
10.067	1.1020	1.88	Q	V	.	.	.
10.083	1.1046	1.88	Q	V	.	.	.
10.100	1.1072	1.89	Q	V	.	.	.
10.117	1.1098	1.89	Q	V	.	.	.
10.133	1.1124	1.89	Q	V	.	.	.
10.150	1.1150	1.90	Q	V	.	.	.
10.167	1.1176	1.90	Q	V	.	.	.
10.183	1.1202	1.91	Q	V	.	.	.
10.200	1.1229	1.91	Q	V	.	.	.
10.217	1.1255	1.92	Q	V	.	.	.
10.233	1.1282	1.92	Q	V	.	.	.
10.250	1.1308	1.92	Q	V	.	.	.
10.267	1.1335	1.92	Q	V	.	.	.
10.283	1.1361	1.93	Q	V	.	.	.
10.300	1.1388	1.93	Q	V	.	.	.
10.317	1.1414	1.93	Q	V	.	.	.
10.333	1.1441	1.93	Q	V	.	.	.
10.350	1.1468	1.94	Q	V	.	.	.
10.367	1.1494	1.94	Q	V	.	.	.
10.383	1.1521	1.95	Q	V	.	.	.
10.400	1.1548	1.95	Q	V	.	.	.

10.417	1.1575	1.96	Q	V	.	.	.	.
10.433	1.1602	1.96	Q	V	.	.	.	.
10.450	1.1629	1.96	Q	V	.	.	.	.
10.467	1.1656	1.97	Q	V	.	.	.	.
10.483	1.1683	1.97	Q	V	.	.	.	.
10.500	1.1710	1.97	Q	V	.	.	.	.
10.517	1.1738	1.97	Q	V	.	.	.	.
10.533	1.1765	1.98	Q	V	.	.	.	.
10.550	1.1792	1.98	Q	V	.	.	.	.
10.567	1.1820	1.99	Q	V	.	.	.	.
10.583	1.1847	1.99	Q	V	.	.	.	.
10.600	1.1875	2.00	Q	V	.	.	.	.
10.617	1.1902	2.00	Q	V	.	.	.	.
10.633	1.1930	2.01	Q	V	.	.	.	.
10.650	1.1957	2.01	Q	V	.	.	.	.
10.667	1.1985	2.01	Q	V	.	.	.	.
10.683	1.2013	2.02	Q	V	.	.	.	.
10.700	1.2041	2.02	Q	V	.	.	.	.
10.717	1.2069	2.02	Q	V	.	.	.	.
10.733	1.2097	2.02	Q	V	.	.	.	.
10.750	1.2124	2.03	Q	V	.	.	.	.
10.767	1.2152	2.03	Q	V	.	.	.	.
10.783	1.2181	2.04	Q	V	.	.	.	.
10.800	1.2209	2.04	Q	V	.	.	.	.
10.817	1.2237	2.05	Q	V	.	.	.	.
10.833	1.2265	2.05	Q	V	.	.	.	.
10.850	1.2294	2.06	Q	V	.	.	.	.
10.867	1.2322	2.06	.Q	V	.	.	.	.
10.883	1.2350	2.07	.Q	V	.	.	.	.
10.900	1.2379	2.07	.Q	V	.	.	.	.
10.917	1.2408	2.07	.Q	V	.	.	.	.
10.933	1.2436	2.07	.Q	V	.	.	.	.
10.950	1.2465	2.08	.Q	V	.	.	.	.
10.967	1.2493	2.08	.Q	V	.	.	.	.
10.983	1.2522	2.09	.Q	V	.	.	.	.
11.000	1.2551	2.09	.Q	V	.	.	.	.
11.017	1.2580	2.10	.Q	V	.	.	.	.
11.033	1.2609	2.11	.Q	V	.	.	.	.
11.050	1.2638	2.11	.Q	V	.	.	.	.
11.067	1.2667	2.12	.Q	V	.	.	.	.
11.083	1.2696	2.12	.Q	V	.	.	.	.
11.100	1.2726	2.12	.Q	V	.	.	.	.
11.117	1.2755	2.13	.Q	V	.	.	.	.
11.133	1.2784	2.13	.Q	V	.	.	.	.
11.150	1.2813	2.13	.Q	V	.	.	.	.
11.167	1.2843	2.13	.Q	V	.	.	.	.
11.183	1.2872	2.14	.Q	V	.	.	.	.
11.200	1.2902	2.15	.Q	V	.	.	.	.
11.217	1.2932	2.15	.Q	V	.	.	.	.
11.233	1.2961	2.16	.Q	V	.	.	.	.

11.250	1.2991	2.17	.Q	V	.	.	.	.
11.267	1.3021	2.17	.Q	V	.	.	.	.
11.283	1.3051	2.18	.Q	V	.	.	.	.
11.300	1.3081	2.18	.Q	V	.	.	.	.
11.317	1.3111	2.18	.Q	V	.	.	.	.
11.333	1.3141	2.19	.Q	V	.	.	.	.
11.350	1.3171	2.19	.Q	V	.	.	.	.
11.367	1.3202	2.19	.Q	V	.	.	.	.
11.383	1.3232	2.20	.Q	V	.	.	.	.
11.400	1.3262	2.20	.Q	V	.	.	.	.
11.417	1.3293	2.21	.Q	V	.	.	.	.
11.433	1.3323	2.22	.Q	V	.	.	.	.
11.450	1.3354	2.22	.Q	V	.	.	.	.
11.467	1.3384	2.23	.Q	V	.	.	.	.
11.483	1.3415	2.24	.Q	V	.	.	.	.
11.500	1.3446	2.24	.Q	V	.	.	.	.
11.517	1.3477	2.24	.Q	V	.	.	.	.
11.533	1.3508	2.25	.Q	V	.	.	.	.
11.550	1.3539	2.25	.Q	V	.	.	.	.
11.567	1.3570	2.25	.Q	V	.	.	.	.
11.583	1.3601	2.26	.Q	V	.	.	.	.
11.600	1.3632	2.26	.Q	V	.	.	.	.
11.617	1.3664	2.27	.Q	V	.	.	.	.
11.633	1.3695	2.28	.Q	V	.	.	.	.
11.650	1.3726	2.29	.Q	V	.	.	.	.
11.667	1.3758	2.29	.Q	V	.	.	.	.
11.683	1.3790	2.30	.Q	V	.	.	.	.
11.700	1.3821	2.31	.Q	V	.	.	.	.
11.717	1.3853	2.31	.Q	V	.	.	.	.
11.733	1.3885	2.31	.Q	V	.	.	.	.
11.750	1.3917	2.32	.Q	V	.	.	.	.
11.767	1.3949	2.32	.Q	V	.	.	.	.
11.783	1.3981	2.32	.Q	V	.	.	.	.
11.800	1.4013	2.33	.Q	V	.	.	.	.
11.817	1.4045	2.34	.Q	V	.	.	.	.
11.833	1.4078	2.34	.Q	V	.	.	.	.
11.850	1.4110	2.35	.Q	V	.	.	.	.
11.867	1.4143	2.36	.Q	V	.	.	.	.
11.883	1.4175	2.37	.Q	V	.	.	.	.
11.900	1.4208	2.38	.Q	V	.	.	.	.
11.917	1.4241	2.38	.Q	V	.	.	.	.
11.933	1.4274	2.39	.Q	V	.	.	.	.
11.950	1.4307	2.39	.Q	V	.	.	.	.
11.967	1.4340	2.40	.Q	V	.	.	.	.
11.983	1.4373	2.40	.Q	V	.	.	.	.
12.000	1.4406	2.41	.Q	V	.	.	.	.
12.017	1.4440	2.47	.Q	V	.	.	.	.
12.033	1.4476	2.64	.Q	V	.	.	.	.
12.050	1.4515	2.82	.Q	V	.	.	.	.
12.067	1.4556	3.00	.Q	V	.	.	.	.

12.083	1.4600	3.18	.Q	V.	.	.	.
12.100	1.4647	3.36	.Q	V.	.	.	.
12.117	1.4695	3.52	.Q	V.	.	.	.
12.133	1.4744	3.55	.Q	V.	.	.	.
12.150	1.4793	3.56	.Q	V.	.	.	.
12.167	1.4842	3.56	.Q	V.	.	.	.
12.183	1.4891	3.57	.Q	V.	.	.	.
12.200	1.4940	3.57	.Q	V.	.	.	.
12.217	1.4990	3.58	.Q	V.	.	.	.
12.233	1.5039	3.59	.Q	V.	.	.	.
12.250	1.5089	3.60	.Q	V.	.	.	.
12.267	1.5139	3.62	.Q	V.	.	.	.
12.283	1.5189	3.63	.Q	V.	.	.	.
12.300	1.5239	3.64	.Q	V.	.	.	.
12.317	1.5289	3.66	.Q	V.	.	.	.
12.333	1.5340	3.67	.Q	V.	.	.	.
12.350	1.5390	3.68	.Q	V.	.	.	.
12.367	1.5441	3.68	.Q	V.	.	.	.
12.383	1.5492	3.69	.Q	V.	.	.	.
12.400	1.5543	3.70	.Q	V.	.	.	.
12.417	1.5594	3.70	.Q	V.	.	.	.
12.433	1.5645	3.71	.Q	V	.	.	.
12.450	1.5696	3.73	.Q	V	.	.	.
12.467	1.5748	3.74	.Q	V	.	.	.
12.483	1.5799	3.75	.Q	V	.	.	.
12.500	1.5851	3.77	.Q	V	.	.	.
12.517	1.5903	3.78	.Q	V	.	.	.
12.533	1.5956	3.80	.Q	V	.	.	.
12.550	1.6008	3.81	.Q	V	.	.	.
12.567	1.6061	3.82	.Q	V	.	.	.
12.583	1.6113	3.82	.Q	V	.	.	.
12.600	1.6166	3.83	.Q	V	.	.	.
12.617	1.6219	3.84	.Q	V	.	.	.
12.633	1.6272	3.85	.Q	V	.	.	.
12.650	1.6325	3.86	.Q	V	.	.	.
12.667	1.6378	3.87	.Q	V	.	.	.
12.683	1.6432	3.89	.Q	V	.	.	.
12.700	1.6486	3.90	.Q	V	.	.	.
12.717	1.6540	3.92	.Q	V	.	.	.
12.733	1.6594	3.94	.Q	V	.	.	.
12.750	1.6648	3.95	.Q	V	.	.	.
12.767	1.6703	3.96	.Q	V	.	.	.
12.783	1.6758	3.97	.Q	V	.	.	.
12.800	1.6812	3.98	.Q	V	.	.	.
12.817	1.6867	3.98	.Q	V	.	.	.
12.833	1.6922	3.99	.Q	V	.	.	.
12.850	1.6977	4.00	.Q	V	.	.	.
12.867	1.7033	4.02	.Q	V	.	.	.
12.883	1.7088	4.03	.Q	V	.	.	.
12.900	1.7144	4.05	.Q	V	.	.	.

12.917	1.7200	4.07	.Q	.V	.	.	.
12.933	1.7256	4.09	.Q	.V	.	.	.
12.950	1.7313	4.10	.Q	.V	.	.	.
12.967	1.7370	4.12	.Q	.V	.	.	.
12.983	1.7426	4.13	. Q	.V	.	.	.
13.000	1.7483	4.14	. Q	.V	.	.	.
13.017	1.7541	4.14	. Q	.V	.	.	.
13.033	1.7598	4.15	. Q	.V	.	.	.
13.050	1.7655	4.16	. Q	.V	.	.	.
13.067	1.7713	4.17	. Q	.V	.	.	.
13.083	1.7770	4.19	. Q	.V	.	.	.
13.100	1.7828	4.21	. Q	.V	.	.	.
13.117	1.7887	4.23	. Q	.V	.	.	.
13.133	1.7945	4.25	. Q	.V	.	.	.
13.150	1.8004	4.27	. Q	.V	.	.	.
13.167	1.8063	4.29	. Q	.V	.	.	.
13.183	1.8122	4.30	. Q	.V	.	.	.
13.200	1.8182	4.31	. Q	.V	.	.	.
13.217	1.8241	4.32	. Q	.V	.	.	.
13.233	1.8301	4.33	. Q	.V	.	.	.
13.250	1.8361	4.34	. Q	.V	.	.	.
13.267	1.8421	4.35	. Q	.V	.	.	.
13.283	1.8481	4.37	. Q	.V	.	.	.
13.300	1.8542	4.39	. Q	.V	.	.	.
13.317	1.8602	4.41	. Q	.V	.	.	.
13.333	1.8663	4.44	. Q	.V	.	.	.
13.350	1.8725	4.46	. Q	. V	.	.	.
13.367	1.8787	4.48	. Q	. V	.	.	.
13.383	1.8848	4.50	. Q	. V	.	.	.
13.400	1.8911	4.51	. Q	. V	.	.	.
13.417	1.8973	4.52	. Q	. V	.	.	.
13.433	1.9035	4.53	. Q	. V	.	.	.
13.450	1.9098	4.54	. Q	. V	.	.	.
13.467	1.9161	4.56	. Q	. V	.	.	.
13.483	1.9224	4.57	. Q	. V	.	.	.
13.500	1.9287	4.59	. Q	. V	.	.	.
13.517	1.9350	4.61	. Q	. V	.	.	.
13.533	1.9414	4.64	. Q	. V	.	.	.
13.550	1.9478	4.66	. Q	. V	.	.	.
13.567	1.9543	4.69	. Q	. V	.	.	.
13.583	1.9608	4.71	. Q	. V	.	.	.
13.600	1.9673	4.73	. Q	. V	.	.	.
13.617	1.9738	4.74	. Q	. V	.	.	.
13.633	1.9804	4.76	. Q	. V	.	.	.
13.650	1.9870	4.77	. Q	. V	.	.	.
13.667	1.9935	4.78	. Q	. V	.	.	.
13.683	2.0002	4.79	. Q	. V	.	.	.
13.700	2.0068	4.81	. Q	. V	.	.	.
13.717	2.0134	4.84	. Q	. V	.	.	.
13.733	2.0202	4.87	. Q	. V	.	.	.

13.750	2.0269	4.90	. Q	. V	.	.	.
13.767	2.0337	4.92	. Q	. V	.	.	.
13.783	2.0405	4.95	. Q	. V	.	.	.
13.800	2.0474	4.98	. Q	. V	.	.	.
13.817	2.0542	4.99	. Q	. V	.	.	.
13.833	2.0611	5.01	. Q	. V	.	.	.
13.850	2.0681	5.02	. Q	. V	.	.	.
13.867	2.0750	5.04	. Q	. V	.	.	.
13.883	2.0820	5.05	. Q	. V	.	.	.
13.900	2.0889	5.07	. Q	. V	.	.	.
13.917	2.0960	5.10	. Q	. V	.	.	.
13.933	2.1030	5.13	. Q	. V	.	.	.
13.950	2.1101	5.16	. Q	. V	.	.	.
13.967	2.1173	5.19	. Q	. V	.	.	.
13.983	2.1245	5.22	. Q	. V	.	.	.
14.000	2.1317	5.26	. Q	. V	.	.	.
14.017	2.1390	5.28	. Q	. V	.	.	.
14.033	2.1463	5.29	. Q	. V	.	.	.
14.050	2.1536	5.30	. Q	. V	.	.	.
14.067	2.1609	5.31	. Q	. V	.	.	.
14.083	2.1682	5.32	. Q	. V	.	.	.
14.100	2.1756	5.33	. Q	. V	.	.	.
14.117	2.1830	5.35	. Q	. V	.	.	.
14.133	2.1904	5.38	. Q	. V	.	.	.
14.150	2.1978	5.41	. Q	. V	.	.	.
14.167	2.2053	5.44	. Q	. V	.	.	.
14.183	2.2128	5.47	. Q	. V	.	.	.
14.200	2.2204	5.50	. Q	. V	.	.	.
14.217	2.2280	5.54	. Q	. V	.	.	.
14.233	2.2357	5.56	. Q	. V	.	.	.
14.250	2.2434	5.58	. Q	. V	.	.	.
14.267	2.2511	5.60	. Q	. V	.	.	.
14.283	2.2588	5.62	. Q	. V	.	.	.
14.300	2.2666	5.64	. Q	. V	.	.	.
14.317	2.2744	5.66	. Q	. V	.	.	.
14.333	2.2823	5.69	. Q	. V	.	.	.
14.350	2.2902	5.74	. Q	. V	.	.	.
14.367	2.2981	5.78	. Q	. V	.	.	.
14.383	2.3061	5.83	. Q	. V	.	.	.
14.400	2.3142	5.87	. Q	. V	.	.	.
14.417	2.3224	5.92	. Q	. V	.	.	.
14.433	2.3306	5.96	. Q	. V	.	.	.
14.450	2.3388	5.98	. Q	. V	.	.	.
14.467	2.3471	6.01	. Q	. V	.	.	.
14.483	2.3554	6.03	. Q	. V	.	.	.
14.500	2.3638	6.06	. Q	. V	.	.	.
14.517	2.3721	6.08	. Q	. V	.	.	.
14.533	2.3805	6.11	. Q	. V	.	.	.
14.550	2.3890	6.16	. Q	. V	.	.	.
14.567	2.3976	6.21	. Q	. V	.	.	.

14.583	2.4062	6.27	. Q	. V	.	.	.
14.600	2.4149	6.32	. Q	. V	.	.	.
14.617	2.4237	6.37	. Q	. V	.	.	.
14.633	2.4325	6.43	. Q	. V	.	.	.
14.650	2.4415	6.47	. Q	. V	.	.	.
14.667	2.4504	6.50	. Q	. V	.	.	.
14.683	2.4594	6.53	. Q	. V	.	.	.
14.700	2.4685	6.56	. Q	. V	.	.	.
14.717	2.4775	6.59	. Q	. V	.	.	.
14.733	2.4867	6.62	. Q	. V	.	.	.
14.750	2.4958	6.66	. Q	. V	.	.	.
14.767	2.5051	6.73	. Q	. V	.	.	.
14.783	2.5145	6.80	. Q	. V	.	.	.
14.800	2.5239	6.87	. Q	. V	.	.	.
14.817	2.5335	6.94	. Q	. V	.	.	.
14.833	2.5431	7.01	. Q	. V	.	.	.
14.850	2.5529	7.07	. Q	. V	.	.	.
14.867	2.5627	7.12	. Q	. V	.	.	.
14.883	2.5726	7.16	. Q	. V	.	.	.
14.900	2.5825	7.20	. Q	. V	.	.	.
14.917	2.5924	7.23	. Q	. V	.	.	.
14.933	2.6024	7.27	. Q	. V	.	.	.
14.950	2.6125	7.31	. Q	. V	.	.	.
14.967	2.6227	7.38	. Q	. V	.	.	.
14.983	2.6330	7.47	. Q	. V	.	.	.
15.000	2.6434	7.56	. Q	. V	.	.	.
15.017	2.6539	7.65	. Q	. V	.	.	.
15.033	2.6646	7.74	. Q	. V	.	.	.
15.050	2.6754	7.83	. Q	. V	.	.	.
15.067	2.6863	7.91	. Q	. V	.	.	.
15.083	2.6973	7.97	. Q	. V	.	.	.
15.100	2.7083	8.02	. Q	. V	.	.	.
15.117	2.7194	8.07	. Q	. V	.	.	.
15.133	2.7306	8.12	. Q	. V	.	.	.
15.150	2.7419	8.18	. Q	. V	.	.	.
15.167	2.7532	8.24	. Q	. V	.	.	.
15.183	2.7647	8.35	. Q	. V	.	.	.
15.200	2.7764	8.48	. Q	. V	.	.	.
15.217	2.7883	8.60	. Q	. V	.	.	.
15.233	2.8003	8.73	. Q	. V	.	.	.
15.250	2.8125	8.85	. Q	. V	.	.	.
15.267	2.8248	8.98	. Q	. V	.	.	.
15.283	2.8373	9.07	. Q	. V	.	.	.
15.300	2.8499	9.15	. Q	. V	.	.	.
15.317	2.8626	9.22	. Q	. V	.	.	.
15.333	2.8755	9.30	. Q	. V	.	.	.
15.350	2.8884	9.38	. Q	. V	.	.	.
15.367	2.9014	9.45	. Q	. V	.	.	.
15.383	2.9144	9.47	. Q	. V	.	.	.
15.400	2.9274	9.40	. Q	. V	.	.	.

15.417	2.9402	9.32	.	Q	.	V	.	.	.
15.433	2.9529	9.24	.	Q	.	V	.	.	.
15.450	2.9656	9.16	.	Q	.	V	.	.	.
15.467	2.9781	9.09	.	Q	.	V	.	.	.
15.483	2.9905	9.04	.	Q	.	V	.	.	.
15.500	3.0031	9.14	.	Q	.	V	.	.	.
15.517	3.0159	9.26	.	Q	.	V	.	.	.
15.533	3.0288	9.38	.	Q	.	V	.	.	.
15.550	3.0419	9.50	.	Q	.	V	.	.	.
15.567	3.0552	9.63	.	Q	.	V	.	.	.
15.583	3.0686	9.75	.	Q	.	V	.	.	.
15.600	3.0824	10.03	.	Q	.	V	.	.	.
15.617	3.0967	10.37	.	Q	.	V	.	.	.
15.633	3.1115	10.72	.	Q	.	V	.	.	.
15.650	3.1267	11.06	.	Q	.	V	.	.	.
15.667	3.1424	11.40	.	Q	.	V	.	.	.
15.683	3.1586	11.74	.	Q	.	V	.	.	.
15.700	3.1752	12.10	.	Q	.	V	.	.	.
15.717	3.1924	12.49	.	Q	.	V	.	.	.
15.733	3.2102	12.88	.	Q	.	V	.	.	.
15.750	3.2285	13.27	.	Q	.	V	.	.	.
15.767	3.2473	13.66	.	Q	.	V	.	.	.
15.783	3.2666	14.05	.	Q	.	V	.	.	.
15.800	3.2867	14.56	.	Q	.	.V	.	.	.
15.817	3.3081	15.53	.	Q	.	.V	.	.	.
15.833	3.3309	16.55	.	Q	.	.V	.	.	.
15.850	3.3551	17.58	.	Q	.	.V	.	.	.
15.867	3.3807	18.60	.	Q	.	.V	.	.	.
15.883	3.4077	19.62	.	Q	.	.V	.	.	.
15.900	3.4362	20.65	.	Q	.	.V	.	.	.
15.917	3.4662	21.81	.	Q	.	.V	.	.	.
15.933	3.4979	23.01	.	.Q	.	.V	.	.	.
15.950	3.5313	24.21	.	.Q	.	.V	.	.	.
15.967	3.5663	25.42	.	.Q	.	.V	.	.	.
15.983	3.6029	26.62	.	.Q	.	.V	.	.	.
16.000	3.6413	27.82	.	.Q	.	.V	.	.	.
16.017	3.6863	32.71	.	.	Q	.V	.	.	.
16.033	3.7432	41.28	.	.	Q	V	.	.	.
16.050	3.8118	49.85	.	.	.	Q	.	.	.
16.067	3.8923	58.42	.	.	.	V	Q	.	.
16.083	3.9846	67.00	.	.	.	V	.	Q	.
16.100	4.0887	75.57	.	.	.	V	.	.	Q
16.117	4.2023	82.51	.	.	.	V	.	.	Q
16.133	4.2990	70.16	.	.	.	V	.	Q	.
16.150	4.3813	59.79	.	.	.	.	Q	.	.
16.167	4.4494	49.41	.	.	.	Q	V	.	.
16.183	4.5032	39.03	.	.	Q	.	V	.	.
16.200	4.5426	28.66	.	.	Q	.	V	.	.
16.217	4.5687	18.95	.	.	Q	.	V	.	.
16.233	4.5910	16.15	.	Q	.	.	V	.	.

16.250	4.6119	15.15	.	Q	.	.	.	V	.
16.267	4.6314	14.15	.	Q	.	.	.	V	.
16.283	4.6495	13.15	.	Q	.	.	.	V	.
16.300	4.6662	12.15	.	Q	.	.	.	V	.
16.317	4.6816	11.16	.	Q	.	.	.	V	.
16.333	4.6962	10.59	.	Q	.	.	.	V	.
16.350	4.7104	10.35	.	Q	.	.	.	V	.
16.367	4.7243	10.10	.	Q	.	.	.	V	.
16.383	4.7379	9.86	.	Q	.	.	.	V	.
16.400	4.7512	9.62	.	Q	.	.	.	V	.
16.417	4.7641	9.38	.	Q	.	.	.	V	.
16.433	4.7767	9.18	.	Q	.	.	.	V	.
16.450	4.7892	9.08	.	Q	.	.	.	V	.
16.467	4.8016	8.99	.	Q	.	.	.	V	.
16.483	4.8139	8.89	.	Q	.	.	.	V	.
16.500	4.8260	8.80	.	Q	.	.	.	V	.
16.517	4.8380	8.70	.	Q	.	.	.	.V	.
16.533	4.8498	8.60	.	Q	.	.	.	.V	.
16.550	4.8615	8.45	.	Q	.	.	.	.V	.
16.567	4.8729	8.29	.	Q	.	.	.	.V	.
16.583	4.8841	8.13	.	Q	.	.	.	.V	.
16.600	4.8951	7.97	.	Q	.	.	.	.V	.
16.617	4.9058	7.82	.	Q	.	.	.	.V	.
16.633	4.9164	7.66	.	Q	.	.	.	.V	.
16.650	4.9267	7.52	.	Q	.	.	.	.V	.
16.667	4.9369	7.41	.	Q	.	.	.	.V	.
16.683	4.9470	7.29	.	Q	.	.	.	.V	.
16.700	4.9568	7.17	.	Q	.	.	.	.V	.
16.717	4.9666	7.05	.	Q	.	.	.	.V	.
16.733	4.9761	6.93	.	Q	.	.	.	.V	.
16.750	4.9855	6.83	.	Q	.	.	.	.V	.
16.767	4.9948	6.73	.	Q	.	.	.	.V	.
16.783	5.0039	6.64	.	Q	.	.	.	.V	.
16.800	5.0130	6.55	.	Q	.	.	.	.V	.
16.817	5.0219	6.46	.	Q	.	.	.	.V	.
16.833	5.0306	6.37	.	Q	.	.	.	.V	.
16.850	5.0393	6.28	.	Q	.	.	.	.V	.
16.867	5.0478	6.20	.	Q	.	.	.	.V	.
16.883	5.0563	6.13	.	Q	.	.	.	.V	.
16.900	5.0646	6.05	.	Q	.	.	.	.V	.
16.917	5.0728	5.98	.	Q	.	.	.	.V	.
16.933	5.0810	5.90	.	Q	.	.	.	.V	.
16.950	5.0890	5.83	.	Q	.	.	.	.V	.
16.967	5.0969	5.77	.	Q	.	.	.	.V	.
16.983	5.1048	5.70	.	Q	.	.	.	.V	.
17.000	5.1126	5.64	.	Q	.	.	.	.V	.
17.017	5.1202	5.58	.	Q	.	.	.	.V	.
17.033	5.1278	5.52	.	Q	.	.	.	.V	.
17.050	5.1354	5.46	.	Q	.	.	.	.V	.
17.067	5.1428	5.41	.	Q	.	.	.	.V	.

17.083	5.1502	5.37	. Q	.	.	.	V	.
17.100	5.1575	5.33	. Q	.	.	.	V	.
17.117	5.1648	5.29	. Q	.	.	.	V	.
17.133	5.1720	5.25	. Q	.	.	.	V	.
17.150	5.1792	5.21	. Q	.	.	.	V	.
17.167	5.1863	5.17	. Q	.	.	.	V	.
17.183	5.1934	5.12	. Q	.	.	.	V	.
17.200	5.2004	5.08	. Q	.	.	.	V	.
17.217	5.2073	5.03	. Q	.	.	.	V	.
17.233	5.2142	4.99	. Q	.	.	.	V	.
17.250	5.2210	4.94	. Q	.	.	.	V	.
17.267	5.2278	4.90	. Q	.	.	.	V	.
17.283	5.2344	4.86	. Q	.	.	.	V	.
17.300	5.2411	4.82	. Q	.	.	.	V	.
17.317	5.2477	4.78	. Q	.	.	.	V	.
17.333	5.2542	4.74	. Q	.	.	.	V	.
17.350	5.2607	4.70	. Q	.	.	.	V	.
17.367	5.2671	4.66	. Q	.	.	.	V	.
17.383	5.2735	4.63	. Q	.	.	.	V	.
17.400	5.2798	4.59	. Q	.	.	.	V	.
17.417	5.2861	4.56	. Q	.	.	.	V	.
17.433	5.2923	4.52	. Q	.	.	.	V	.
17.450	5.2985	4.49	. Q	.	.	.	V	.
17.467	5.3046	4.45	. Q	.	.	.	V	.
17.483	5.3107	4.42	. Q	.	.	.	V	.
17.500	5.3168	4.39	. Q	.	.	.	V	.
17.517	5.3228	4.36	. Q	.	.	.	V	.
17.533	5.3287	4.33	. Q	.	.	.	V	.
17.550	5.3346	4.30	. Q	.	.	.	V	.
17.567	5.3405	4.27	. Q	.	.	.	V	.
17.583	5.3464	4.24	. Q	.	.	.	V	.
17.600	5.3522	4.21	. Q	.	.	.	V	.
17.617	5.3579	4.18	. Q	.	.	.	V	.
17.633	5.3636	4.15	. Q	.	.	.	V	.
17.650	5.3693	4.12	. Q	.	.	.	V	.
17.667	5.3750	4.10	. Q	.	.	.	V	.
17.683	5.3806	4.07	. Q	.	.	.	V	.
17.700	5.3861	4.04	. Q	.	.	.	V	.
17.717	5.3917	4.02	. Q	.	.	.	V	.
17.733	5.3972	3.99	. Q	.	.	.	V	.
17.750	5.4026	3.97	. Q	.	.	.	V	.
17.767	5.4081	3.94	. Q	.	.	.	V	.
17.783	5.4135	3.92	. Q	.	.	.	V	.
17.800	5.4188	3.89	. Q	.	.	.	V	.
17.817	5.4242	3.87	. Q	.	.	.	V	.
17.833	5.4295	3.85	. Q	.	.	.	V	.
17.850	5.4347	3.83	. Q	.	.	.	V	.
17.867	5.4400	3.80	. Q	.	.	.	V	.
17.883	5.4452	3.78	. Q	.	.	.	V	.
17.900	5.4503	3.76	. Q	.	.	.	V	.

17.917	5.4555	3.74	. Q	.	.	.	V	.
17.933	5.4606	3.72	. Q	.	.	.	V	.
17.950	5.4657	3.69	. Q	.	.	.	V	.
17.967	5.4708	3.67	. Q	.	.	.	V	.
17.983	5.4758	3.65	. Q	.	.	.	V	.
18.000	5.4808	3.63	. Q	.	.	.	V	.
18.017	5.4856	3.52	. Q	.	.	.	V	.
18.033	5.4902	3.34	. Q	.	.	.	V	.
18.050	5.4946	3.16	. Q	.	.	.	V	.
18.067	5.4987	2.98	. Q	.	.	.	V	.
18.083	5.5026	2.81	. Q	.	.	.	V	.
18.100	5.5062	2.63	. Q	.	.	.	V	.
18.117	5.5096	2.50	. Q	.	.	.	V	.
18.133	5.5130	2.47	. Q	.	.	.	V	.
18.150	5.5164	2.45	. Q	.	.	.	V	.
18.167	5.5197	2.43	. Q	.	.	.	V	.
18.183	5.5231	2.40	. Q	.	.	.	V	.
18.200	5.5263	2.38	. Q	.	.	.	V	.
18.217	5.5296	2.36	. Q	.	.	.	V	.
18.233	5.5328	2.34	. Q	.	.	.	V	.
18.250	5.5360	2.33	. Q	.	.	.	V	.
18.267	5.5392	2.32	. Q	.	.	.	V	.
18.283	5.5424	2.31	. Q	.	.	.	V	.
18.300	5.5455	2.30	. Q	.	.	.	V	.
18.317	5.5487	2.29	. Q	.	.	.	V	.
18.333	5.5518	2.28	. Q	.	.	.	V	.
18.350	5.5549	2.26	. Q	.	.	.	V	.
18.367	5.5581	2.25	. Q	.	.	.	V	.
18.383	5.5611	2.24	. Q	.	.	.	V	.
18.400	5.5642	2.23	. Q	.	.	.	V	.
18.417	5.5673	2.22	. Q	.	.	.	V	.
18.433	5.5703	2.21	. Q	.	.	.	V	.
18.450	5.5734	2.20	. Q	.	.	.	V	.
18.467	5.5764	2.19	. Q	.	.	.	V	.
18.483	5.5794	2.18	. Q	.	.	.	V	.
18.500	5.5824	2.17	. Q	.	.	.	V	.
18.517	5.5854	2.16	. Q	.	.	.	V	.
18.533	5.5883	2.15	. Q	.	.	.	V	.
18.550	5.5913	2.15	. Q	.	.	.	V	.
18.567	5.5942	2.14	. Q	.	.	.	V	.
18.583	5.5972	2.13	. Q	.	.	.	V	.
18.600	5.6001	2.12	. Q	.	.	.	V	.
18.617	5.6030	2.11	. Q	.	.	.	V	.
18.633	5.6059	2.10	. Q	.	.	.	V	.
18.650	5.6088	2.09	. Q	.	.	.	V	.
18.667	5.6116	2.08	. Q	.	.	.	V	.
18.683	5.6145	2.07	. Q	.	.	.	V	.
18.700	5.6173	2.07	. Q	.	.	.	V	.
18.717	5.6202	2.06	Q	.	.	.	V	.
18.733	5.6230	2.05	Q	.	.	.	V	.

18.750	5.6258	2.04	Q	.	.	.	V	.
18.767	5.6286	2.03	Q	.	.	.	V	.
18.783	5.6314	2.02	Q	.	.	.	V	.
18.800	5.6342	2.02	Q	.	.	.	V	.
18.817	5.6369	2.01	Q	.	.	.	V	.
18.833	5.6397	2.00	Q	.	.	.	V	.
18.850	5.6424	1.99	Q	.	.	.	V	.
18.867	5.6452	1.99	Q	.	.	.	V	.
18.883	5.6479	1.98	Q	.	.	.	V	.
18.900	5.6506	1.97	Q	.	.	.	V	.
18.917	5.6533	1.96	Q	.	.	.	V	.
18.933	5.6560	1.96	Q	.	.	.	V	.
18.950	5.6587	1.95	Q	.	.	.	V	.
18.967	5.6614	1.94	Q	.	.	.	V	.
18.983	5.6640	1.93	Q	.	.	.	V	.
19.000	5.6667	1.93	Q	.	.	.	V	.
19.017	5.6693	1.92	Q	.	.	.	V	.
19.033	5.6720	1.91	Q	.	.	.	V	.
19.050	5.6746	1.91	Q	.	.	.	V	.
19.067	5.6772	1.90	Q	.	.	.	V	.
19.083	5.6798	1.89	Q	.	.	.	V	.
19.100	5.6824	1.89	Q	.	.	.	V	.
19.117	5.6850	1.88	Q	.	.	.	V	.
19.133	5.6876	1.87	Q	.	.	.	V	.
19.150	5.6902	1.87	Q	.	.	.	V	.
19.167	5.6927	1.86	Q	.	.	.	V	.
19.183	5.6953	1.85	Q	.	.	.	V	.
19.200	5.6978	1.85	Q	.	.	.	V	.
19.217	5.7004	1.84	Q	.	.	.	V	.
19.233	5.7029	1.83	Q	.	.	.	V	.
19.250	5.7054	1.83	Q	.	.	.	V	.
19.267	5.7079	1.82	Q	.	.	.	V	.
19.283	5.7104	1.82	Q	.	.	.	V	.
19.300	5.7129	1.81	Q	.	.	.	V	.
19.317	5.7154	1.80	Q	.	.	.	V	.
19.333	5.7179	1.80	Q	.	.	.	V	.
19.350	5.7203	1.79	Q	.	.	.	V	.
19.367	5.7228	1.79	Q	.	.	.	V	.
19.383	5.7253	1.78	Q	.	.	.	V	.
19.400	5.7277	1.78	Q	.	.	.	V	.
19.417	5.7301	1.77	Q	.	.	.	V	.
19.433	5.7326	1.76	Q	.	.	.	V	.
19.450	5.7350	1.76	Q	.	.	.	V	.
19.467	5.7374	1.75	Q	.	.	.	V	.
19.483	5.7398	1.75	Q	.	.	.	V	.
19.500	5.7422	1.74	Q	.	.	.	V	.
19.517	5.7446	1.74	Q	.	.	.	V	.
19.533	5.7470	1.73	Q	.	.	.	V	.
19.550	5.7494	1.73	Q	.	.	.	V	.
19.567	5.7517	1.72	Q	.	.	.	V	.

19.583	5.7541	1.72	Q	.	.	.	V	.
19.600	5.7565	1.71	Q	.	.	.	V	.
19.617	5.7588	1.71	Q	.	.	.	V	.
19.633	5.7611	1.70	Q	.	.	.	V	.
19.650	5.7635	1.70	Q	.	.	.	V	.
19.667	5.7658	1.69	Q	.	.	.	V	.
19.683	5.7681	1.68	Q	.	.	.	V	.
19.700	5.7704	1.68	Q	.	.	.	V	.
19.717	5.7727	1.68	Q	.	.	.	V	.
19.733	5.7750	1.67	Q	.	.	.	V	.
19.750	5.7773	1.67	Q	.	.	.	V	.
19.767	5.7796	1.66	Q	.	.	.	V	.
19.783	5.7819	1.66	Q	.	.	.	V	.
19.800	5.7842	1.65	Q	.	.	.	V	.
19.817	5.7865	1.65	Q	.	.	.	V	.
19.833	5.7887	1.64	Q	.	.	.	V	.
19.850	5.7910	1.64	Q	.	.	.	V	.
19.867	5.7932	1.63	Q	.	.	.	V	.
19.883	5.7955	1.63	Q	.	.	.	V	.
19.900	5.7977	1.62	Q	.	.	.	V	.
19.917	5.7999	1.62	Q	.	.	.	V	.
19.933	5.8021	1.61	Q	.	.	.	V	.
19.950	5.8044	1.61	Q	.	.	.	V	.
19.967	5.8066	1.61	Q	.	.	.	V	.
19.983	5.8088	1.60	Q	.	.	.	V	.
20.000	5.8110	1.60	Q	.	.	.	V	.

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
 (Note: 100% of Peak Flow Rate estimate assumed to have
 an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
=====	=====
0%	1201.0
10%	420.0
20%	120.0
30%	75.0
40%	50.0
50%	45.0
60%	35.0
70%	30.0
80%	20.0
90%	10.0

FLOW PROCESS FROM NODE 580.00 TO NODE 580.00 IS CODE = 3.2

>>>>FLOW-THROUGH DETENTION BASIN ROUTING MODEL APPLIED TO STREAM #1<<<<

	18	4.25	63.37	2.070		
	19	4.50	78.86	2.150		
=====						
MODIFIED-PULS BASIN ROUTING MODEL RESULTS(1-MINUTE COMPUTATION INTERVALS):						
(Note: Computed EFFECTIVE DEPTH and VOLUME are estimated at the clock time;						
MEAN OUTFLOW is the average value during the unit interval.)						
	CLOCK				MEAN	
	TIME	DEAD-STORAGE	INFLOW	LOSS	EFFECTIVE	EFFECTIVE
	(HRS)	FILLED(AF)	(CFS)	(CFS)	DEPTH(FT)	VOLUME(AF)

	10.000	0.000	1.87	0.00	0.85	1.8 0.322
	10.017	0.000	1.88	0.00	0.86	1.8 0.322
	10.033	0.000	1.88	0.00	0.86	1.8 0.322
	10.050	0.000	1.88	0.00	0.86	1.8 0.322
	10.067	0.000	1.88	0.00	0.86	1.8 0.322
	10.083	0.000	1.88	0.00	0.86	1.8 0.322
	10.100	0.000	1.89	0.00	0.86	1.8 0.322
	10.117	0.000	1.89	0.00	0.86	1.8 0.322
	10.133	0.000	1.89	0.00	0.86	1.8 0.322
	10.150	0.000	1.90	0.00	0.86	1.8 0.322
	10.167	0.000	1.90	0.00	0.86	1.8 0.322
	10.183	0.000	1.91	0.00	0.86	1.8 0.323
	10.200	0.000	1.91	0.00	0.86	1.8 0.323
	10.217	0.000	1.92	0.00	0.86	1.8 0.323
	10.233	0.000	1.92	0.00	0.86	1.8 0.323
	10.250	0.000	1.92	0.00	0.86	1.8 0.323
	10.267	0.000	1.92	0.00	0.86	1.9 0.323
	10.283	0.000	1.93	0.00	0.86	1.9 0.323
	10.300	0.000	1.93	0.00	0.86	1.9 0.323
	10.317	0.000	1.93	0.00	0.86	1.9 0.323
	10.333	0.000	1.93	0.00	0.86	1.9 0.323
	10.350	0.000	1.94	0.00	0.86	1.9 0.324
	10.367	0.000	1.94	0.00	0.86	1.9 0.324
	10.383	0.000	1.95	0.00	0.86	1.9 0.324
	10.400	0.000	1.95	0.00	0.86	1.9 0.324
	10.417	0.000	1.96	0.00	0.86	1.9 0.324
	10.433	0.000	1.96	0.00	0.86	1.9 0.324
	10.450	0.000	1.96	0.00	0.86	1.9 0.324
	10.467	0.000	1.97	0.00	0.86	1.9 0.324
	10.483	0.000	1.97	0.00	0.86	1.9 0.324
	10.500	0.000	1.97	0.00	0.86	1.9 0.324
	10.517	0.000	1.97	0.00	0.86	1.9 0.325
	10.533	0.000	1.98	0.00	0.86	1.9 0.325
	10.550	0.000	1.98	0.00	0.86	1.9 0.325
	10.567	0.000	1.99	0.00	0.86	1.9 0.325
	10.583	0.000	1.99	0.00	0.86	1.9 0.325
	10.600	0.000	2.00	0.00	0.86	1.9 0.325

10.617	0.000	2.00	0.00	0.86	1.9	0.325
10.633	0.000	2.01	0.00	0.86	1.9	0.325
10.650	0.000	2.01	0.00	0.86	1.9	0.325
10.667	0.000	2.01	0.00	0.86	1.9	0.326
10.683	0.000	2.02	0.00	0.86	1.9	0.326
10.700	0.000	2.02	0.00	0.86	1.9	0.326
10.717	0.000	2.02	0.00	0.86	1.9	0.326
10.733	0.000	2.02	0.00	0.86	1.9	0.326
10.750	0.000	2.03	0.00	0.86	2.0	0.326
10.767	0.000	2.03	0.00	0.86	2.0	0.326
10.783	0.000	2.04	0.00	0.86	2.0	0.326
10.800	0.000	2.04	0.00	0.86	2.0	0.326
10.817	0.000	2.05	0.00	0.86	2.0	0.327
10.833	0.000	2.05	0.00	0.86	2.0	0.327
10.850	0.000	2.06	0.00	0.86	2.0	0.327
10.867	0.000	2.06	0.00	0.87	2.0	0.327
10.883	0.000	2.07	0.00	0.87	2.0	0.327
10.900	0.000	2.07	0.00	0.87	2.0	0.327
10.917	0.000	2.07	0.00	0.87	2.0	0.327
10.933	0.000	2.07	0.00	0.87	2.0	0.327
10.950	0.000	2.08	0.00	0.87	2.0	0.327
10.967	0.000	2.08	0.00	0.87	2.0	0.328
10.983	0.000	2.09	0.00	0.87	2.0	0.328
11.000	0.000	2.09	0.00	0.87	2.0	0.328
11.017	0.000	2.10	0.00	0.87	2.0	0.328
11.033	0.000	2.11	0.00	0.87	2.0	0.328
11.050	0.000	2.11	0.00	0.87	2.0	0.328
11.067	0.000	2.12	0.00	0.87	2.0	0.328
11.083	0.000	2.12	0.00	0.87	2.0	0.328
11.100	0.000	2.12	0.00	0.87	2.0	0.329
11.117	0.000	2.13	0.00	0.87	2.0	0.329
11.133	0.000	2.13	0.00	0.87	2.0	0.329
11.150	0.000	2.13	0.00	0.87	2.0	0.329
11.167	0.000	2.13	0.00	0.87	2.0	0.329
11.183	0.000	2.14	0.00	0.87	2.1	0.329
11.200	0.000	2.15	0.00	0.87	2.1	0.329
11.217	0.000	2.15	0.00	0.87	2.1	0.329
11.233	0.000	2.16	0.00	0.87	2.1	0.330
11.250	0.000	2.17	0.00	0.87	2.1	0.330
11.267	0.000	2.17	0.00	0.87	2.1	0.330
11.283	0.000	2.18	0.00	0.87	2.1	0.330
11.300	0.000	2.18	0.00	0.87	2.1	0.330
11.317	0.000	2.18	0.00	0.87	2.1	0.330
11.333	0.000	2.19	0.00	0.87	2.1	0.330
11.350	0.000	2.19	0.00	0.87	2.1	0.331
11.367	0.000	2.19	0.00	0.87	2.1	0.331
11.383	0.000	2.20	0.00	0.87	2.1	0.331
11.400	0.000	2.20	0.00	0.87	2.1	0.331
11.417	0.000	2.21	0.00	0.87	2.1	0.331
11.433	0.000	2.22	0.00	0.87	2.1	0.331

11.450	0.000	2.22	0.00	0.87	2.1	0.331
11.467	0.000	2.23	0.00	0.87	2.1	0.331
11.483	0.000	2.24	0.00	0.87	2.1	0.332
11.500	0.000	2.24	0.00	0.87	2.1	0.332
11.517	0.000	2.24	0.00	0.87	2.1	0.332
11.533	0.000	2.25	0.00	0.88	2.1	0.332
11.550	0.000	2.25	0.00	0.88	2.1	0.332
11.567	0.000	2.25	0.00	0.88	2.2	0.332
11.583	0.000	2.26	0.00	0.88	2.2	0.332
11.600	0.000	2.26	0.00	0.88	2.2	0.333
11.617	0.000	2.27	0.00	0.88	2.2	0.333
11.633	0.000	2.28	0.00	0.88	2.2	0.333
11.650	0.000	2.29	0.00	0.88	2.2	0.333
11.667	0.000	2.29	0.00	0.88	2.2	0.333
11.683	0.000	2.30	0.00	0.88	2.2	0.333
11.700	0.000	2.31	0.00	0.88	2.2	0.334
11.717	0.000	2.31	0.00	0.88	2.2	0.334
11.733	0.000	2.31	0.00	0.88	2.2	0.334
11.750	0.000	2.32	0.00	0.88	2.2	0.334
11.767	0.000	2.32	0.00	0.88	2.2	0.334
11.783	0.000	2.32	0.00	0.88	2.2	0.334
11.800	0.000	2.33	0.00	0.88	2.2	0.334
11.817	0.000	2.34	0.00	0.88	2.2	0.335
11.833	0.000	2.34	0.00	0.88	2.2	0.335
11.850	0.000	2.35	0.00	0.88	2.2	0.335
11.867	0.000	2.36	0.00	0.88	2.2	0.335
11.883	0.000	2.37	0.00	0.88	2.2	0.335
11.900	0.000	2.38	0.00	0.88	2.3	0.335
11.917	0.000	2.38	0.00	0.88	2.3	0.336
11.933	0.000	2.39	0.00	0.88	2.3	0.336
11.950	0.000	2.39	0.00	0.88	2.3	0.336
11.967	0.000	2.40	0.00	0.88	2.3	0.336
11.983	0.000	2.40	0.00	0.88	2.3	0.336
12.000	0.000	2.41	0.00	0.88	2.3	0.336
12.017	0.000	2.47	0.00	0.88	2.3	0.337
12.033	0.000	2.64	0.00	0.88	2.3	0.337
12.050	0.000	2.82	0.00	0.89	2.3	0.338
12.067	0.000	3.00	0.00	0.89	2.3	0.339
12.083	0.000	3.18	0.00	0.89	2.4	0.340
12.100	0.000	3.36	0.00	0.89	2.4	0.341
12.117	0.000	3.52	0.00	0.90	2.5	0.343
12.133	0.000	3.55	0.00	0.90	2.5	0.344
12.150	0.000	3.56	0.00	0.90	2.6	0.345
12.167	0.000	3.56	0.00	0.90	2.6	0.347
12.183	0.000	3.57	0.00	0.91	2.6	0.348
12.200	0.000	3.57	0.00	0.91	2.7	0.349
12.217	0.000	3.58	0.00	0.91	2.7	0.350
12.233	0.000	3.59	0.00	0.91	2.8	0.352
12.250	0.000	3.60	0.00	0.91	2.8	0.353
12.267	0.000	3.62	0.00	0.92	2.8	0.354

12.283	0.000	3.63	0.00	0.92	2.9	0.355
12.300	0.000	3.64	0.00	0.92	2.9	0.356
12.317	0.000	3.66	0.00	0.92	2.9	0.357
12.333	0.000	3.67	0.00	0.92	3.0	0.358
12.350	0.000	3.68	0.00	0.93	3.0	0.359
12.367	0.000	3.68	0.00	0.93	3.0	0.360
12.383	0.000	3.69	0.00	0.93	3.1	0.361
12.400	0.000	3.70	0.00	0.93	3.1	0.361
12.417	0.000	3.70	0.00	0.93	3.1	0.362
12.433	0.000	3.71	0.00	0.93	3.1	0.363
12.450	0.000	3.73	0.00	0.94	3.2	0.364
12.467	0.000	3.74	0.00	0.94	3.2	0.365
12.483	0.000	3.75	0.00	0.94	3.2	0.365
12.500	0.000	3.77	0.00	0.94	3.2	0.366
12.517	0.000	3.78	0.00	0.94	3.3	0.367
12.533	0.000	3.80	0.00	0.94	3.3	0.367
12.550	0.000	3.81	0.00	0.94	3.3	0.368
12.567	0.000	3.82	0.00	0.95	3.3	0.369
12.583	0.000	3.82	0.00	0.95	3.3	0.369
12.600	0.000	3.83	0.00	0.95	3.4	0.370
12.617	0.000	3.84	0.00	0.95	3.4	0.371
12.633	0.000	3.85	0.00	0.95	3.4	0.371
12.650	0.000	3.86	0.00	0.95	3.4	0.372
12.667	0.000	3.87	0.00	0.95	3.4	0.372
12.683	0.000	3.89	0.00	0.95	3.5	0.373
12.700	0.000	3.90	0.00	0.96	3.5	0.374
12.717	0.000	3.92	0.00	0.96	3.5	0.374
12.733	0.000	3.94	0.00	0.96	3.5	0.375
12.750	0.000	3.95	0.00	0.96	3.5	0.375
12.767	0.000	3.96	0.00	0.96	3.6	0.376
12.783	0.000	3.97	0.00	0.96	3.6	0.376
12.800	0.000	3.98	0.00	0.96	3.6	0.377
12.817	0.000	3.98	0.00	0.96	3.6	0.377
12.833	0.000	3.99	0.00	0.96	3.6	0.378
12.850	0.000	4.00	0.00	0.96	3.6	0.378
12.867	0.000	4.02	0.00	0.97	3.7	0.379
12.883	0.000	4.03	0.00	0.97	3.7	0.379
12.900	0.000	4.05	0.00	0.97	3.7	0.380
12.917	0.000	4.07	0.00	0.97	3.7	0.380
12.933	0.000	4.09	0.00	0.97	3.7	0.381
12.950	0.000	4.10	0.00	0.97	3.7	0.381
12.967	0.000	4.12	0.00	0.97	3.8	0.382
12.983	0.000	4.13	0.00	0.97	3.8	0.382
13.000	0.000	4.14	0.00	0.97	3.8	0.383
13.017	0.000	4.14	0.00	0.97	3.8	0.383
13.033	0.000	4.15	0.00	0.97	3.8	0.384
13.050	0.000	4.16	0.00	0.98	3.8	0.384
13.067	0.000	4.17	0.00	0.98	3.8	0.385
13.083	0.000	4.19	0.00	0.98	3.9	0.385
13.100	0.000	4.21	0.00	0.98	3.9	0.386

13.117	0.000	4.23	0.00	0.98	3.9	0.386
13.133	0.000	4.25	0.00	0.98	3.9	0.387
13.150	0.000	4.27	0.00	0.98	3.9	0.387
13.167	0.000	4.29	0.00	0.98	3.9	0.388
13.183	0.000	4.30	0.00	0.98	4.0	0.388
13.200	0.000	4.31	0.00	0.98	4.0	0.388
13.217	0.000	4.32	0.00	0.98	4.0	0.389
13.233	0.000	4.33	0.00	0.99	4.0	0.389
13.250	0.000	4.34	0.00	0.99	4.0	0.390
13.267	0.000	4.35	0.00	0.99	4.0	0.390
13.283	0.000	4.37	0.00	0.99	4.0	0.391
13.300	0.000	4.39	0.00	0.99	4.1	0.391
13.317	0.000	4.41	0.00	0.99	4.1	0.392
13.333	0.000	4.44	0.00	0.99	4.1	0.392
13.350	0.000	4.46	0.00	0.99	4.1	0.393
13.367	0.000	4.48	0.00	0.99	4.1	0.393
13.383	0.000	4.50	0.00	0.99	4.1	0.394
13.400	0.000	4.51	0.00	0.99	4.2	0.394
13.417	0.000	4.52	0.00	1.00	4.2	0.395
13.433	0.000	4.53	0.00	1.00	4.2	0.395
13.450	0.000	4.54	0.00	1.00	4.2	0.396
13.467	0.000	4.56	0.00	1.00	4.2	0.396
13.483	0.000	4.57	0.00	1.00	4.2	0.397
13.500	0.000	4.59	0.00	1.00	4.2	0.397
13.517	0.000	4.61	0.00	1.00	4.3	0.397
13.533	0.000	4.64	0.00	1.00	4.3	0.398
13.550	0.000	4.66	0.00	1.00	4.3	0.399
13.567	0.000	4.69	0.00	1.00	4.3	0.399
13.583	0.000	4.71	0.00	1.00	4.3	0.400
13.600	0.000	4.73	0.00	1.01	4.3	0.400
13.617	0.000	4.74	0.00	1.01	4.3	0.401
13.633	0.000	4.76	0.00	1.01	4.3	0.402
13.650	0.000	4.77	0.00	1.01	4.3	0.402
13.667	0.000	4.78	0.00	1.01	4.3	0.403
13.683	0.000	4.79	0.00	1.01	4.3	0.403
13.700	0.000	4.81	0.00	1.01	4.3	0.404
13.717	0.000	4.84	0.00	1.01	4.3	0.405
13.733	0.000	4.87	0.00	1.02	4.4	0.405
13.750	0.000	4.90	0.00	1.02	4.4	0.406
13.767	0.000	4.92	0.00	1.02	4.4	0.407
13.783	0.000	4.95	0.00	1.02	4.4	0.408
13.800	0.000	4.98	0.00	1.02	4.4	0.409
13.817	0.000	4.99	0.00	1.02	4.4	0.409
13.833	0.000	5.01	0.00	1.02	4.4	0.410
13.850	0.000	5.02	0.00	1.02	4.4	0.411
13.867	0.000	5.04	0.00	1.03	4.4	0.412
13.883	0.000	5.05	0.00	1.03	4.4	0.413
13.900	0.000	5.07	0.00	1.03	4.5	0.414
13.917	0.000	5.10	0.00	1.03	4.5	0.414
13.933	0.000	5.13	0.00	1.03	4.5	0.415

13.950	0.000	5.16	0.00	1.03	4.5	0.416
13.967	0.000	5.19	0.00	1.04	4.5	0.417
13.983	0.000	5.22	0.00	1.04	4.5	0.418
14.000	0.000	5.26	0.00	1.04	4.5	0.419
14.017	0.000	5.28	0.00	1.04	4.5	0.420
14.033	0.000	5.29	0.00	1.04	4.6	0.421
14.050	0.000	5.30	0.00	1.04	4.6	0.422
14.067	0.000	5.31	0.00	1.05	4.6	0.423
14.083	0.000	5.32	0.00	1.05	4.6	0.424
14.100	0.000	5.33	0.00	1.05	4.6	0.425
14.117	0.000	5.35	0.00	1.05	4.6	0.426
14.133	0.000	5.38	0.00	1.05	4.6	0.427
14.150	0.000	5.41	0.00	1.06	4.6	0.428
14.167	0.000	5.44	0.00	1.06	4.7	0.429
14.183	0.000	5.47	0.00	1.06	4.7	0.431
14.200	0.000	5.50	0.00	1.06	4.7	0.432
14.217	0.000	5.54	0.00	1.06	4.7	0.433
14.233	0.000	5.56	0.00	1.07	4.7	0.434
14.250	0.000	5.58	0.00	1.07	4.7	0.435
14.267	0.000	5.60	0.00	1.07	4.7	0.436
14.283	0.000	5.62	0.00	1.07	4.8	0.438
14.300	0.000	5.64	0.00	1.07	4.8	0.439
14.317	0.000	5.66	0.00	1.08	4.8	0.440
14.333	0.000	5.69	0.00	1.08	4.8	0.441
14.350	0.000	5.74	0.00	1.08	4.8	0.442
14.367	0.000	5.78	0.00	1.08	4.8	0.444
14.383	0.000	5.83	0.00	1.09	4.8	0.445
14.400	0.000	5.87	0.00	1.09	4.9	0.447
14.417	0.000	5.92	0.00	1.09	4.9	0.448
14.433	0.000	5.96	0.00	1.09	4.9	0.449
14.450	0.000	5.98	0.00	1.10	4.9	0.451
14.467	0.000	6.01	0.00	1.10	4.9	0.452
14.483	0.000	6.03	0.00	1.10	5.0	0.454
14.500	0.000	6.06	0.00	1.10	5.0	0.455
14.517	0.000	6.08	0.00	1.11	5.0	0.457
14.533	0.000	6.11	0.00	1.11	5.0	0.458
14.550	0.000	6.16	0.00	1.11	5.0	0.460
14.567	0.000	6.21	0.00	1.11	5.1	0.461
14.583	0.000	6.27	0.00	1.12	5.1	0.463
14.600	0.000	6.32	0.00	1.12	5.1	0.465
14.617	0.000	6.37	0.00	1.12	5.1	0.467
14.633	0.000	6.43	0.00	1.13	5.1	0.468
14.650	0.000	6.47	0.00	1.13	5.2	0.470
14.667	0.000	6.50	0.00	1.13	5.2	0.472
14.683	0.000	6.53	0.00	1.14	5.2	0.474
14.700	0.000	6.56	0.00	1.14	5.2	0.476
14.717	0.000	6.59	0.00	1.14	5.2	0.477
14.733	0.000	6.62	0.00	1.15	5.3	0.479
14.750	0.000	6.66	0.00	1.15	5.3	0.481
14.767	0.000	6.73	0.00	1.15	5.3	0.483

14.783	0.000	6.80	0.00	1.16	5.3	0.485
14.800	0.000	6.87	0.00	1.16	5.4	0.487
14.817	0.000	6.94	0.00	1.16	5.4	0.489
14.833	0.000	7.01	0.00	1.17	5.4	0.492
14.850	0.000	7.07	0.00	1.17	5.5	0.494
14.867	0.000	7.12	0.00	1.18	5.5	0.496
14.883	0.000	7.16	0.00	1.18	5.5	0.498
14.900	0.000	7.20	0.00	1.18	5.5	0.501
14.917	0.000	7.23	0.00	1.19	5.6	0.503
14.933	0.000	7.27	0.00	1.19	5.6	0.505
14.950	0.000	7.31	0.00	1.20	5.6	0.508
14.967	0.000	7.38	0.00	1.20	5.7	0.510
14.983	0.000	7.47	0.00	1.20	5.7	0.512
15.000	0.000	7.56	0.00	1.21	5.7	0.515
15.017	0.000	7.65	0.00	1.21	5.7	0.518
15.033	0.000	7.74	0.00	1.22	5.8	0.520
15.050	0.000	7.83	0.00	1.22	5.8	0.523
15.067	0.000	7.91	0.00	1.23	5.8	0.526
15.083	0.000	7.97	0.00	1.23	5.9	0.529
15.100	0.000	8.02	0.00	1.24	5.9	0.532
15.117	0.000	8.07	0.00	1.24	6.0	0.535
15.133	0.000	8.12	0.00	1.25	6.0	0.538
15.150	0.000	8.18	0.00	1.25	6.0	0.540
15.167	0.000	8.24	0.00	1.26	6.1	0.543
15.183	0.000	8.35	0.00	1.26	6.1	0.547
15.200	0.000	8.48	0.00	1.27	6.1	0.550
15.217	0.000	8.60	0.00	1.28	6.1	0.553
15.233	0.000	8.73	0.00	1.28	6.2	0.557
15.250	0.000	8.85	0.00	1.29	6.2	0.560
15.267	0.000	8.98	0.00	1.29	6.2	0.564
15.283	0.000	9.07	0.00	1.30	6.3	0.568
15.300	0.000	9.15	0.00	1.31	6.3	0.572
15.317	0.000	9.22	0.00	1.31	6.3	0.576
15.333	0.000	9.30	0.00	1.32	6.4	0.580
15.350	0.000	9.38	0.00	1.33	6.4	0.584
15.367	0.000	9.45	0.00	1.33	6.5	0.588
15.383	0.000	9.47	0.00	1.34	6.5	0.592
15.400	0.000	9.40	0.00	1.35	6.5	0.596
15.417	0.000	9.32	0.00	1.35	6.6	0.600
15.433	0.000	9.24	0.00	1.36	6.6	0.604
15.450	0.000	9.16	0.00	1.37	6.6	0.607
15.467	0.000	9.09	0.00	1.37	6.7	0.611
15.483	0.000	9.04	0.00	1.38	6.7	0.614
15.500	0.000	9.14	0.00	1.38	6.7	0.617
15.517	0.000	9.26	0.00	1.39	6.8	0.621
15.533	0.000	9.38	0.00	1.39	6.8	0.624
15.550	0.000	9.50	0.00	1.40	6.8	0.628
15.567	0.000	9.63	0.00	1.41	6.8	0.632
15.583	0.000	9.75	0.00	1.41	6.9	0.636
15.600	0.000	10.03	0.00	1.42	6.9	0.640

15.617	0.000	10.37	0.00	1.43	7.0	0.645
15.633	0.000	10.72	0.00	1.44	7.0	0.650
15.650	0.000	11.06	0.00	1.45	7.1	0.655
15.667	0.000	11.40	0.00	1.46	7.1	0.661
15.683	0.000	11.74	0.00	1.47	7.2	0.667
15.700	0.000	12.10	0.00	1.48	7.2	0.674
15.717	0.000	12.49	0.00	1.49	7.3	0.681
15.733	0.000	12.88	0.00	1.50	7.4	0.689
15.750	0.000	13.27	0.00	1.52	7.4	0.697
15.767	0.000	13.66	0.00	1.53	7.5	0.706
15.783	0.000	14.05	0.00	1.54	7.5	0.714
15.800	0.000	14.56	0.00	1.56	7.6	0.724
15.817	0.000	15.53	0.00	1.58	7.7	0.735
15.833	0.000	16.55	0.00	1.60	7.8	0.747
15.850	0.000	17.58	0.00	1.62	7.9	0.760
15.867	0.000	18.60	0.00	1.64	8.0	0.775
15.883	0.000	19.62	0.00	1.67	8.1	0.791
15.900	0.000	20.65	0.00	1.70	8.2	0.808
15.917	0.000	21.81	0.00	1.73	8.3	0.827
15.933	0.000	23.01	0.00	1.76	8.5	0.847
15.950	0.000	24.21	0.00	1.79	8.6	0.868
15.967	0.000	25.42	0.00	1.83	8.8	0.891
15.983	0.000	26.62	0.00	1.87	8.9	0.915
16.000	0.000	27.82	0.00	1.91	9.1	0.941
16.017	0.000	32.71	0.00	1.96	9.3	0.974
16.033	0.000	41.28	0.00	2.03	9.5	1.017
16.050	0.000	49.85	0.00	2.12	9.8	1.072
16.067	0.000	58.42	0.00	2.23	10.2	1.139
16.083	0.000	67.00	0.00	2.36	10.6	1.217
16.100	0.000	75.57	0.00	2.50	11.0	1.306
16.117	0.000	82.51	0.00	2.67	11.5	1.403
16.133	0.000	70.16	0.00	2.80	12.0	1.484
16.150	0.000	59.79	0.00	2.92	12.4	1.549
16.167	0.000	49.41	0.00	3.01	12.7	1.599
16.183	0.000	39.03	0.00	3.08	13.6	1.634
16.200	0.000	28.66	0.00	3.11	14.6	1.654
16.217	0.000	18.95	0.00	3.12	15.1	1.659
16.233	0.000	16.15	0.00	3.13	15.2	1.660
16.250	0.000	15.15	0.00	3.13	15.3	1.660
16.267	0.000	14.15	0.00	3.12	15.2	1.659
16.283	0.000	13.15	0.00	3.12	15.1	1.656
16.300	0.000	12.15	0.00	3.11	15.0	1.652
16.317	0.000	11.16	0.00	3.10	14.8	1.647
16.333	0.000	10.59	0.00	3.09	14.6	1.641
16.350	0.000	10.35	0.00	3.08	14.4	1.636
16.367	0.000	10.10	0.00	3.07	14.2	1.630
16.383	0.000	9.86	0.00	3.06	14.0	1.624
16.400	0.000	9.62	0.00	3.05	13.8	1.619
16.417	0.000	9.38	0.00	3.03	13.6	1.613
16.433	0.000	9.18	0.00	3.02	13.3	1.607

16.450	0.000	9.08	0.00	3.01	13.1	1.602
16.467	0.000	8.99	0.00	3.00	12.9	1.596
16.483	0.000	8.89	0.00	2.99	12.8	1.591
16.500	0.000	8.80	0.00	2.98	12.7	1.585
16.517	0.000	8.70	0.00	2.97	12.7	1.580
16.533	0.000	8.60	0.00	2.96	12.7	1.574
16.550	0.000	8.45	0.00	2.95	12.6	1.568
16.567	0.000	8.29	0.00	2.94	12.6	1.563
16.583	0.000	8.13	0.00	2.93	12.6	1.556
16.600	0.000	7.97	0.00	2.92	12.5	1.550
16.617	0.000	7.82	0.00	2.91	12.5	1.544
16.633	0.000	7.66	0.00	2.90	12.5	1.537
16.650	0.000	7.52	0.00	2.89	12.4	1.530
16.667	0.000	7.41	0.00	2.87	12.4	1.523
16.683	0.000	7.29	0.00	2.86	12.4	1.516
16.700	0.000	7.17	0.00	2.85	12.3	1.509
16.717	0.000	7.05	0.00	2.84	12.3	1.502
16.733	0.000	6.93	0.00	2.82	12.3	1.495
16.750	0.000	6.83	0.00	2.81	12.2	1.487
16.767	0.000	6.73	0.00	2.80	12.2	1.480
16.783	0.000	6.64	0.00	2.78	12.2	1.472
16.800	0.000	6.55	0.00	2.77	12.1	1.464
16.817	0.000	6.46	0.00	2.76	12.1	1.457
16.833	0.000	6.37	0.00	2.74	12.0	1.449
16.850	0.000	6.28	0.00	2.73	12.0	1.441
16.867	0.000	6.20	0.00	2.72	11.9	1.433
16.883	0.000	6.13	0.00	2.70	11.9	1.425
16.900	0.000	6.05	0.00	2.69	11.9	1.417
16.917	0.000	5.98	0.00	2.68	11.8	1.409
16.933	0.000	5.90	0.00	2.66	11.8	1.401
16.950	0.000	5.83	0.00	2.65	11.7	1.393
16.967	0.000	5.77	0.00	2.63	11.7	1.385
16.983	0.000	5.70	0.00	2.62	11.7	1.376
17.000	0.000	5.64	0.00	2.61	11.6	1.368
17.017	0.000	5.58	0.00	2.59	11.6	1.360
17.033	0.000	5.52	0.00	2.58	11.5	1.352
17.050	0.000	5.46	0.00	2.56	11.5	1.343
17.067	0.000	5.41	0.00	2.55	11.4	1.335
17.083	0.000	5.37	0.00	2.54	11.4	1.327
17.100	0.000	5.33	0.00	2.52	11.3	1.319
17.117	0.000	5.29	0.00	2.51	11.3	1.310
17.133	0.000	5.25	0.00	2.50	11.3	1.302
17.150	0.000	5.21	0.00	2.48	11.2	1.294
17.167	0.000	5.17	0.00	2.47	11.2	1.285
17.183	0.000	5.12	0.00	2.45	11.1	1.277
17.200	0.000	5.08	0.00	2.44	11.1	1.269
17.217	0.000	5.03	0.00	2.43	11.0	1.261
17.233	0.000	4.99	0.00	2.41	11.0	1.252
17.250	0.000	4.94	0.00	2.40	10.9	1.244
17.267	0.000	4.90	0.00	2.39	10.9	1.236

17.283	0.000	4.86	0.00	2.37	10.9	1.228
17.300	0.000	4.82	0.00	2.36	10.8	1.219
17.317	0.000	4.78	0.00	2.35	10.8	1.211
17.333	0.000	4.74	0.00	2.33	10.7	1.203
17.350	0.000	4.70	0.00	2.32	10.7	1.195
17.367	0.000	4.66	0.00	2.31	10.6	1.186
17.383	0.000	4.63	0.00	2.29	10.6	1.178
17.400	0.000	4.59	0.00	2.28	10.5	1.170
17.417	0.000	4.56	0.00	2.27	10.5	1.162
17.433	0.000	4.52	0.00	2.25	10.5	1.154
17.450	0.000	4.49	0.00	2.24	10.4	1.145
17.467	0.000	4.45	0.00	2.23	10.4	1.137
17.483	0.000	4.42	0.00	2.21	10.3	1.129
17.500	0.000	4.39	0.00	2.20	10.3	1.121
17.517	0.000	4.36	0.00	2.19	10.2	1.113
17.533	0.000	4.33	0.00	2.18	10.2	1.105
17.550	0.000	4.30	0.00	2.16	10.1	1.097
17.567	0.000	4.27	0.00	2.15	10.1	1.089
17.583	0.000	4.24	0.00	2.14	10.0	1.081
17.600	0.000	4.21	0.00	2.12	10.0	1.073
17.617	0.000	4.18	0.00	2.11	9.9	1.065
17.633	0.000	4.15	0.00	2.10	9.9	1.057
17.650	0.000	4.12	0.00	2.09	9.8	1.049
17.667	0.000	4.10	0.00	2.07	9.8	1.041
17.683	0.000	4.07	0.00	2.06	9.8	1.034
17.700	0.000	4.04	0.00	2.05	9.7	1.026
17.717	0.000	4.02	0.00	2.04	9.7	1.018
17.733	0.000	3.99	0.00	2.02	9.6	1.010
17.750	0.000	3.97	0.00	2.01	9.6	1.002
17.767	0.000	3.94	0.00	2.00	9.5	0.995
17.783	0.000	3.92	0.00	1.99	9.5	0.987
17.800	0.000	3.89	0.00	1.97	9.4	0.979
17.817	0.000	3.87	0.00	1.96	9.4	0.972
17.833	0.000	3.85	0.00	1.95	9.3	0.964
17.850	0.000	3.83	0.00	1.94	9.3	0.957
17.867	0.000	3.80	0.00	1.93	9.2	0.949
17.883	0.000	3.78	0.00	1.91	9.2	0.942
17.900	0.000	3.76	0.00	1.90	9.1	0.934
17.917	0.000	3.74	0.00	1.89	9.1	0.927
17.933	0.000	3.72	0.00	1.88	9.0	0.920
17.950	0.000	3.69	0.00	1.87	9.0	0.912
17.967	0.000	3.67	0.00	1.85	9.0	0.905
17.983	0.000	3.65	0.00	1.84	8.9	0.898
18.000	0.000	3.63	0.00	1.83	8.9	0.891
18.017	0.000	3.52	0.00	1.82	8.8	0.883
18.033	0.000	3.34	0.00	1.81	8.8	0.876
18.050	0.000	3.16	0.00	1.80	8.7	0.868
18.067	0.000	2.98	0.00	1.78	8.7	0.860
18.083	0.000	2.81	0.00	1.77	8.6	0.852
18.100	0.000	2.63	0.00	1.76	8.6	0.844

18.117	0.000	2.50	0.00	1.74	8.5	0.836
18.133	0.000	2.47	0.00	1.73	8.4	0.828
18.150	0.000	2.45	0.00	1.72	8.4	0.820
18.167	0.000	2.43	0.00	1.70	8.3	0.811
18.183	0.000	2.40	0.00	1.69	8.3	0.803
18.200	0.000	2.38	0.00	1.68	8.2	0.795
18.217	0.000	2.36	0.00	1.66	8.1	0.787
18.233	0.000	2.34	0.00	1.65	8.1	0.779
18.250	0.000	2.33	0.00	1.64	8.0	0.772
18.267	0.000	2.32	0.00	1.63	8.0	0.764
18.283	0.000	2.31	0.00	1.61	7.9	0.756
18.300	0.000	2.30	0.00	1.60	7.9	0.748
18.317	0.000	2.29	0.00	1.59	7.8	0.741
18.333	0.000	2.28	0.00	1.58	7.7	0.733
18.350	0.000	2.26	0.00	1.56	7.7	0.726
18.367	0.000	2.25	0.00	1.55	7.6	0.718
18.383	0.000	2.24	0.00	1.54	7.6	0.711
18.400	0.000	2.23	0.00	1.53	7.5	0.704
18.417	0.000	2.22	0.00	1.52	7.5	0.697
18.433	0.000	2.21	0.00	1.50	7.4	0.689
18.450	0.000	2.20	0.00	1.49	7.4	0.682
18.467	0.000	2.19	0.00	1.48	7.3	0.675
18.483	0.000	2.18	0.00	1.47	7.2	0.668
18.500	0.000	2.17	0.00	1.46	7.2	0.662
18.517	0.000	2.16	0.00	1.45	7.1	0.655
18.533	0.000	2.15	0.00	1.43	7.0	0.648
18.550	0.000	2.15	0.00	1.42	7.0	0.641
18.567	0.000	2.14	0.00	1.41	6.9	0.635
18.583	0.000	2.13	0.00	1.40	6.9	0.628
18.600	0.000	2.12	0.00	1.39	6.8	0.622
18.617	0.000	2.11	0.00	1.38	6.7	0.615
18.633	0.000	2.10	0.00	1.37	6.7	0.609
18.650	0.000	2.09	0.00	1.36	6.6	0.603
18.667	0.000	2.08	0.00	1.35	6.6	0.597
18.683	0.000	2.07	0.00	1.34	6.5	0.590
18.700	0.000	2.07	0.00	1.33	6.5	0.584
18.717	0.000	2.06	0.00	1.32	6.4	0.578
18.733	0.000	2.05	0.00	1.31	6.4	0.572
18.750	0.000	2.04	0.00	1.30	6.3	0.567
18.767	0.000	2.03	0.00	1.29	6.2	0.561
18.783	0.000	2.02	0.00	1.28	6.2	0.555
18.800	0.000	2.02	0.00	1.27	6.1	0.549
18.817	0.000	2.01	0.00	1.26	6.1	0.544
18.833	0.000	2.00	0.00	1.25	6.0	0.538
18.850	0.000	1.99	0.00	1.24	6.0	0.533
18.867	0.000	1.99	0.00	1.23	5.9	0.527
18.883	0.000	1.98	0.00	1.22	5.8	0.522
18.900	0.000	1.97	0.00	1.21	5.8	0.517
18.917	0.000	1.96	0.00	1.20	5.7	0.511
18.933	0.000	1.96	0.00	1.19	5.7	0.506

18.950	0.000	1.95	0.00	1.19	5.6	0.501
18.967	0.000	1.94	0.00	1.18	5.5	0.496
18.983	0.000	1.93	0.00	1.17	5.5	0.492
19.000	0.000	1.93	0.00	1.16	5.4	0.487
19.017	0.000	1.92	0.00	1.15	5.3	0.482
19.033	0.000	1.91	0.00	1.14	5.3	0.477
19.050	0.000	1.91	0.00	1.13	5.2	0.473
19.067	0.000	1.90	0.00	1.13	5.2	0.468
19.083	0.000	1.89	0.00	1.12	5.1	0.464
19.100	0.000	1.89	0.00	1.11	5.1	0.459
19.117	0.000	1.88	0.00	1.10	5.0	0.455
19.133	0.000	1.87	0.00	1.10	5.0	0.451
19.150	0.000	1.87	0.00	1.09	4.9	0.447
19.167	0.000	1.86	0.00	1.08	4.9	0.443
19.183	0.000	1.85	0.00	1.07	4.8	0.439
19.200	0.000	1.85	0.00	1.07	4.7	0.435
19.217	0.000	1.84	0.00	1.06	4.7	0.431
19.233	0.000	1.83	0.00	1.05	4.7	0.427
19.250	0.000	1.83	0.00	1.05	4.6	0.423
19.267	0.000	1.82	0.00	1.04	4.6	0.419
19.283	0.000	1.82	0.00	1.03	4.5	0.415
19.300	0.000	1.81	0.00	1.03	4.5	0.412
19.317	0.000	1.80	0.00	1.02	4.4	0.408
19.333	0.000	1.80	0.00	1.01	4.4	0.405
19.350	0.000	1.79	0.00	1.01	4.3	0.401
19.367	0.000	1.79	0.00	1.00	4.3	0.398
19.383	0.000	1.78	0.00	0.99	4.2	0.394
19.400	0.000	1.78	0.00	0.99	4.1	0.391
19.417	0.000	1.77	0.00	0.98	4.0	0.388
19.433	0.000	1.76	0.00	0.98	3.9	0.385
19.450	0.000	1.76	0.00	0.97	3.8	0.382
19.467	0.000	1.75	0.00	0.97	3.7	0.380
19.483	0.000	1.75	0.00	0.96	3.6	0.377
19.500	0.000	1.74	0.00	0.96	3.6	0.374
19.517	0.000	1.74	0.00	0.95	3.5	0.372
19.533	0.000	1.73	0.00	0.95	3.4	0.370
19.550	0.000	1.73	0.00	0.94	3.3	0.368
19.567	0.000	1.72	0.00	0.94	3.3	0.365
19.583	0.000	1.72	0.00	0.94	3.2	0.363
19.600	0.000	1.71	0.00	0.93	3.1	0.361
19.617	0.000	1.71	0.00	0.93	3.1	0.360
19.633	0.000	1.70	0.00	0.92	3.0	0.358
19.650	0.000	1.70	0.00	0.92	3.0	0.356
19.667	0.000	1.69	0.00	0.92	2.9	0.354
19.683	0.000	1.68	0.00	0.91	2.8	0.353
19.700	0.000	1.68	0.00	0.91	2.8	0.351
19.717	0.000	1.68	0.00	0.91	2.7	0.350
19.733	0.000	1.67	0.00	0.91	2.7	0.348
19.750	0.000	1.67	0.00	0.90	2.7	0.347
19.767	0.000	1.66	0.00	0.90	2.6	0.346

19.783	0.000	1.66	0.00	0.90	2.6	0.344
19.800	0.000	1.65	0.00	0.90	2.5	0.343
19.817	0.000	1.65	0.00	0.89	2.5	0.342
19.833	0.000	1.64	0.00	0.89	2.5	0.341
19.850	0.000	1.64	0.00	0.89	2.4	0.340
19.867	0.000	1.63	0.00	0.89	2.4	0.339
19.883	0.000	1.63	0.00	0.89	2.3	0.338
19.900	0.000	1.62	0.00	0.88	2.3	0.337
19.917	0.000	1.62	0.00	0.88	2.3	0.336
19.933	0.000	1.61	0.00	0.88	2.3	0.335
19.950	0.000	1.61	0.00	0.88	2.2	0.334
19.967	0.000	1.61	0.00	0.88	2.2	0.333
19.983	0.000	1.60	0.00	0.88	2.2	0.333
20.000	0.000	1.60	0.00	0.87	2.2	0.332

PROCESS SUMMARY OF STORAGE:

INFLOW VOLUME = 6.238 AF
 BASIN STORAGE = 0.054 AF (WITH 0.000 AF INITIALLY FILLED)
 OUTFLOW VOLUME = 6.183 AF
 LOSS VOLUME = 0.000 AF

FLOW PROCESS FROM NODE 330.00 TO NODE 700.00 IS CODE = 1.2

 >>>>SUBAREA RUNOFF (SMALL AREA UNIT-HYDROGRAPH ANALYSIS) <<<<

(SMALL AREA UNIT-HYDROGRAPH ADDED TO STREAM #2)

RATIONAL METHOD CALIBRATION COEFFICIENT = 0.90
 TOTAL CATCHMENT AREA(ACRES) = 21.50
 SOIL-LOSS RATE, Fm,(INCH/HR) = 0.030
 LOSS FRACTION = 0.250
 TIME OF CONCENTRATION(MIN.) = 6.96
 SMALL AREA PEAK Q COMPUTED USING PEAK FLOW RATE FORMULA
 ORANGE COUNTY "VALLEY" RAINFALL VALUES ARE USED:
 RETURN FREQUENCY(YEARS) = 25
 5-MINUTE POINT RAINFALL VALUE(INCHES) = 0.40
 30-MINUTE POINT RAINFALL VALUE(INCHES) = 0.87
 1-HOUR POINT RAINFALL VALUE(INCHES) = 1.15
 3-HOUR POINT RAINFALL VALUE(INCHES) = 1.94
 6-HOUR POINT RAINFALL VALUE(INCHES) = 2.71
 24-HOUR POINT RAINFALL VALUE(INCHES) = 4.49

 TOTAL CATCHMENT RUNOFF VOLUME(ACRE-FEET) = 6.22
 TOTAL CATCHMENT SOIL-LOSS VOLUME(ACRE-FEET) = 1.83



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

HYDROGRAPH IN ONE-MINUTE UNIT INTERVALS(CFS)

(Notes: Time indicated is at END of Each Unit Intervals.

Peak 5-minute rainfall intensity is modeled as
a constant value for entire 5-minute period.)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	19.1	38.2	57.3	76.4
10.000	1.0678	1.85	Q	V	.	.	.
10.017	1.0704	1.86	Q	V	.	.	.
10.033	1.0730	1.86	Q	V	.	.	.
10.050	1.0755	1.87	Q	V	.	.	.
10.067	1.0781	1.87	Q	V	.	.	.
10.083	1.0807	1.88	Q	V	.	.	.
10.100	1.0833	1.88	Q	V	.	.	.
10.117	1.0859	1.89	Q	V	.	.	.
10.133	1.0885	1.89	Q	V	.	.	.
10.150	1.0911	1.89	Q	V	.	.	.
10.167	1.0937	1.89	Q	V	.	.	.
10.183	1.0963	1.90	Q	V	.	.	.
10.200	1.0989	1.90	Q	V	.	.	.
10.217	1.1015	1.90	Q	V	.	.	.
10.233	1.1042	1.91	Q	V	.	.	.
10.250	1.1068	1.92	.Q	V	.	.	.
10.267	1.1095	1.92	.Q	V	.	.	.
10.283	1.1121	1.93	.Q	V	.	.	.
10.300	1.1148	1.93	.Q	V	.	.	.
10.317	1.1175	1.94	.Q	V	.	.	.
10.333	1.1201	1.95	.Q	V	.	.	.
10.350	1.1228	1.95	.Q	V	.	.	.
10.367	1.1255	1.95	.Q	V	.	.	.
10.383	1.1282	1.95	.Q	V	.	.	.
10.400	1.1309	1.96	.Q	V	.	.	.
10.417	1.1336	1.96	.Q	V	.	.	.
10.433	1.1363	1.96	.Q	V	.	.	.
10.450	1.1390	1.97	.Q	V	.	.	.
10.467	1.1417	1.98	.Q	V	.	.	.
10.483	1.1445	1.98	.Q	V	.	.	.
10.500	1.1472	1.99	.Q	V	.	.	.
10.517	1.1500	2.00	.Q	V	.	.	.
10.533	1.1527	2.00	.Q	V	.	.	.
10.550	1.1555	2.01	.Q	V	.	.	.
10.567	1.1583	2.01	.Q	V	.	.	.
10.583	1.1610	2.02	.Q	V	.	.	.

10.600	1.1638	2.02	.Q	V	.	.	.
10.617	1.1666	2.02	.Q	V	.	.	.
10.633	1.1694	2.03	.Q	V	.	.	.
10.650	1.1722	2.03	.Q	V	.	.	.
10.667	1.1750	2.03	.Q	V	.	.	.
10.683	1.1778	2.04	.Q	V	.	.	.
10.700	1.1806	2.05	.Q	V	.	.	.
10.717	1.1834	2.05	.Q	V	.	.	.
10.733	1.1863	2.06	.Q	V	.	.	.
10.750	1.1891	2.07	.Q	V	.	.	.
10.767	1.1920	2.07	.Q	V	.	.	.
10.783	1.1948	2.08	.Q	V	.	.	.
10.800	1.1977	2.08	.Q	V	.	.	.
10.817	1.2006	2.09	.Q	V	.	.	.
10.833	1.2035	2.09	.Q	V	.	.	.
10.850	1.2064	2.10	.Q	V	.	.	.
10.867	1.2092	2.10	.Q	V	.	.	.
10.883	1.2121	2.10	.Q	V	.	.	.
10.900	1.2150	2.11	.Q	V	.	.	.
10.917	1.2179	2.11	.Q	V	.	.	.
10.933	1.2209	2.12	.Q	V	.	.	.
10.950	1.2238	2.13	.Q	V	.	.	.
10.967	1.2267	2.13	.Q	V	.	.	.
10.983	1.2297	2.14	.Q	V	.	.	.
11.000	1.2327	2.15	.Q	V	.	.	.
11.017	1.2356	2.16	.Q	V	.	.	.
11.033	1.2386	2.16	.Q	V	.	.	.
11.050	1.2416	2.17	.Q	V	.	.	.
11.067	1.2446	2.17	.Q	V	.	.	.
11.083	1.2476	2.17	.Q	V	.	.	.
11.100	1.2506	2.18	.Q	V	.	.	.
11.117	1.2536	2.18	.Q	V	.	.	.
11.133	1.2566	2.19	.Q	V	.	.	.
11.150	1.2596	2.19	.Q	V	.	.	.
11.167	1.2626	2.20	.Q	V	.	.	.
11.183	1.2657	2.21	.Q	V	.	.	.
11.200	1.2687	2.22	.Q	V	.	.	.
11.217	1.2718	2.22	.Q	V	.	.	.
11.233	1.2749	2.23	.Q	V	.	.	.
11.250	1.2780	2.24	.Q	V	.	.	.
11.267	1.2810	2.25	.Q	V	.	.	.
11.283	1.2841	2.25	.Q	V	.	.	.
11.300	1.2872	2.25	.Q	V	.	.	.
11.317	1.2904	2.26	.Q	V	.	.	.
11.333	1.2935	2.26	.Q	V	.	.	.
11.350	1.2966	2.27	.Q	V	.	.	.
11.367	1.2997	2.27	.Q	V	.	.	.
11.383	1.3029	2.28	.Q	V	.	.	.
11.400	1.3060	2.29	.Q	V	.	.	.
11.417	1.3092	2.30	.Q	V	.	.	.

11.433	1.3123	2.30	.Q	V .	.	.	.
11.450	1.3155	2.31	.Q	V .	.	.	.
11.467	1.3187	2.32	.Q	V .	.	.	.
11.483	1.3219	2.33	.Q	V .	.	.	.
11.500	1.3252	2.34	.Q	V .	.	.	.
11.517	1.3284	2.34	.Q	V .	.	.	.
11.533	1.3316	2.34	.Q	V .	.	.	.
11.550	1.3349	2.35	.Q	V .	.	.	.
11.567	1.3381	2.35	.Q	V .	.	.	.
11.583	1.3413	2.36	.Q	V .	.	.	.
11.600	1.3446	2.36	.Q	V .	.	.	.
11.617	1.3479	2.37	.Q	V .	.	.	.
11.633	1.3511	2.38	.Q	V .	.	.	.
11.650	1.3544	2.39	.Q	V .	.	.	.
11.667	1.3577	2.40	.Q	V .	.	.	.
11.683	1.3611	2.41	.Q	V .	.	.	.
11.700	1.3644	2.42	.Q	V .	.	.	.
11.717	1.3677	2.43	.Q	V .	.	.	.
11.733	1.3711	2.43	.Q	V .	.	.	.
11.750	1.3745	2.44	.Q	V .	.	.	.
11.767	1.3778	2.44	.Q	V .	.	.	.
11.783	1.3812	2.45	.Q	V .	.	.	.
11.800	1.3846	2.45	.Q	V .	.	.	.
11.817	1.3880	2.46	.Q	V .	.	.	.
11.833	1.3914	2.46	.Q	V .	.	.	.
11.850	1.3948	2.47	.Q	V .	.	.	.
11.867	1.3982	2.48	.Q	V .	.	.	.
11.883	1.4016	2.49	.Q	V .	.	.	.
11.900	1.4051	2.51	.Q	V .	.	.	.
11.917	1.4085	2.52	.Q	V .	.	.	.
11.933	1.4120	2.53	.Q	V .	.	.	.
11.950	1.4155	2.54	.Q	V .	.	.	.
11.967	1.4190	2.54	.Q	V .	.	.	.
11.983	1.4225	2.55	.Q	V .	.	.	.
12.000	1.4260	2.55	.Q	V .	.	.	.
12.017	1.4296	2.56	.Q	V .	.	.	.
12.033	1.4331	2.56	.Q	V .	.	.	.
12.050	1.4366	2.57	.Q	V .	.	.	.
12.067	1.4402	2.61	.Q	V .	.	.	.
12.083	1.4440	2.76	.Q	V .	.	.	.
12.100	1.4480	2.92	.Q	V .	.	.	.
12.117	1.4523	3.08	.Q	V .	.	.	.
12.133	1.4567	3.24	.Q	V .	.	.	.
12.150	1.4614	3.40	.Q	V .	.	.	.
12.167	1.4663	3.56	.Q	V .	.	.	.
12.183	1.4714	3.68	.Q	V .	.	.	.
12.200	1.4764	3.69	.Q	V .	.	.	.
12.217	1.4815	3.70	.Q	V .	.	.	.
12.233	1.4866	3.71	.Q	V .	.	.	.
12.250	1.4918	3.71	.Q	V .	.	.	.

12.267	1.4969	3.72	.Q	V .	.	.	.
12.283	1.5020	3.73	.Q	V .	.	.	.
12.300	1.5072	3.73	.Q	V .	.	.	.
12.317	1.5123	3.75	.Q	V .	.	.	.
12.333	1.5175	3.76	.Q	V .	.	.	.
12.350	1.5227	3.77	.Q	V .	.	.	.
12.367	1.5279	3.79	.Q	V .	.	.	.
12.383	1.5332	3.80	.Q	V .	.	.	.
12.400	1.5384	3.81	.Q	V .	.	.	.
12.417	1.5437	3.83	. Q	V .	.	.	.
12.433	1.5490	3.83	. Q	V .	.	.	.
12.450	1.5542	3.84	. Q	V	.	.	.
12.467	1.5595	3.85	. Q	V	.	.	.
12.483	1.5649	3.85	. Q	V	.	.	.
12.500	1.5702	3.86	. Q	V	.	.	.
12.517	1.5755	3.87	. Q	V	.	.	.
12.533	1.5808	3.88	. Q	V	.	.	.
12.550	1.5862	3.89	. Q	V	.	.	.
12.567	1.5916	3.91	. Q	V	.	.	.
12.583	1.5970	3.92	. Q	V	.	.	.
12.600	1.6024	3.94	. Q	V	.	.	.
12.617	1.6079	3.95	. Q	V	.	.	.
12.633	1.6133	3.97	. Q	V	.	.	.
12.650	1.6188	3.98	. Q	V	.	.	.
12.667	1.6243	3.99	. Q	V	.	.	.
12.683	1.6298	3.99	. Q	V	.	.	.
12.700	1.6353	4.00	. Q	V	.	.	.
12.717	1.6408	4.01	. Q	V	.	.	.
12.733	1.6464	4.02	. Q	V	.	.	.
12.750	1.6519	4.02	. Q	V	.	.	.
12.767	1.6575	4.04	. Q	V	.	.	.
12.783	1.6630	4.05	. Q	V	.	.	.
12.800	1.6686	4.07	. Q	V	.	.	.
12.817	1.6743	4.08	. Q	V	.	.	.
12.833	1.6799	4.10	. Q	V	.	.	.
12.850	1.6856	4.12	. Q	V	.	.	.
12.867	1.6913	4.13	. Q	V	.	.	.
12.883	1.6970	4.15	. Q	V	.	.	.
12.900	1.7027	4.16	. Q	V	.	.	.
12.917	1.7085	4.16	. Q	V	.	.	.
12.933	1.7142	4.17	. Q	.V	.	.	.
12.950	1.7200	4.18	. Q	.V	.	.	.
12.967	1.7257	4.19	. Q	.V	.	.	.
12.983	1.7315	4.20	. Q	.V	.	.	.
13.000	1.7373	4.21	. Q	.V	.	.	.
13.017	1.7431	4.23	. Q	.V	.	.	.
13.033	1.7490	4.25	. Q	.V	.	.	.
13.050	1.7549	4.27	. Q	.V	.	.	.
13.067	1.7608	4.28	. Q	.V	.	.	.
13.083	1.7667	4.30	. Q	.V	.	.	.

13.100	1.7727	4.32	. Q	.V	.	.	.
13.117	1.7786	4.34	. Q	.V	.	.	.
13.133	1.7846	4.34	. Q	.V	.	.	.
13.150	1.7906	4.35	. Q	.V	.	.	.
13.167	1.7966	4.36	. Q	.V	.	.	.
13.183	1.8026	4.37	. Q	.V	.	.	.
13.200	1.8087	4.38	. Q	.V	.	.	.
13.217	1.8147	4.39	. Q	.V	.	.	.
13.233	1.8208	4.41	. Q	.V	.	.	.
13.250	1.8269	4.43	. Q	.V	.	.	.
13.267	1.8330	4.45	. Q	.V	.	.	.
13.283	1.8392	4.47	. Q	.V	.	.	.
13.300	1.8454	4.49	. Q	.V	.	.	.
13.317	1.8516	4.51	. Q	.V	.	.	.
13.333	1.8578	4.53	. Q	.V	.	.	.
13.350	1.8641	4.55	. Q	.V	.	.	.
13.367	1.8704	4.56	. Q	. V	.	.	.
13.383	1.8767	4.57	. Q	. V	.	.	.
13.400	1.8830	4.58	. Q	. V	.	.	.
13.417	1.8893	4.59	. Q	. V	.	.	.
13.433	1.8956	4.60	. Q	. V	.	.	.
13.450	1.9020	4.61	. Q	. V	.	.	.
13.467	1.9084	4.63	. Q	. V	.	.	.
13.483	1.9148	4.66	. Q	. V	.	.	.
13.500	1.9212	4.68	. Q	. V	.	.	.
13.517	1.9277	4.70	. Q	. V	.	.	.
13.533	1.9342	4.73	. Q	. V	.	.	.
13.550	1.9408	4.75	. Q	. V	.	.	.
13.567	1.9473	4.77	. Q	. V	.	.	.
13.583	1.9539	4.79	. Q	. V	.	.	.
13.600	1.9605	4.80	. Q	. V	.	.	.
13.617	1.9672	4.81	. Q	. V	.	.	.
13.633	1.9738	4.83	. Q	. V	.	.	.
13.650	1.9805	4.84	. Q	. V	.	.	.
13.667	1.9872	4.85	. Q	. V	.	.	.
13.683	1.9939	4.86	. Q	. V	.	.	.
13.700	2.0006	4.89	. Q	. V	.	.	.
13.717	2.0074	4.91	. Q	. V	.	.	.
13.733	2.0142	4.94	. Q	. V	.	.	.
13.750	2.0210	4.97	. Q	. V	.	.	.
13.767	2.0279	5.00	. Q	. V	.	.	.
13.783	2.0348	5.02	. Q	. V	.	.	.
13.800	2.0418	5.05	. Q	. V	.	.	.
13.817	2.0488	5.07	. Q	. V	.	.	.
13.833	2.0558	5.08	. Q	. V	.	.	.
13.850	2.0628	5.10	. Q	. V	.	.	.
13.867	2.0698	5.11	. Q	. V	.	.	.
13.883	2.0769	5.13	. Q	. V	.	.	.
13.900	2.0840	5.14	. Q	. V	.	.	.
13.917	2.0911	5.16	. Q	. V	.	.	.

13.933	2.0982	5.18	. Q	. V	.	.	.
13.950	2.1054	5.21	. Q	. V	.	.	.
13.967	2.1126	5.25	. Q	. V	.	.	.
13.983	2.1199	5.28	. Q	. V	.	.	.
14.000	2.1272	5.31	. Q	. V	.	.	.
14.017	2.1345	5.34	. Q	. V	.	.	.
14.033	2.1419	5.37	. Q	. V	.	.	.
14.050	2.1494	5.38	. Q	. V	.	.	.
14.067	2.1568	5.39	. Q	. V	.	.	.
14.083	2.1642	5.40	. Q	. V	.	.	.
14.100	2.1717	5.41	. Q	. V	.	.	.
14.117	2.1791	5.41	. Q	. V	.	.	.
14.133	2.1866	5.42	. Q	. V	.	.	.
14.150	2.1941	5.43	. Q	. V	.	.	.
14.167	2.2016	5.46	. Q	. V	.	.	.
14.183	2.2092	5.50	. Q	. V	.	.	.
14.200	2.2168	5.53	. Q	. V	.	.	.
14.217	2.2245	5.57	. Q	. V	.	.	.
14.233	2.2322	5.61	. Q	. V	.	.	.
14.250	2.2400	5.64	. Q	. V	.	.	.
14.267	2.2478	5.68	. Q	. V	.	.	.
14.283	2.2556	5.70	. Q	. V	.	.	.
14.300	2.2635	5.72	. Q	. V	.	.	.
14.317	2.2714	5.74	. Q	. V	.	.	.
14.333	2.2794	5.76	. Q	. V	.	.	.
14.350	2.2873	5.78	. Q	. V	.	.	.
14.367	2.2953	5.80	. Q	. V	.	.	.
14.383	2.3034	5.83	. Q	. V	.	.	.
14.400	2.3115	5.87	. Q	. V	.	.	.
14.417	2.3196	5.92	. Q	. V	.	.	.
14.433	2.3278	5.96	. Q	. V	.	.	.
14.450	2.3361	6.01	. Q	. V	.	.	.
14.467	2.3444	6.05	. Q	. V	.	.	.
14.483	2.3528	6.10	. Q	. V	.	.	.
14.500	2.3613	6.14	. Q	. V	.	.	.
14.517	2.3698	6.17	. Q	. V	.	.	.
14.533	2.3783	6.20	. Q	. V	.	.	.
14.550	2.3869	6.22	. Q	. V	.	.	.
14.567	2.3955	6.25	. Q	. V	.	.	.
14.583	2.4042	6.28	. Q	. V	.	.	.
14.600	2.4128	6.30	. Q	. V	.	.	.
14.617	2.4216	6.33	. Q	. V	.	.	.
14.633	2.4304	6.39	. Q	. V	.	.	.
14.650	2.4392	6.44	. Q	. V	.	.	.
14.667	2.4482	6.50	. Q	. V	.	.	.
14.683	2.4572	6.56	. Q	. V	.	.	.
14.700	2.4663	6.62	. Q	. V	.	.	.
14.717	2.4755	6.67	. Q	. V	.	.	.
14.733	2.4848	6.73	. Q	. V	.	.	.
14.750	2.4941	6.76	. Q	. V	.	.	.

14.767	2.5035	6.80	.	Q	.	V	.	.	.
14.783	2.5129	6.83	.	Q	.	V	.	.	.
14.800	2.5223	6.86	.	Q	.	V	.	.	.
14.817	2.5318	6.90	.	Q	.	V	.	.	.
14.833	2.5414	6.93	.	Q	.	V	.	.	.
14.850	2.5510	6.97	.	Q	.	V	.	.	.
14.867	2.5607	7.04	.	Q	.	V	.	.	.
14.883	2.5705	7.12	.	Q	.	V	.	.	.
14.900	2.5804	7.19	.	Q	.	V	.	.	.
14.917	2.5904	7.27	.	Q	.	V	.	.	.
14.933	2.6005	7.35	.	Q	.	V	.	.	.
14.950	2.6107	7.42	.	Q	.	V	.	.	.
14.967	2.6210	7.49	.	Q	.	V	.	.	.
14.983	2.6314	7.54	.	Q	.	V	.	.	.
15.000	2.6419	7.58	.	Q	.	V	.	.	.
15.017	2.6524	7.63	.	Q	.	V	.	.	.
15.033	2.6629	7.67	.	Q	.	V	.	.	.
15.050	2.6736	7.71	.	Q	.	V	.	.	.
15.067	2.6843	7.76	.	Q	.	V	.	.	.
15.083	2.6950	7.82	.	Q	.	V	.	.	.
15.100	2.7059	7.92	.	Q	.	V	.	.	.
15.117	2.7170	8.02	.	Q	.	V	.	.	.
15.133	2.7282	8.13	.	Q	.	V	.	.	.
15.150	2.7395	8.24	.	Q	.	V	.	.	.
15.167	2.7510	8.34	.	Q	.	V	.	.	.
15.183	2.7626	8.45	.	Q	.	V	.	.	.
15.200	2.7744	8.54	.	Q	.	V	.	.	.
15.217	2.7863	8.61	.	Q	.	V	.	.	.
15.233	2.7982	8.67	.	Q	.	V	.	.	.
15.250	2.8102	8.74	.	Q	.	V	.	.	.
15.267	2.8224	8.80	.	Q	.	V	.	.	.
15.283	2.8346	8.86	.	Q	.	V	.	.	.
15.300	2.8469	8.93	.	Q	.	V	.	.	.
15.317	2.8592	8.98	.	Q	.	V	.	.	.
15.333	2.8716	8.99	.	Q	.	V	.	.	.
15.350	2.8840	9.01	.	Q	.	V	.	.	.
15.367	2.8965	9.02	.	Q	.	V	.	.	.
15.383	2.9089	9.04	.	Q	.	V	.	.	.
15.400	2.9214	9.05	.	Q	.	V	.	.	.
15.417	2.9339	9.07	.	Q	.	V	.	.	.
15.433	2.9464	9.08	.	Q	.	V	.	.	.
15.450	2.9589	9.09	.	Q	.	V.	.	.	.
15.467	2.9714	9.10	.	Q	.	V.	.	.	.
15.483	2.9840	9.12	.	Q	.	V.	.	.	.
15.500	2.9966	9.13	.	Q	.	V.	.	.	.
15.517	3.0091	9.14	.	Q	.	V.	.	.	.
15.533	3.0218	9.15	.	Q	.	V.	.	.	.
15.550	3.0345	9.26	.	Q	.	V.	.	.	.
15.567	3.0477	9.54	.	Q	.	V.	.	.	.
15.583	3.0612	9.83	.	Q	.	V.	.	.	.

15.600	3.0751	10.12	.	Q	.	V.	.	.	.
15.617	3.0895	10.40	.	Q	.	V.	.	.	.
15.633	3.1042	10.69	.	Q	.	V.	.	.	.
15.650	3.1193	10.97	.	Q	.	V	.	.	.
15.667	3.1348	11.25	.	Q	.	V	.	.	.
15.683	3.1507	11.51	.	Q	.	V	.	.	.
15.700	3.1669	11.78	.	Q	.	V	.	.	.
15.717	3.1835	12.04	.	Q	.	V	.	.	.
15.733	3.2004	12.30	.	Q	.	V	.	.	.
15.750	3.2177	12.57	.	Q	.	V	.	.	.
15.767	3.2354	12.83	.	Q	.	V	.	.	.
15.783	3.2538	13.37	.	Q	.	V	.	.	.
15.800	3.2735	14.29	.	Q	.	.V	.	.	.
15.817	3.2945	15.22	.	Q	.	.V	.	.	.
15.833	3.3167	16.14	.	Q	.	.V	.	.	.
15.850	3.3402	17.07	.	Q	.	.V	.	.	.
15.867	3.3650	17.99	.	Q	.	.V	.	.	.
15.883	3.3911	18.92	.	Q	.	.V	.	.	.
15.900	3.4184	19.88	.	Q	.	.V	.	.	.
15.917	3.4472	20.89	.	Q	.	.V	.	.	.
15.933	3.4774	21.89	.	.Q	.	.V	.	.	.
15.950	3.5089	22.90	.	.Q	.	.V	.	.	.
15.967	3.5418	23.91	.	.Q	.	.V	.	.	.
15.983	3.5762	24.92	.	.Q	.	.V	.	.	.
16.000	3.6119	25.92	.	.Q	.	.V	.	.	.
16.017	3.6532	30.02	.	.Q	.	.V	.	.	.
16.033	3.7045	37.20	.	.	Q.	.V	.	.	.
16.050	3.7656	44.39	.	.	.	QV	.	.	.
16.067	3.8366	51.57	.	.	.	.V Q	.	.	.
16.083	3.9176	58.76	.	.	.	.V	Q	.	.
16.100	4.0084	65.94	.	.	.	.V	.	Q	.
16.117	4.1137	76.43	.	.	.	.V	.	.	Q
16.133	4.2125	71.74	.	.	.	.V	.	.	Q
16.150	4.2993	63.04	.	.	.	.V	.	Q	.
16.167	4.3742	54.34	.	.	.	.	Q	.	.
16.183	4.4371	45.65	.	.	.	Q	.	.	.
16.200	4.4879	36.95	.	.	Q.	.	.	.	.
16.217	4.5269	28.25	.	.	Q	.	.	.	.
16.233	4.5538	19.58	.	.	Q	.	.	.	.
16.250	4.5750	15.41	.	.	Q	.	.	.	.
16.267	4.5951	14.57	.	.	Q	.	.	.	.
16.283	4.6140	13.72	.	.	Q	.	.	.	.
16.300	4.6318	12.88	.	.	Q	.	.	.	.
16.317	4.6483	12.04	.	.	Q	.	.	.	.
16.333	4.6638	11.20	.	.	Q	.	.	.	.
16.350	4.6780	10.36	.	.	Q	.	.	.	.
16.367	4.6918	9.98	.	.	Q	.	.	.	.
16.383	4.7054	9.91	.	.	Q	.	.	.	.
16.400	4.7190	9.83	.	.	Q	.	.	.	.
16.417	4.7324	9.75	.	.	Q	.	.	.	.

16.433	4.7457	9.67	.	Q	.	.	.	V	.
16.450	4.7589	9.59	.	Q	.	.	.	V	.
16.467	4.7720	9.51	.	Q	.	.	.	V	.
16.483	4.7849	9.36	.	Q	.	.	.	V	.
16.500	4.7976	9.17	.	Q	.	.	.	V	.
16.517	4.8099	8.97	.	Q	.	.	.	V	.
16.533	4.8220	8.78	.	Q	.	.	.	.V	.
16.550	4.8338	8.59	.	Q	.	.	.	.V	.
16.567	4.8454	8.39	.	Q	.	.	.	.V	.
16.583	4.8567	8.20	.	Q	.	.	.	.V	.
16.600	4.8678	8.05	.	Q	.	.	.	.V	.
16.617	4.8787	7.91	.	Q	.	.	.	.V	.
16.633	4.8894	7.78	.	Q	.	.	.	.V	.
16.650	4.8999	7.64	.	Q	.	.	.	.V	.
16.667	4.9103	7.51	.	Q	.	.	.	.V	.
16.683	4.9204	7.38	.	Q	.	.	.	.V	.
16.700	4.9304	7.24	.	Q	.	.	.	.V	.
16.717	4.9402	7.14	.	Q	.	.	.	.V	.
16.733	4.9499	7.04	.	Q	.	.	.	.V	.
16.750	4.9595	6.94	.	Q	.	.	.	.V	.
16.767	4.9689	6.84	.	Q	.	.	.	.V	.
16.783	4.9782	6.74	.	Q	.	.	.	.V	.
16.800	4.9873	6.64	.	Q	.	.	.	.V	.
16.817	4.9963	6.54	.	Q	.	.	.	.V	.
16.833	5.0052	6.46	.	Q	.	.	.	.V	.
16.850	5.0140	6.38	.	Q	.	.	.	.V	.
16.867	5.0227	6.30	.	Q	.	.	.	.V	.
16.883	5.0313	6.23	.	Q	.	.	.	.V	.
16.900	5.0398	6.15	.	Q	.	.	.	.V	.
16.917	5.0481	6.07	.	Q	.	.	.	.V	.
16.933	5.0564	6.00	.	Q	.	.	.	.V	.
16.950	5.0645	5.93	.	Q	.	.	.	.V	.
16.967	5.0726	5.87	.	Q	.	.	.	.V	.
16.983	5.0806	5.81	.	Q	.	.	.	.V	.
17.000	5.0885	5.74	.	Q	.	.	.	.V	.
17.017	5.0964	5.68	.	Q	.	.	.	.V	.
17.033	5.1041	5.62	.	Q	.	.	.	.V	.
17.050	5.1118	5.56	.	Q	.	.	.	.V	.
17.067	5.1193	5.51	.	Q	.	.	.	.V	.
17.083	5.1269	5.47	.	Q	.	.	.	.V	.
17.100	5.1344	5.43	.	Q	.	.	.	.V	.
17.117	5.1418	5.39	.	Q	.	.	.	.V	.
17.133	5.1492	5.35	.	Q	.	.	.	.V	.
17.150	5.1565	5.31	.	Q	.	.	.	.V	.
17.167	5.1637	5.27	.	Q	.	.	.	.V	.
17.183	5.1709	5.23	.	Q	.	.	.	.V	.
17.200	5.1781	5.18	.	Q	.	.	.	.V	.
17.217	5.1851	5.14	.	Q	.	.	.	.V	.
17.233	5.1922	5.09	.	Q	.	.	.	.V	.
17.250	5.1991	5.05	.	Q	.	.	.	.V	.

17.267	5.2060	5.01	.	Q	.	.	.	.V	.
17.283	5.2129	4.96	.	Q	.	.	.	.V	.
17.300	5.2196	4.92	.	Q	.	.	.	.V	.
17.317	5.2264	4.89	.	Q	.	.	.	.V	.
17.333	5.2330	4.85	.	Q	.	.	.	.V	.
17.350	5.2397	4.81	.	Q	.	.	.	.V	.
17.367	5.2462	4.77	.	Q	.	.	.	.V	.
17.383	5.2528	4.74	.	Q	.	.	.	.V	.
17.400	5.2592	4.70	.	Q	.	.	.	.V	.
17.417	5.2657	4.66	.	Q	.	.	.	.V	.
17.433	5.2720	4.63	.	Q	.	.	.	.V	.
17.450	5.2784	4.60	.	Q	.	.	.	.V	.
17.467	5.2847	4.57	.	Q	.	.	.	.V	.
17.483	5.2909	4.53	.	Q	.	.	.	.V	.
17.500	5.2971	4.50	.	Q	.	.	.	.V	.
17.517	5.3033	4.47	.	Q	.	.	.	.V	.
17.533	5.3094	4.44	.	Q	.	.	.	.V	.
17.550	5.3155	4.41	.	Q	.	.	.	.V	.
17.567	5.3215	4.38	.	Q	.	.	.	.V	.
17.583	5.3275	4.35	.	Q	.	.	.	.V	.
17.600	5.3334	4.32	.	Q	.	.	.	.V	.
17.617	5.3393	4.29	.	Q	.	.	.	.V	.
17.633	5.3452	4.26	.	Q	.	.	.	.V	.
17.650	5.3511	4.24	.	Q	.	.	.	.V	.
17.667	5.3569	4.21	.	Q	.	.	.	.V	.
17.683	5.3626	4.19	.	Q	.	.	.	.V	.
17.700	5.3684	4.16	.	Q	.	.	.	.V	.
17.717	5.3741	4.13	.	Q	.	.	.	.V	.
17.733	5.3797	4.11	.	Q	.	.	.	.V	.
17.750	5.3853	4.08	.	Q	.	.	.	.V	.
17.767	5.3909	4.06	.	Q	.	.	.	.V	.
17.783	5.3965	4.04	.	Q	.	.	.	.V	.
17.800	5.4020	4.01	.	Q	.	.	.	.V	.
17.817	5.4075	3.99	.	Q	.	.	.	.V	.
17.833	5.4130	3.97	.	Q	.	.	.	.V	.
17.850	5.4184	3.94	.	Q	.	.	.	.V	.
17.867	5.4238	3.92	.	Q	.	.	.	.V	.
17.883	5.4292	3.90	.	Q	.	.	.	.V	.
17.900	5.4345	3.88	.	Q	.	.	.	.V	.
17.917	5.4398	3.86	.	Q	.	.	.	.V	.
17.933	5.4451	3.84	.	Q	.	.	.	.V	.
17.950	5.4504	3.82	.	Q	.	.	.	.V	.
17.967	5.4556	3.79	.	Q	.	.	.	.V	.
17.983	5.4608	3.76	.	Q	.	.	.	.V	.
18.000	5.4659	3.71	.	Q	.	.	.	.V	.
18.017	5.4709	3.65	.	Q	.	.	.	.V	.
18.033	5.4759	3.59	.	Q	.	.	.	.V	.
18.050	5.4807	3.53	.	Q	.	.	.	.V	.
18.067	5.4855	3.47	.	Q	.	.	.	.V	.
18.083	5.4902	3.41	.	Q	.	.	.	.V	.

18.100	5.4948	3.33	.Q	.	.	.	V	.
18.117	5.4992	3.21	.Q	.	.	.	V	.
18.133	5.5034	3.08	.Q	.	.	.	V	.
18.150	5.5075	2.96	.Q	.	.	.	V	.
18.167	5.5114	2.84	.Q	.	.	.	V	.
18.183	5.5152	2.71	.Q	.	.	.	V	.
18.200	5.5187	2.59	.Q	.	.	.	V	.
18.217	5.5222	2.50	.Q	.	.	.	V	.
18.233	5.5256	2.48	.Q	.	.	.	V	.
18.250	5.5290	2.47	.Q	.	.	.	V	.
18.267	5.5323	2.45	.Q	.	.	.	V	.
18.283	5.5357	2.44	.Q	.	.	.	V	.
18.300	5.5390	2.42	.Q	.	.	.	V	.
18.317	5.5424	2.41	.Q	.	.	.	V	.
18.333	5.5456	2.39	.Q	.	.	.	V	.
18.350	5.5489	2.38	.Q	.	.	.	V	.
18.367	5.5522	2.36	.Q	.	.	.	V	.
18.383	5.5554	2.35	.Q	.	.	.	V	.
18.400	5.5586	2.34	.Q	.	.	.	V	.
18.417	5.5618	2.32	.Q	.	.	.	V	.
18.433	5.5650	2.31	.Q	.	.	.	V	.
18.450	5.5682	2.30	.Q	.	.	.	V	.
18.467	5.5713	2.28	.Q	.	.	.	V	.
18.483	5.5745	2.27	.Q	.	.	.	V	.
18.500	5.5776	2.26	.Q	.	.	.	V	.
18.517	5.5807	2.25	.Q	.	.	.	V	.
18.533	5.5837	2.23	.Q	.	.	.	V	.
18.550	5.5868	2.22	.Q	.	.	.	V	.
18.567	5.5898	2.21	.Q	.	.	.	V	.
18.583	5.5929	2.20	.Q	.	.	.	V	.
18.600	5.5959	2.19	.Q	.	.	.	V	.
18.617	5.5989	2.17	.Q	.	.	.	V	.
18.633	5.6018	2.16	.Q	.	.	.	V	.
18.650	5.6048	2.15	.Q	.	.	.	V	.
18.667	5.6078	2.14	.Q	.	.	.	V	.
18.683	5.6107	2.13	.Q	.	.	.	V	.
18.700	5.6136	2.12	.Q	.	.	.	V	.
18.717	5.6165	2.11	.Q	.	.	.	V	.
18.733	5.6194	2.10	.Q	.	.	.	V	.
18.750	5.6223	2.09	.Q	.	.	.	V	.
18.767	5.6251	2.07	.Q	.	.	.	V	.
18.783	5.6280	2.06	.Q	.	.	.	V	.
18.800	5.6308	2.05	.Q	.	.	.	V	.
18.817	5.6336	2.04	.Q	.	.	.	V	.
18.833	5.6364	2.03	.Q	.	.	.	V	.
18.850	5.6392	2.02	.Q	.	.	.	V	.
18.867	5.6420	2.01	.Q	.	.	.	V	.
18.883	5.6447	2.00	.Q	.	.	.	V	.
18.900	5.6475	1.99	.Q	.	.	.	V	.
18.917	5.6502	1.98	.Q	.	.	.	V	.

18.933	5.6529	1.97	.Q	.	.	.	V	.
18.950	5.6556	1.96	.Q	.	.	.	V	.
18.967	5.6583	1.95	.Q	.	.	.	V	.
18.983	5.6610	1.95	.Q	.	.	.	V	.
19.000	5.6637	1.94	.Q	.	.	.	V	.
19.017	5.6663	1.93	.Q	.	.	.	V	.
19.033	5.6690	1.92	.Q	.	.	.	V	.
19.050	5.6716	1.91	Q	.	.	.	V	.
19.067	5.6742	1.90	Q	.	.	.	V	.
19.083	5.6768	1.89	Q	.	.	.	V	.
19.100	5.6794	1.88	Q	.	.	.	V	.
19.117	5.6820	1.87	Q	.	.	.	V	.
19.133	5.6846	1.86	Q	.	.	.	V	.
19.150	5.6871	1.86	Q	.	.	.	V	.
19.167	5.6897	1.85	Q	.	.	.	V	.
19.183	5.6922	1.84	Q	.	.	.	V	.
19.200	5.6947	1.83	Q	.	.	.	V	.
19.217	5.6972	1.82	Q	.	.	.	V	.
19.233	5.6997	1.81	Q	.	.	.	V	.
19.250	5.7022	1.81	Q	.	.	.	V	.
19.267	5.7047	1.80	Q	.	.	.	V	.
19.283	5.7072	1.79	Q	.	.	.	V	.
19.300	5.7096	1.78	Q	.	.	.	V	.
19.317	5.7121	1.78	Q	.	.	.	V	.
19.333	5.7145	1.77	Q	.	.	.	V	.
19.350	5.7169	1.76	Q	.	.	.	V	.
19.367	5.7193	1.75	Q	.	.	.	V	.
19.383	5.7217	1.75	Q	.	.	.	V	.
19.400	5.7241	1.74	Q	.	.	.	V	.
19.417	5.7265	1.73	Q	.	.	.	V	.
19.433	5.7289	1.73	Q	.	.	.	V	.
19.450	5.7313	1.72	Q	.	.	.	V	.
19.467	5.7336	1.72	Q	.	.	.	V	.
19.483	5.7360	1.71	Q	.	.	.	V	.
19.500	5.7383	1.71	Q	.	.	.	V	.
19.517	5.7407	1.70	Q	.	.	.	V	.
19.533	5.7430	1.69	Q	.	.	.	V	.
19.550	5.7453	1.69	Q	.	.	.	V	.
19.567	5.7477	1.68	Q	.	.	.	V	.
19.583	5.7500	1.68	Q	.	.	.	V	.
19.600	5.7523	1.67	Q	.	.	.	V	.
19.617	5.7546	1.67	Q	.	.	.	V	.
19.633	5.7569	1.66	Q	.	.	.	V	.
19.650	5.7592	1.66	Q	.	.	.	V	.
19.667	5.7614	1.65	Q	.	.	.	V	.
19.683	5.7637	1.65	Q	.	.	.	V	.
19.700	5.7660	1.64	Q	.	.	.	V	.
19.717	5.7682	1.64	Q	.	.	.	V	.
19.733	5.7705	1.63	Q	.	.	.	V	.
19.750	5.7727	1.63	Q	.	.	.	V	.

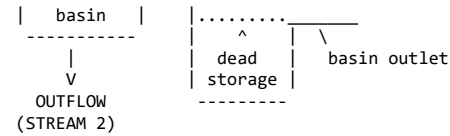
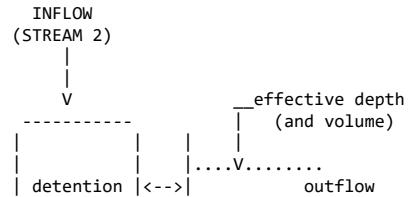
19.767	5.7750	1.63	Q	.	.	.	V	.
19.783	5.7772	1.62	Q	.	.	.	V	.
19.800	5.7794	1.62	Q	.	.	.	V	.
19.817	5.7816	1.61	Q	.	.	.	V	.
19.833	5.7839	1.61	Q	.	.	.	V	.
19.850	5.7861	1.60	Q	.	.	.	V	.
19.867	5.7883	1.60	Q	.	.	.	V	.
19.883	5.7905	1.59	Q	.	.	.	V	.
19.900	5.7927	1.59	Q	.	.	.	V	.
19.917	5.7948	1.58	Q	.	.	.	V	.
19.933	5.7970	1.58	Q	.	.	.	V	.
19.950	5.7992	1.58	Q	.	.	.	V	.
19.967	5.8013	1.57	Q	.	.	.	V	.
19.983	5.8035	1.57	Q	.	.	.	V	.
20.000	5.8057	1.56	Q	.	.	.	V	.

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
 (Note: 100% of Peak Flow Rate estimate assumed to have
 an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
=====	=====
0%	1201.0
10%	490.0
20%	130.0
30%	80.0
40%	55.0
50%	45.0
60%	35.0
70%	30.0
80%	20.0
90%	10.0

 FLOW PROCESS FROM NODE 700.00 TO NODE 700.00 IS CODE = 3.2

>>>>FLOW-THROUGH DETENTION BASIN ROUTING MODEL APPLIED TO STREAM #2<<<<



ROUTE RUNOFF HYDROGRAPH FROM STREAM NUMBER 2
 THROUGH A FLOW-THROUGH DETENTION BASIN
 SPECIFIED BASIN CONDITIONS ARE AS FOLLOWS:
 DEAD STORAGE(AF) = 0.000
 SPECIFIED DEAD STORAGE(AF) FILLED = 0.000
 SPECIFIED EFFECTIVE VOLUME(AF) FILLED ABOVE OUTLET = 0.000
 DETENTION BASIN CONSTANT LOSS RATE(CFS) = 0.00

BASIN DEPTH VERSUS OUTFLOW AND STORAGE INFORMATION:

INTERVAL NUMBER	DEPTH (FT)	OUTFLOW (CFS)	STORAGE (AF)
1	0.00	0.00	0.000
2	0.25	0.01	0.074
3	0.50	0.02	0.149
4	0.75	0.03	0.250
5	1.00	4.25	0.372
6	1.25	6.02	0.504
7	1.50	7.37	0.644
8	1.75	8.51	0.787
9	2.00	9.51	0.933
10	2.25	10.42	1.078
11	2.50	11.26	1.222
12	2.75	12.03	1.361
13	3.00	12.76	1.586
14	3.25	17.70	1.615
15	3.50	26.12	1.716
16	3.75	36.79	1.791
17	4.00	49.30	1.865
18	4.25	63.37	1.940
19	4.50	78.86	2.014

=====

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

CLOCK TIME	DEAD-STORAGE	INFLOW	LOSS	MEAN EFFECTIVE OUTFLOW	EFFECTIVE
---------------	--------------	--------	------	---------------------------	-----------

(HRS)	FILLED(AF)	(CFS)	(CFS)	DEPTH(FT)	(CFS)	VOLUME(AF)
10.000	0.000	1.85	0.00	0.85	1.8	0.300
10.017	0.000	1.86	0.00	0.85	1.8	0.301
10.033	0.000	1.86	0.00	0.85	1.8	0.301
10.050	0.000	1.87	0.00	0.85	1.8	0.301
10.067	0.000	1.87	0.00	0.85	1.8	0.301
10.083	0.000	1.88	0.00	0.85	1.8	0.301
10.100	0.000	1.88	0.00	0.85	1.8	0.301
10.117	0.000	1.89	0.00	0.86	1.8	0.301
10.133	0.000	1.89	0.00	0.86	1.8	0.301
10.150	0.000	1.89	0.00	0.86	1.8	0.301
10.167	0.000	1.89	0.00	0.86	1.8	0.302
10.183	0.000	1.90	0.00	0.86	1.8	0.302
10.200	0.000	1.90	0.00	0.86	1.8	0.302
10.217	0.000	1.90	0.00	0.86	1.8	0.302
10.233	0.000	1.91	0.00	0.86	1.8	0.302
10.250	0.000	1.92	0.00	0.86	1.8	0.302
10.267	0.000	1.92	0.00	0.86	1.8	0.302
10.283	0.000	1.93	0.00	0.86	1.8	0.302
10.300	0.000	1.93	0.00	0.86	1.8	0.302
10.317	0.000	1.94	0.00	0.86	1.8	0.303
10.333	0.000	1.95	0.00	0.86	1.9	0.303
10.350	0.000	1.95	0.00	0.86	1.9	0.303
10.367	0.000	1.95	0.00	0.86	1.9	0.303
10.383	0.000	1.95	0.00	0.86	1.9	0.303
10.400	0.000	1.96	0.00	0.86	1.9	0.303
10.417	0.000	1.96	0.00	0.86	1.9	0.303
10.433	0.000	1.96	0.00	0.86	1.9	0.303
10.450	0.000	1.97	0.00	0.86	1.9	0.304
10.467	0.000	1.98	0.00	0.86	1.9	0.304
10.483	0.000	1.98	0.00	0.86	1.9	0.304
10.500	0.000	1.99	0.00	0.86	1.9	0.304
10.517	0.000	2.00	0.00	0.86	1.9	0.304
10.533	0.000	2.00	0.00	0.86	1.9	0.304
10.550	0.000	2.01	0.00	0.86	1.9	0.304
10.567	0.000	2.01	0.00	0.86	1.9	0.304
10.583	0.000	2.02	0.00	0.86	1.9	0.305
10.600	0.000	2.02	0.00	0.86	1.9	0.305
10.617	0.000	2.02	0.00	0.86	1.9	0.305
10.633	0.000	2.03	0.00	0.86	1.9	0.305
10.650	0.000	2.03	0.00	0.86	1.9	0.305
10.667	0.000	2.03	0.00	0.86	1.9	0.305
10.683	0.000	2.04	0.00	0.86	1.9	0.305
10.700	0.000	2.05	0.00	0.86	2.0	0.306
10.717	0.000	2.05	0.00	0.86	2.0	0.306
10.733	0.000	2.06	0.00	0.86	2.0	0.306
10.750	0.000	2.07	0.00	0.86	2.0	0.306
10.767	0.000	2.07	0.00	0.86	2.0	0.306
10.783	0.000	2.08	0.00	0.87	2.0	0.306

10.800	0.000	2.08	0.00	0.87	2.0	0.306
10.817	0.000	2.09	0.00	0.87	2.0	0.307
10.833	0.000	2.09	0.00	0.87	2.0	0.307
10.850	0.000	2.10	0.00	0.87	2.0	0.307
10.867	0.000	2.10	0.00	0.87	2.0	0.307
10.883	0.000	2.10	0.00	0.87	2.0	0.307
10.900	0.000	2.11	0.00	0.87	2.0	0.307
10.917	0.000	2.11	0.00	0.87	2.0	0.307
10.933	0.000	2.12	0.00	0.87	2.0	0.307
10.950	0.000	2.13	0.00	0.87	2.0	0.308
10.967	0.000	2.13	0.00	0.87	2.0	0.308
10.983	0.000	2.14	0.00	0.87	2.0	0.308
11.000	0.000	2.15	0.00	0.87	2.0	0.308
11.017	0.000	2.16	0.00	0.87	2.0	0.308
11.033	0.000	2.16	0.00	0.87	2.0	0.308
11.050	0.000	2.17	0.00	0.87	2.1	0.309
11.067	0.000	2.17	0.00	0.87	2.1	0.309
11.083	0.000	2.17	0.00	0.87	2.1	0.309
11.100	0.000	2.18	0.00	0.87	2.1	0.309
11.117	0.000	2.18	0.00	0.87	2.1	0.309
11.133	0.000	2.19	0.00	0.87	2.1	0.309
11.150	0.000	2.19	0.00	0.87	2.1	0.309
11.167	0.000	2.20	0.00	0.87	2.1	0.310
11.183	0.000	2.21	0.00	0.87	2.1	0.310
11.200	0.000	2.22	0.00	0.87	2.1	0.310
11.217	0.000	2.22	0.00	0.87	2.1	0.310
11.233	0.000	2.23	0.00	0.87	2.1	0.310
11.250	0.000	2.24	0.00	0.87	2.1	0.310
11.267	0.000	2.25	0.00	0.87	2.1	0.311
11.283	0.000	2.25	0.00	0.87	2.1	0.311
11.300	0.000	2.25	0.00	0.87	2.1	0.311
11.317	0.000	2.26	0.00	0.88	2.1	0.311
11.333	0.000	2.26	0.00	0.88	2.1	0.311
11.350	0.000	2.27	0.00	0.88	2.2	0.311
11.367	0.000	2.27	0.00	0.88	2.2	0.312
11.383	0.000	2.28	0.00	0.88	2.2	0.312
11.400	0.000	2.29	0.00	0.88	2.2	0.312
11.417	0.000	2.30	0.00	0.88	2.2	0.312
11.433	0.000	2.30	0.00	0.88	2.2	0.312
11.450	0.000	2.31	0.00	0.88	2.2	0.312
11.467	0.000	2.32	0.00	0.88	2.2	0.313
11.483	0.000	2.33	0.00	0.88	2.2	0.313
11.500	0.000	2.34	0.00	0.88	2.2	0.313
11.517	0.000	2.34	0.00	0.88	2.2	0.313
11.533	0.000	2.34	0.00	0.88	2.2	0.313
11.550	0.000	2.35	0.00	0.88	2.2	0.313
11.567	0.000	2.35	0.00	0.88	2.2	0.314
11.583	0.000	2.36	0.00	0.88	2.2	0.314
11.600	0.000	2.36	0.00	0.88	2.2	0.314
11.617	0.000	2.37	0.00	0.88	2.2	0.314

11.633	0.000	2.38	0.00	0.88	2.3	0.314
11.650	0.000	2.39	0.00	0.88	2.3	0.314
11.667	0.000	2.40	0.00	0.88	2.3	0.315
11.683	0.000	2.41	0.00	0.88	2.3	0.315
11.700	0.000	2.42	0.00	0.88	2.3	0.315
11.717	0.000	2.43	0.00	0.88	2.3	0.315
11.733	0.000	2.43	0.00	0.88	2.3	0.315
11.750	0.000	2.44	0.00	0.88	2.3	0.316
11.767	0.000	2.44	0.00	0.88	2.3	0.316
11.783	0.000	2.45	0.00	0.89	2.3	0.316
11.800	0.000	2.45	0.00	0.89	2.3	0.316
11.817	0.000	2.46	0.00	0.89	2.3	0.316
11.833	0.000	2.46	0.00	0.89	2.3	0.317
11.850	0.000	2.47	0.00	0.89	2.3	0.317
11.867	0.000	2.48	0.00	0.89	2.3	0.317
11.883	0.000	2.49	0.00	0.89	2.4	0.317
11.900	0.000	2.51	0.00	0.89	2.4	0.317
11.917	0.000	2.52	0.00	0.89	2.4	0.318
11.933	0.000	2.53	0.00	0.89	2.4	0.318
11.950	0.000	2.54	0.00	0.89	2.4	0.318
11.967	0.000	2.54	0.00	0.89	2.4	0.318
11.983	0.000	2.55	0.00	0.89	2.4	0.318
12.000	0.000	2.55	0.00	0.89	2.4	0.319
12.017	0.000	2.56	0.00	0.89	2.4	0.319
12.033	0.000	2.56	0.00	0.89	2.4	0.319
12.050	0.000	2.57	0.00	0.89	2.4	0.319
12.067	0.000	2.61	0.00	0.89	2.4	0.319
12.083	0.000	2.76	0.00	0.89	2.4	0.320
12.100	0.000	2.92	0.00	0.89	2.5	0.321
12.117	0.000	3.08	0.00	0.90	2.5	0.321
12.133	0.000	3.24	0.00	0.90	2.5	0.322
12.150	0.000	3.40	0.00	0.90	2.6	0.323
12.167	0.000	3.56	0.00	0.90	2.6	0.325
12.183	0.000	3.68	0.00	0.91	2.6	0.326
12.200	0.000	3.69	0.00	0.91	2.7	0.328
12.217	0.000	3.70	0.00	0.91	2.7	0.329
12.233	0.000	3.71	0.00	0.91	2.8	0.330
12.250	0.000	3.71	0.00	0.92	2.8	0.331
12.267	0.000	3.72	0.00	0.92	2.9	0.333
12.283	0.000	3.73	0.00	0.92	2.9	0.334
12.300	0.000	3.73	0.00	0.92	2.9	0.335
12.317	0.000	3.75	0.00	0.93	3.0	0.336
12.333	0.000	3.76	0.00	0.93	3.0	0.337
12.350	0.000	3.77	0.00	0.93	3.1	0.338
12.367	0.000	3.79	0.00	0.93	3.1	0.339
12.383	0.000	3.80	0.00	0.93	3.1	0.340
12.400	0.000	3.81	0.00	0.94	3.2	0.341
12.417	0.000	3.83	0.00	0.94	3.2	0.342
12.433	0.000	3.83	0.00	0.94	3.2	0.342
12.450	0.000	3.84	0.00	0.94	3.2	0.343

12.467	0.000	3.85	0.00	0.94	3.3	0.344
12.483	0.000	3.85	0.00	0.94	3.3	0.345
12.500	0.000	3.86	0.00	0.95	3.3	0.346
12.517	0.000	3.87	0.00	0.95	3.3	0.346
12.533	0.000	3.88	0.00	0.95	3.4	0.347
12.550	0.000	3.89	0.00	0.95	3.4	0.348
12.567	0.000	3.91	0.00	0.95	3.4	0.348
12.583	0.000	3.92	0.00	0.95	3.4	0.349
12.600	0.000	3.94	0.00	0.95	3.5	0.350
12.617	0.000	3.95	0.00	0.96	3.5	0.350
12.633	0.000	3.97	0.00	0.96	3.5	0.351
12.650	0.000	3.98	0.00	0.96	3.5	0.352
12.667	0.000	3.99	0.00	0.96	3.6	0.352
12.683	0.000	3.99	0.00	0.96	3.6	0.353
12.700	0.000	4.00	0.00	0.96	3.6	0.353
12.717	0.000	4.01	0.00	0.96	3.6	0.354
12.733	0.000	4.02	0.00	0.96	3.6	0.354
12.750	0.000	4.02	0.00	0.96	3.6	0.355
12.767	0.000	4.04	0.00	0.97	3.7	0.355
12.783	0.000	4.05	0.00	0.97	3.7	0.356
12.800	0.000	4.07	0.00	0.97	3.7	0.356
12.817	0.000	4.08	0.00	0.97	3.7	0.357
12.833	0.000	4.10	0.00	0.97	3.7	0.357
12.850	0.000	4.12	0.00	0.97	3.8	0.358
12.867	0.000	4.13	0.00	0.97	3.8	0.358
12.883	0.000	4.15	0.00	0.97	3.8	0.359
12.900	0.000	4.16	0.00	0.97	3.8	0.359
12.917	0.000	4.16	0.00	0.98	3.8	0.360
12.933	0.000	4.17	0.00	0.98	3.8	0.360
12.950	0.000	4.18	0.00	0.98	3.9	0.361
12.967	0.000	4.19	0.00	0.98	3.9	0.361
12.983	0.000	4.20	0.00	0.98	3.9	0.362
13.000	0.000	4.21	0.00	0.98	3.9	0.362
13.017	0.000	4.23	0.00	0.98	3.9	0.362
13.033	0.000	4.25	0.00	0.98	3.9	0.363
13.050	0.000	4.27	0.00	0.98	3.9	0.363
13.067	0.000	4.28	0.00	0.98	4.0	0.364
13.083	0.000	4.30	0.00	0.98	4.0	0.364
13.100	0.000	4.32	0.00	0.99	4.0	0.365
13.117	0.000	4.34	0.00	0.99	4.0	0.365
13.133	0.000	4.34	0.00	0.99	4.0	0.366
13.150	0.000	4.35	0.00	0.99	4.0	0.366
13.167	0.000	4.36	0.00	0.99	4.1	0.366
13.183	0.000	4.37	0.00	0.99	4.1	0.367
13.200	0.000	4.38	0.00	0.99	4.1	0.367
13.217	0.000	4.39	0.00	0.99	4.1	0.368
13.233	0.000	4.41	0.00	0.99	4.1	0.368
13.250	0.000	4.43	0.00	0.99	4.1	0.369
13.267	0.000	4.45	0.00	0.99	4.1	0.369
13.283	0.000	4.47	0.00	0.99	4.2	0.369

13.300	0.000	4.49	0.00	1.00	4.2	0.370
13.317	0.000	4.51	0.00	1.00	4.2	0.370
13.333	0.000	4.53	0.00	1.00	4.2	0.371
13.350	0.000	4.55	0.00	1.00	4.2	0.371
13.367	0.000	4.56	0.00	1.00	4.2	0.372
13.383	0.000	4.57	0.00	1.00	4.2	0.372
13.400	0.000	4.58	0.00	1.00	4.3	0.373
13.417	0.000	4.59	0.00	1.00	4.3	0.373
13.433	0.000	4.60	0.00	1.00	4.3	0.374
13.450	0.000	4.61	0.00	1.00	4.3	0.374
13.467	0.000	4.63	0.00	1.00	4.3	0.374
13.483	0.000	4.66	0.00	1.01	4.3	0.375
13.500	0.000	4.68	0.00	1.01	4.3	0.376
13.517	0.000	4.70	0.00	1.01	4.3	0.376
13.533	0.000	4.73	0.00	1.01	4.3	0.377
13.550	0.000	4.75	0.00	1.01	4.3	0.377
13.567	0.000	4.77	0.00	1.01	4.3	0.378
13.583	0.000	4.79	0.00	1.01	4.3	0.378
13.600	0.000	4.80	0.00	1.01	4.3	0.379
13.617	0.000	4.81	0.00	1.01	4.3	0.380
13.633	0.000	4.83	0.00	1.02	4.4	0.380
13.650	0.000	4.84	0.00	1.02	4.4	0.381
13.667	0.000	4.85	0.00	1.02	4.4	0.382
13.683	0.000	4.86	0.00	1.02	4.4	0.382
13.700	0.000	4.89	0.00	1.02	4.4	0.383
13.717	0.000	4.91	0.00	1.02	4.4	0.384
13.733	0.000	4.94	0.00	1.02	4.4	0.384
13.750	0.000	4.97	0.00	1.03	4.4	0.385
13.767	0.000	5.00	0.00	1.03	4.4	0.386
13.783	0.000	5.02	0.00	1.03	4.4	0.387
13.800	0.000	5.05	0.00	1.03	4.5	0.388
13.817	0.000	5.07	0.00	1.03	4.5	0.388
13.833	0.000	5.08	0.00	1.03	4.5	0.389
13.850	0.000	5.10	0.00	1.03	4.5	0.390
13.867	0.000	5.11	0.00	1.04	4.5	0.391
13.883	0.000	5.13	0.00	1.04	4.5	0.392
13.900	0.000	5.14	0.00	1.04	4.5	0.393
13.917	0.000	5.16	0.00	1.04	4.5	0.394
13.933	0.000	5.18	0.00	1.04	4.5	0.394
13.950	0.000	5.21	0.00	1.04	4.6	0.395
13.967	0.000	5.25	0.00	1.05	4.6	0.396
13.983	0.000	5.28	0.00	1.05	4.6	0.397
14.000	0.000	5.31	0.00	1.05	4.6	0.398
14.017	0.000	5.34	0.00	1.05	4.6	0.399
14.033	0.000	5.37	0.00	1.05	4.6	0.400
14.050	0.000	5.38	0.00	1.06	4.6	0.401
14.067	0.000	5.39	0.00	1.06	4.6	0.402
14.083	0.000	5.40	0.00	1.06	4.7	0.403
14.100	0.000	5.41	0.00	1.06	4.7	0.404
14.117	0.000	5.41	0.00	1.06	4.7	0.405

14.133	0.000	5.42	0.00	1.06	4.7	0.406
14.150	0.000	5.43	0.00	1.07	4.7	0.407
14.167	0.000	5.46	0.00	1.07	4.7	0.408
14.183	0.000	5.50	0.00	1.07	4.7	0.409
14.200	0.000	5.53	0.00	1.07	4.8	0.410
14.217	0.000	5.57	0.00	1.07	4.8	0.412
14.233	0.000	5.61	0.00	1.08	4.8	0.413
14.250	0.000	5.64	0.00	1.08	4.8	0.414
14.267	0.000	5.68	0.00	1.08	4.8	0.415
14.283	0.000	5.70	0.00	1.08	4.8	0.416
14.300	0.000	5.72	0.00	1.09	4.8	0.417
14.317	0.000	5.74	0.00	1.09	4.9	0.419
14.333	0.000	5.76	0.00	1.09	4.9	0.420
14.350	0.000	5.78	0.00	1.09	4.9	0.421
14.367	0.000	5.80	0.00	1.10	4.9	0.422
14.383	0.000	5.83	0.00	1.10	4.9	0.423
14.400	0.000	5.87	0.00	1.10	4.9	0.425
14.417	0.000	5.92	0.00	1.10	5.0	0.426
14.433	0.000	5.96	0.00	1.10	5.0	0.427
14.450	0.000	6.01	0.00	1.11	5.0	0.429
14.467	0.000	6.05	0.00	1.11	5.0	0.430
14.483	0.000	6.10	0.00	1.11	5.0	0.432
14.500	0.000	6.14	0.00	1.12	5.1	0.433
14.517	0.000	6.17	0.00	1.12	5.1	0.435
14.533	0.000	6.20	0.00	1.12	5.1	0.436
14.550	0.000	6.22	0.00	1.12	5.1	0.438
14.567	0.000	6.25	0.00	1.13	5.1	0.439
14.583	0.000	6.28	0.00	1.13	5.2	0.441
14.600	0.000	6.30	0.00	1.13	5.2	0.442
14.617	0.000	6.33	0.00	1.14	5.2	0.444
14.633	0.000	6.39	0.00	1.14	5.2	0.445
14.650	0.000	6.44	0.00	1.14	5.2	0.447
14.667	0.000	6.50	0.00	1.15	5.3	0.449
14.683	0.000	6.56	0.00	1.15	5.3	0.451
14.700	0.000	6.62	0.00	1.15	5.3	0.452
14.717	0.000	6.67	0.00	1.16	5.3	0.454
14.733	0.000	6.73	0.00	1.16	5.4	0.456
14.750	0.000	6.76	0.00	1.16	5.4	0.458
14.767	0.000	6.80	0.00	1.17	5.4	0.460
14.783	0.000	6.83	0.00	1.17	5.4	0.462
14.800	0.000	6.86	0.00	1.17	5.5	0.464
14.817	0.000	6.90	0.00	1.18	5.5	0.466
14.833	0.000	6.93	0.00	1.18	5.5	0.468
14.850	0.000	6.97	0.00	1.18	5.5	0.470
14.867	0.000	7.04	0.00	1.19	5.6	0.472
14.883	0.000	7.12	0.00	1.19	5.6	0.474
14.900	0.000	7.19	0.00	1.20	5.6	0.476
14.917	0.000	7.27	0.00	1.20	5.7	0.478
14.933	0.000	7.35	0.00	1.21	5.7	0.480
14.950	0.000	7.42	0.00	1.21	5.7	0.483

14.967	0.000	7.49	0.00	1.21	5.7	0.485
14.983	0.000	7.54	0.00	1.22	5.8	0.488
15.000	0.000	7.58	0.00	1.22	5.8	0.490
15.017	0.000	7.63	0.00	1.23	5.8	0.492
15.033	0.000	7.67	0.00	1.23	5.9	0.495
15.050	0.000	7.71	0.00	1.24	5.9	0.497
15.067	0.000	7.76	0.00	1.24	5.9	0.500
15.083	0.000	7.82	0.00	1.25	6.0	0.502
15.100	0.000	7.92	0.00	1.25	6.0	0.505
15.117	0.000	8.02	0.00	1.26	6.0	0.508
15.133	0.000	8.13	0.00	1.26	6.1	0.511
15.150	0.000	8.24	0.00	1.27	6.1	0.514
15.167	0.000	8.34	0.00	1.27	6.1	0.517
15.183	0.000	8.45	0.00	1.28	6.2	0.520
15.200	0.000	8.54	0.00	1.28	6.2	0.523
15.217	0.000	8.61	0.00	1.29	6.2	0.526
15.233	0.000	8.67	0.00	1.30	6.2	0.530
15.250	0.000	8.74	0.00	1.30	6.3	0.533
15.267	0.000	8.80	0.00	1.31	6.3	0.536
15.283	0.000	8.86	0.00	1.31	6.3	0.540
15.300	0.000	8.93	0.00	1.32	6.4	0.543
15.317	0.000	8.98	0.00	1.33	6.4	0.547
15.333	0.000	8.99	0.00	1.33	6.4	0.550
15.350	0.000	9.01	0.00	1.34	6.5	0.554
15.367	0.000	9.02	0.00	1.35	6.5	0.557
15.383	0.000	9.04	0.00	1.35	6.5	0.561
15.400	0.000	9.05	0.00	1.36	6.6	0.564
15.417	0.000	9.07	0.00	1.36	6.6	0.568
15.433	0.000	9.08	0.00	1.37	6.6	0.571
15.450	0.000	9.09	0.00	1.38	6.7	0.574
15.467	0.000	9.10	0.00	1.38	6.7	0.578
15.483	0.000	9.12	0.00	1.39	6.7	0.581
15.500	0.000	9.13	0.00	1.39	6.8	0.584
15.517	0.000	9.14	0.00	1.40	6.8	0.587
15.533	0.000	9.15	0.00	1.40	6.8	0.590
15.550	0.000	9.26	0.00	1.41	6.9	0.594
15.567	0.000	9.54	0.00	1.42	6.9	0.597
15.583	0.000	9.83	0.00	1.42	6.9	0.601
15.600	0.000	10.12	0.00	1.43	7.0	0.606
15.617	0.000	10.40	0.00	1.44	7.0	0.610
15.633	0.000	10.69	0.00	1.45	7.1	0.615
15.650	0.000	10.97	0.00	1.46	7.1	0.621
15.667	0.000	11.25	0.00	1.47	7.2	0.626
15.683	0.000	11.51	0.00	1.48	7.2	0.632
15.700	0.000	11.78	0.00	1.49	7.3	0.638
15.717	0.000	12.04	0.00	1.50	7.3	0.645
15.733	0.000	12.30	0.00	1.51	7.4	0.652
15.750	0.000	12.57	0.00	1.53	7.5	0.659
15.767	0.000	12.83	0.00	1.54	7.5	0.666
15.783	0.000	13.37	0.00	1.55	7.6	0.674

15.800	0.000	14.29	0.00	1.57	7.6	0.683
15.817	0.000	15.22	0.00	1.59	7.7	0.693
15.833	0.000	16.14	0.00	1.61	7.8	0.705
15.850	0.000	17.07	0.00	1.63	7.9	0.718
15.867	0.000	17.99	0.00	1.65	8.0	0.731
15.883	0.000	18.92	0.00	1.68	8.1	0.746
15.900	0.000	19.88	0.00	1.71	8.2	0.762
15.917	0.000	20.89	0.00	1.74	8.4	0.779
15.933	0.000	21.89	0.00	1.77	8.5	0.798
15.950	0.000	22.90	0.00	1.80	8.7	0.817
15.967	0.000	23.91	0.00	1.84	8.8	0.838
15.983	0.000	24.92	0.00	1.88	8.9	0.860
16.000	0.000	25.92	0.00	1.92	9.1	0.883
16.017	0.000	30.02	0.00	1.96	9.3	0.912
16.033	0.000	37.20	0.00	2.03	9.5	0.950
16.050	0.000	44.39	0.00	2.11	9.8	0.998
16.067	0.000	51.57	0.00	2.21	10.1	1.055
16.083	0.000	58.76	0.00	2.33	10.5	1.122
16.100	0.000	65.94	0.00	2.46	10.9	1.197
16.117	0.000	76.43	0.00	2.62	11.4	1.287
16.133	0.000	71.74	0.00	2.76	11.8	1.370
16.150	0.000	63.04	0.00	2.84	12.2	1.440
16.167	0.000	54.34	0.00	2.90	12.4	1.497
16.183	0.000	45.65	0.00	2.95	12.5	1.543
16.200	0.000	36.95	0.00	2.99	12.7	1.576
16.217	0.000	28.25	0.00	3.09	13.6	1.597
16.233	0.000	19.58	0.00	3.14	15.1	1.603
16.250	0.000	15.41	0.00	3.14	15.6	1.602
16.267	0.000	14.57	0.00	3.13	15.5	1.601
16.283	0.000	13.72	0.00	3.11	15.2	1.599
16.300	0.000	12.88	0.00	3.09	14.8	1.597
16.317	0.000	12.04	0.00	3.06	14.3	1.593
16.333	0.000	11.20	0.00	3.03	13.7	1.590
16.350	0.000	10.36	0.00	3.00	13.1	1.586
16.367	0.000	9.98	0.00	3.00	12.8	1.582
16.383	0.000	9.91	0.00	2.99	12.7	1.578
16.400	0.000	9.83	0.00	2.99	12.7	1.574
16.417	0.000	9.75	0.00	2.98	12.7	1.570
16.433	0.000	9.67	0.00	2.98	12.7	1.566
16.450	0.000	9.59	0.00	2.97	12.7	1.562
16.467	0.000	9.51	0.00	2.97	12.7	1.558
16.483	0.000	9.36	0.00	2.96	12.7	1.553
16.500	0.000	9.17	0.00	2.96	12.6	1.548
16.517	0.000	8.97	0.00	2.95	12.6	1.543
16.533	0.000	8.78	0.00	2.95	12.6	1.538
16.550	0.000	8.59	0.00	2.94	12.6	1.532
16.567	0.000	8.39	0.00	2.93	12.6	1.527
16.583	0.000	8.20	0.00	2.93	12.6	1.521
16.600	0.000	8.05	0.00	2.92	12.5	1.514
16.617	0.000	7.91	0.00	2.91	12.5	1.508

16.633	0.000	7.78	0.00	2.91	12.5	1.502
16.650	0.000	7.64	0.00	2.90	12.5	1.495
16.667	0.000	7.51	0.00	2.89	12.5	1.488
16.683	0.000	7.38	0.00	2.88	12.4	1.481
16.700	0.000	7.24	0.00	2.88	12.4	1.474
16.717	0.000	7.14	0.00	2.87	12.4	1.467
16.733	0.000	7.04	0.00	2.86	12.4	1.459
16.750	0.000	6.94	0.00	2.85	12.3	1.452
16.767	0.000	6.84	0.00	2.84	12.3	1.444
16.783	0.000	6.74	0.00	2.83	12.3	1.437
16.800	0.000	6.64	0.00	2.83	12.3	1.429
16.817	0.000	6.54	0.00	2.82	12.2	1.421
16.833	0.000	6.46	0.00	2.81	12.2	1.413
16.850	0.000	6.38	0.00	2.80	12.2	1.405
16.867	0.000	6.30	0.00	2.79	12.2	1.397
16.883	0.000	6.23	0.00	2.78	12.1	1.389
16.900	0.000	6.15	0.00	2.77	12.1	1.381
16.917	0.000	6.07	0.00	2.76	12.1	1.373
16.933	0.000	6.00	0.00	2.75	12.1	1.364
16.950	0.000	5.93	0.00	2.74	12.0	1.356
16.967	0.000	5.87	0.00	2.73	12.0	1.347
16.983	0.000	5.81	0.00	2.71	11.9	1.339
17.000	0.000	5.74	0.00	2.70	11.9	1.331
17.017	0.000	5.68	0.00	2.68	11.8	1.322
17.033	0.000	5.62	0.00	2.66	11.8	1.314
17.050	0.000	5.56	0.00	2.65	11.7	1.305
17.067	0.000	5.51	0.00	2.63	11.7	1.297
17.083	0.000	5.47	0.00	2.62	11.6	1.288
17.100	0.000	5.43	0.00	2.60	11.6	1.280
17.117	0.000	5.39	0.00	2.59	11.6	1.271
17.133	0.000	5.35	0.00	2.57	11.5	1.263
17.150	0.000	5.31	0.00	2.56	11.5	1.254
17.167	0.000	5.27	0.00	2.54	11.4	1.246
17.183	0.000	5.23	0.00	2.53	11.4	1.237
17.200	0.000	5.18	0.00	2.51	11.3	1.229
17.217	0.000	5.14	0.00	2.50	11.3	1.220
17.233	0.000	5.09	0.00	2.48	11.2	1.212
17.250	0.000	5.05	0.00	2.47	11.2	1.203
17.267	0.000	5.01	0.00	2.45	11.1	1.195
17.283	0.000	4.96	0.00	2.44	11.1	1.187
17.300	0.000	4.92	0.00	2.42	11.0	1.178
17.317	0.000	4.89	0.00	2.41	11.0	1.170
17.333	0.000	4.85	0.00	2.39	10.9	1.161
17.350	0.000	4.81	0.00	2.38	10.9	1.153
17.367	0.000	4.77	0.00	2.37	10.8	1.145
17.383	0.000	4.74	0.00	2.35	10.8	1.136
17.400	0.000	4.70	0.00	2.34	10.7	1.128
17.417	0.000	4.66	0.00	2.32	10.7	1.120
17.433	0.000	4.63	0.00	2.31	10.6	1.111
17.450	0.000	4.60	0.00	2.29	10.6	1.103

17.467	0.000	4.57	0.00	2.28	10.5	1.095
17.483	0.000	4.53	0.00	2.27	10.5	1.087
17.500	0.000	4.50	0.00	2.25	10.4	1.079
17.517	0.000	4.47	0.00	2.24	10.4	1.070
17.533	0.000	4.44	0.00	2.22	10.3	1.062
17.550	0.000	4.41	0.00	2.21	10.3	1.054
17.567	0.000	4.38	0.00	2.20	10.2	1.046
17.583	0.000	4.35	0.00	2.18	10.2	1.038
17.600	0.000	4.32	0.00	2.17	10.1	1.030
17.617	0.000	4.29	0.00	2.15	10.1	1.022
17.633	0.000	4.26	0.00	2.14	10.0	1.014
17.650	0.000	4.24	0.00	2.13	10.0	1.006
17.667	0.000	4.21	0.00	2.11	9.9	0.998
17.683	0.000	4.19	0.00	2.10	9.9	0.990
17.700	0.000	4.16	0.00	2.09	9.8	0.983
17.717	0.000	4.13	0.00	2.07	9.8	0.975
17.733	0.000	4.11	0.00	2.06	9.7	0.967
17.750	0.000	4.08	0.00	2.05	9.7	0.959
17.767	0.000	4.06	0.00	2.03	9.7	0.952
17.783	0.000	4.04	0.00	2.02	9.6	0.944
17.800	0.000	4.01	0.00	2.01	9.6	0.936
17.817	0.000	3.99	0.00	1.99	9.5	0.929
17.833	0.000	3.97	0.00	1.98	9.5	0.921
17.850	0.000	3.94	0.00	1.97	9.4	0.914
17.867	0.000	3.92	0.00	1.95	9.4	0.906
17.883	0.000	3.90	0.00	1.94	9.3	0.899
17.900	0.000	3.88	0.00	1.93	9.3	0.891
17.917	0.000	3.86	0.00	1.92	9.2	0.884
17.933	0.000	3.84	0.00	1.90	9.1	0.877
17.950	0.000	3.82	0.00	1.89	9.1	0.869
17.967	0.000	3.79	0.00	1.88	9.0	0.862
17.983	0.000	3.76	0.00	1.87	9.0	0.855
18.000	0.000	3.71	0.00	1.85	9.0	0.848
18.017	0.000	3.65	0.00	1.84	8.9	0.840
18.033	0.000	3.59	0.00	1.83	8.9	0.833
18.050	0.000	3.53	0.00	1.82	8.8	0.826
18.067	0.000	3.47	0.00	1.80	8.8	0.819
18.083	0.000	3.41	0.00	1.79	8.7	0.811
18.100	0.000	3.33	0.00	1.78	8.7	0.804
18.117	0.000	3.21	0.00	1.77	8.6	0.797
18.133	0.000	3.08	0.00	1.75	8.5	0.789
18.150	0.000	2.96	0.00	1.74	8.5	0.781
18.167	0.000	2.84	0.00	1.73	8.4	0.774
18.183	0.000	2.71	0.00	1.71	8.4	0.766
18.200	0.000	2.59	0.00	1.70	8.3	0.758
18.217	0.000	2.50	0.00	1.69	8.2	0.750
18.233	0.000	2.48	0.00	1.67	8.2	0.742
18.250	0.000	2.47	0.00	1.66	8.1	0.734
18.267	0.000	2.45	0.00	1.64	8.1	0.727
18.283	0.000	2.44	0.00	1.63	8.0	0.719

18.300	0.000	2.42	0.00	1.62	7.9	0.711
18.317	0.000	2.41	0.00	1.60	7.9	0.704
18.333	0.000	2.39	0.00	1.59	7.8	0.696
18.350	0.000	2.38	0.00	1.58	7.8	0.689
18.367	0.000	2.36	0.00	1.57	7.7	0.682
18.383	0.000	2.35	0.00	1.55	7.6	0.674
18.400	0.000	2.34	0.00	1.54	7.6	0.667
18.417	0.000	2.32	0.00	1.53	7.5	0.660
18.433	0.000	2.31	0.00	1.52	7.5	0.653
18.450	0.000	2.30	0.00	1.50	7.4	0.646
18.467	0.000	2.28	0.00	1.49	7.4	0.639
18.483	0.000	2.27	0.00	1.48	7.3	0.632
18.500	0.000	2.26	0.00	1.47	7.2	0.625
18.517	0.000	2.25	0.00	1.45	7.2	0.618
18.533	0.000	2.23	0.00	1.44	7.1	0.612
18.550	0.000	2.22	0.00	1.43	7.0	0.605
18.567	0.000	2.21	0.00	1.42	7.0	0.599
18.583	0.000	2.20	0.00	1.41	6.9	0.592
18.600	0.000	2.19	0.00	1.40	6.8	0.586
18.617	0.000	2.17	0.00	1.38	6.8	0.579
18.633	0.000	2.16	0.00	1.37	6.7	0.573
18.650	0.000	2.15	0.00	1.36	6.7	0.567
18.667	0.000	2.14	0.00	1.35	6.6	0.561
18.683	0.000	2.13	0.00	1.34	6.5	0.555
18.700	0.000	2.12	0.00	1.33	6.5	0.549
18.717	0.000	2.11	0.00	1.32	6.4	0.543
18.733	0.000	2.10	0.00	1.31	6.4	0.537
18.750	0.000	2.09	0.00	1.30	6.3	0.531
18.767	0.000	2.07	0.00	1.29	6.2	0.525
18.783	0.000	2.06	0.00	1.28	6.2	0.520
18.800	0.000	2.05	0.00	1.27	6.1	0.514
18.817	0.000	2.04	0.00	1.26	6.1	0.508
18.833	0.000	2.03	0.00	1.25	6.0	0.503
18.850	0.000	2.02	0.00	1.24	6.0	0.497
18.867	0.000	2.01	0.00	1.23	5.9	0.492
18.883	0.000	2.00	0.00	1.22	5.8	0.487
18.900	0.000	1.99	0.00	1.21	5.8	0.482
18.917	0.000	1.98	0.00	1.20	5.7	0.477
18.933	0.000	1.97	0.00	1.19	5.6	0.472
18.950	0.000	1.96	0.00	1.18	5.5	0.467
18.967	0.000	1.95	0.00	1.17	5.5	0.462
18.983	0.000	1.95	0.00	1.16	5.4	0.457
19.000	0.000	1.94	0.00	1.15	5.4	0.452
19.017	0.000	1.93	0.00	1.14	5.3	0.448
19.033	0.000	1.92	0.00	1.13	5.2	0.443
19.050	0.000	1.91	0.00	1.13	5.2	0.439
19.067	0.000	1.90	0.00	1.12	5.1	0.434
19.083	0.000	1.89	0.00	1.11	5.1	0.430
19.100	0.000	1.88	0.00	1.10	5.0	0.425
19.117	0.000	1.87	0.00	1.09	4.9	0.421

19.133	0.000	1.86	0.00	1.09	4.9	0.417
19.150	0.000	1.86	0.00	1.08	4.8	0.413
19.167	0.000	1.85	0.00	1.07	4.8	0.409
19.183	0.000	1.84	0.00	1.06	4.7	0.405
19.200	0.000	1.83	0.00	1.06	4.7	0.401
19.217	0.000	1.82	0.00	1.05	4.6	0.397
19.233	0.000	1.81	0.00	1.04	4.6	0.393
19.250	0.000	1.81	0.00	1.03	4.5	0.390
19.267	0.000	1.80	0.00	1.03	4.5	0.386
19.283	0.000	1.79	0.00	1.02	4.4	0.382
19.300	0.000	1.78	0.00	1.01	4.4	0.379
19.317	0.000	1.78	0.00	1.01	4.3	0.375
19.333	0.000	1.77	0.00	1.00	4.3	0.372
19.350	0.000	1.76	0.00	0.99	4.2	0.369
19.367	0.000	1.75	0.00	0.99	4.1	0.365
19.383	0.000	1.75	0.00	0.98	4.0	0.362
19.400	0.000	1.74	0.00	0.97	3.9	0.359
19.417	0.000	1.73	0.00	0.97	3.8	0.357
19.433	0.000	1.73	0.00	0.96	3.7	0.354
19.450	0.000	1.72	0.00	0.96	3.6	0.351
19.467	0.000	1.72	0.00	0.95	3.5	0.349
19.483	0.000	1.71	0.00	0.95	3.4	0.347
19.500	0.000	1.71	0.00	0.94	3.3	0.344
19.517	0.000	1.70	0.00	0.94	3.3	0.342
19.533	0.000	1.69	0.00	0.93	3.2	0.340
19.550	0.000	1.69	0.00	0.93	3.1	0.338
19.567	0.000	1.68	0.00	0.93	3.0	0.336
19.583	0.000	1.68	0.00	0.92	3.0	0.335
19.600	0.000	1.67	0.00	0.92	2.9	0.333
19.617	0.000	1.67	0.00	0.92	2.9	0.331
19.633	0.000	1.66	0.00	0.91	2.8	0.330
19.650	0.000	1.66	0.00	0.91	2.8	0.328
19.667	0.000	1.65	0.00	0.91	2.7	0.327
19.683	0.000	1.65	0.00	0.90	2.7	0.325
19.700	0.000	1.64	0.00	0.90	2.6	0.324
19.717	0.000	1.64	0.00	0.90	2.6	0.323
19.733	0.000	1.63	0.00	0.90	2.5	0.321
19.750	0.000	1.63	0.00	0.89	2.5	0.320
19.767	0.000	1.63	0.00	0.89	2.4	0.319
19.783	0.000	1.62	0.00	0.89	2.4	0.318
19.800	0.000	1.62	0.00	0.89	2.4	0.317
19.817	0.000	1.61	0.00	0.89	2.3	0.316
19.833	0.000	1.61	0.00	0.88	2.3	0.315
19.850	0.000	1.60	0.00	0.88	2.3	0.314
19.867	0.000	1.60	0.00	0.88	2.2	0.313
19.883	0.000	1.59	0.00	0.88	2.2	0.312
19.900	0.000	1.59	0.00	0.88	2.2	0.312
19.917	0.000	1.58	0.00	0.87	2.1	0.311
19.933	0.000	1.58	0.00	0.87	2.1	0.310
19.950	0.000	1.58	0.00	0.87	2.1	0.309

19.967	0.000	1.57	0.00	0.87	2.1	0.309
19.983	0.000	1.57	0.00	0.87	2.0	0.308
20.000	0.000	1.56	0.00	0.87	2.0	0.307

PROCESS SUMMARY OF STORAGE:

INFLOW VOLUME = 6.216 AF
BASIN STORAGE = 0.045 AF (WITH 0.000 AF INITIALLY FILLED)
OUTFLOW VOLUME = 6.171 AF
LOSS VOLUME = 0.000 AF

FLOW PROCESS FROM NODE 290.00 TO NODE 540.00 IS CODE = 1.2

>>>>SUBAREA RUNOFF (SMALL AREA UNIT-HYDROGRAPH ANALYSIS) <<<<

(SMALL AREA UNIT-HYDROGRAPH ADDED TO STREAM #3)

RATIONAL METHOD CALIBRATION COEFFICIENT = 0.90
TOTAL CATCHMENT AREA(ACRES) = 13.51
SOIL-LOSS RATE, Fm,(INCH/HR) = 0.030
LOW LOSS FRACTION = 0.250
TIME OF CONCENTRATION(MIN.) = 6.58
SMALL AREA PEAK Q COMPUTED USING PEAK FLOW RATE FORMULA
ORANGE COUNTY "VALLEY" RAINFALL VALUES ARE USED:
RETURN FREQUENCY(YEARS) = 25
5-MINUTE POINT RAINFALL VALUE(INCHES) = 0.40
30-MINUTE POINT RAINFALL VALUE(INCHES) = 0.87
1-HOUR POINT RAINFALL VALUE(INCHES) = 1.15
3-HOUR POINT RAINFALL VALUE(INCHES) = 1.94
6-HOUR POINT RAINFALL VALUE(INCHES) = 2.71
24-HOUR POINT RAINFALL VALUE(INCHES) = 4.49

TOTAL CATCHMENT RUNOFF VOLUME(ACRE- FEET) = 3.90
TOTAL CATCHMENT SOIL-LOSS VOLUME(ACRE- FEET) = 1.15

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

HYDROGRAPH IN ONE-MINUTE UNIT INTERVALS(CFS)

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

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	12.4	24.8	37.2	49.6
10.000	0.6715	1.17	Q	V	.	.	.
10.017	0.6731	1.17	Q	V	.	.	.
10.033	0.6747	1.17	Q	V	.	.	.
10.050	0.6763	1.17	Q	V	.	.	.
10.067	0.6779	1.17	Q	V	.	.	.
10.083	0.6796	1.18	Q	V	.	.	.
10.100	0.6812	1.18	Q	V	.	.	.
10.117	0.6828	1.18	Q	V	.	.	.
10.133	0.6844	1.19	Q	V	.	.	.
10.150	0.6861	1.19	Q	V	.	.	.
10.167	0.6877	1.19	Q	V	.	.	.
10.183	0.6894	1.20	Q	V	.	.	.
10.200	0.6910	1.20	Q	V	.	.	.
10.217	0.6927	1.20	Q	V	.	.	.
10.233	0.6943	1.20	Q	V	.	.	.
10.250	0.6960	1.21	Q	V	.	.	.
10.267	0.6977	1.21	Q	V	.	.	.
10.283	0.6993	1.21	Q	V	.	.	.
10.300	0.7010	1.21	Q	V	.	.	.
10.317	0.7027	1.22	Q	V	.	.	.
10.333	0.7044	1.22	Q	V	.	.	.
10.350	0.7060	1.22	Q	V	.	.	.
10.367	0.7077	1.23	Q	V	.	.	.
10.383	0.7094	1.23	Q	V	.	.	.
10.400	0.7111	1.23	Q	V	.	.	.
10.417	0.7128	1.24	Q	V	.	.	.
10.433	0.7145	1.24	.Q	V	.	.	.
10.450	0.7162	1.24	.Q	V	.	.	.
10.467	0.7180	1.24	.Q	V	.	.	.
10.483	0.7197	1.25	.Q	V	.	.	.
10.500	0.7214	1.25	.Q	V	.	.	.
10.517	0.7231	1.25	.Q	V	.	.	.
10.533	0.7248	1.25	.Q	V	.	.	.
10.550	0.7266	1.26	.Q	V	.	.	.
10.567	0.7283	1.26	.Q	V	.	.	.
10.583	0.7301	1.27	.Q	V	.	.	.
10.600	0.7318	1.27	.Q	V	.	.	.
10.617	0.7336	1.27	.Q	V	.	.	.
10.633	0.7353	1.28	.Q	V	.	.	.
10.650	0.7371	1.28	.Q	V	.	.	.
10.667	0.7389	1.28	.Q	V	.	.	.
10.683	0.7406	1.29	.Q	V	.	.	.
10.700	0.7424	1.29	.Q	V	.	.	.
10.717	0.7442	1.29	.Q	V	.	.	.
10.733	0.7460	1.29	.Q	V	.	.	.
10.750	0.7477	1.29	.Q	V	.	.	.
10.767	0.7495	1.30	.Q	V	.	.	.

10.783	0.7513	1.30	.Q	V	.	.	.	.
10.800	0.7531	1.31	.Q	V	.	.	.	.
10.817	0.7549	1.31	.Q	V	.	.	.	.
10.833	0.7568	1.32	.Q	V	.	.	.	.
10.850	0.7586	1.32	.Q	V	.	.	.	.
10.867	0.7604	1.32	.Q	V	.	.	.	.
10.883	0.7622	1.33	.Q	V	.	.	.	.
10.900	0.7641	1.33	.Q	V	.	.	.	.
10.917	0.7659	1.33	.Q	V	.	.	.	.
10.933	0.7677	1.33	.Q	V	.	.	.	.
10.950	0.7696	1.34	.Q	V	.	.	.	.
10.967	0.7714	1.34	.Q	V	.	.	.	.
10.983	0.7733	1.34	.Q	V	.	.	.	.
11.000	0.7751	1.35	.Q	V	.	.	.	.
11.017	0.7770	1.35	.Q	V	.	.	.	.
11.033	0.7788	1.36	.Q	V	.	.	.	.
11.050	0.7807	1.36	.Q	V	.	.	.	.
11.067	0.7826	1.37	.Q	V	.	.	.	.
11.083	0.7845	1.37	.Q	V	.	.	.	.
11.100	0.7864	1.37	.Q	V	.	.	.	.
11.117	0.7883	1.38	.Q	V	.	.	.	.
11.133	0.7902	1.38	.Q	V	.	.	.	.
11.150	0.7921	1.38	.Q	V	.	.	.	.
11.167	0.7940	1.38	.Q	V	.	.	.	.
11.183	0.7959	1.39	.Q	V	.	.	.	.
11.200	0.7978	1.39	.Q	V	.	.	.	.
11.217	0.7997	1.40	.Q	V	.	.	.	.
11.233	0.8017	1.40	.Q	V	.	.	.	.
11.250	0.8036	1.41	.Q	V	.	.	.	.
11.267	0.8055	1.41	.Q	V	.	.	.	.
11.283	0.8075	1.42	.Q	V	.	.	.	.
11.300	0.8095	1.42	.Q	V	.	.	.	.
11.317	0.8114	1.42	.Q	V	.	.	.	.
11.333	0.8134	1.43	.Q	V	.	.	.	.
11.350	0.8153	1.43	.Q	V	.	.	.	.
11.367	0.8173	1.43	.Q	V	.	.	.	.
11.383	0.8193	1.43	.Q	V	.	.	.	.
11.400	0.8213	1.44	.Q	V	.	.	.	.
11.417	0.8233	1.44	.Q	V	.	.	.	.
11.433	0.8252	1.45	.Q	V	.	.	.	.
11.450	0.8272	1.45	.Q	V	.	.	.	.
11.467	0.8293	1.46	.Q	V	.	.	.	.
11.483	0.8313	1.46	.Q	V	.	.	.	.
11.500	0.8333	1.47	.Q	V	.	.	.	.
11.517	0.8353	1.47	.Q	V	.	.	.	.
11.533	0.8374	1.48	.Q	V	.	.	.	.
11.550	0.8394	1.48	.Q	V	.	.	.	.
11.567	0.8414	1.48	.Q	V	.	.	.	.
11.583	0.8435	1.49	.Q	V	.	.	.	.
11.600	0.8455	1.49	.Q	V	.	.	.	.

11.617	0.8476	1.49	.Q	V	.	.	.	.
11.633	0.8496	1.50	.Q	V	.	.	.	.
11.650	0.8517	1.50	.Q	V	.	.	.	.
11.667	0.8538	1.51	.Q	V	.	.	.	.
11.683	0.8559	1.51	.Q	V	.	.	.	.
11.700	0.8580	1.52	.Q	V	.	.	.	.
11.717	0.8601	1.53	.Q	V	.	.	.	.
11.733	0.8622	1.53	.Q	V	.	.	.	.
11.750	0.8643	1.54	.Q	V	.	.	.	.
11.767	0.8664	1.54	.Q	V	.	.	.	.
11.783	0.8685	1.54	.Q	V	.	.	.	.
11.800	0.8707	1.54	.Q	V	.	.	.	.
11.817	0.8728	1.55	.Q	V	.	.	.	.
11.833	0.8749	1.55	.Q	V	.	.	.	.
11.850	0.8771	1.56	.Q	V	.	.	.	.
11.867	0.8792	1.56	.Q	V	.	.	.	.
11.883	0.8814	1.57	.Q	V	.	.	.	.
11.900	0.8836	1.58	.Q	V	.	.	.	.
11.917	0.8857	1.58	.Q	V	.	.	.	.
11.933	0.8879	1.59	.Q	V	.	.	.	.
11.950	0.8901	1.59	.Q	V	.	.	.	.
11.967	0.8923	1.60	.Q	V	.	.	.	.
11.983	0.8945	1.60	.Q	V	.	.	.	.
12.000	0.8967	1.61	.Q	V	.	.	.	.
12.017	0.8990	1.61	.Q	V	.	.	.	.
12.033	0.9012	1.61	.Q	V	.	.	.	.
12.050	0.9034	1.62	.Q	V	.	.	.	.
12.067	0.9057	1.66	.Q	V	.	.	.	.
12.083	0.9081	1.76	.Q	V	.	.	.	.
12.100	0.9107	1.87	.Q	V	.	.	.	.
12.117	0.9134	1.98	.Q	V	.	.	.	.
12.133	0.9163	2.08	.Q	V	.	.	.	.
12.150	0.9193	2.19	.Q	V	.	.	.	.
12.167	0.9224	2.29	.Q	V	.	.	.	.
12.183	0.9256	2.32	.Q	V	.	.	.	.
12.200	0.9288	2.32	.Q	V	.	.	.	.
12.217	0.9320	2.33	.Q	V	.	.	.	.
12.233	0.9352	2.33	.Q	V	.	.	.	.
12.250	0.9385	2.33	.Q	V	.	.	.	.
12.267	0.9417	2.34	.Q	V	.	.	.	.
12.283	0.9449	2.34	.Q	V	.	.	.	.
12.300	0.9481	2.35	.Q	V	.	.	.	.
12.317	0.9514	2.36	.Q	V	.	.	.	.
12.333	0.9547	2.37	.Q	V	.	.	.	.
12.350	0.9579	2.38	.Q	V	.	.	.	.
12.367	0.9612	2.38	.Q	V	.	.	.	.
12.383	0.9645	2.39	.Q	V	.	.	.	.
12.400	0.9678	2.40	.Q	V	.	.	.	.
12.417	0.9711	2.40	.Q	V	.	.	.	.
12.433	0.9744	2.41	.Q	V	.	.	.	.

12.450	0.9778	2.41	.Q	V	.	.	.
12.467	0.9811	2.42	.Q	V	.	.	.
12.483	0.9844	2.42	.Q	V	.	.	.
12.500	0.9878	2.43	.Q	V	.	.	.
12.517	0.9911	2.43	.Q	V	.	.	.
12.533	0.9945	2.44	.Q	V	.	.	.
12.550	0.9979	2.45	.Q	V	.	.	.
12.567	1.0013	2.46	.Q	V	.	.	.
12.583	1.0047	2.47	.Q	V	.	.	.
12.600	1.0081	2.48	.Q	V	.	.	.
12.617	1.0115	2.49	.Q	V	.	.	.
12.633	1.0149	2.49	.Q	V	.	.	.
12.650	1.0184	2.50	.Q	V	.	.	.
12.667	1.0218	2.50	.Q	V	.	.	.
12.683	1.0253	2.51	.Q	V	.	.	.
12.700	1.0287	2.51	.Q	V	.	.	.
12.717	1.0322	2.52	.Q	V	.	.	.
12.733	1.0357	2.53	.Q	V	.	.	.
12.750	1.0392	2.54	.Q	V	.	.	.
12.767	1.0427	2.55	.Q	V	.	.	.
12.783	1.0462	2.56	.Q	V	.	.	.
12.800	1.0497	2.57	.Q	V	.	.	.
12.817	1.0533	2.58	.Q	V	.	.	.
12.833	1.0568	2.58	.Q	V	.	.	.
12.850	1.0604	2.59	.Q	V	.	.	.
12.867	1.0640	2.59	.Q	V	.	.	.
12.883	1.0676	2.60	.Q	V	.	.	.
12.900	1.0711	2.61	.Q	V	.	.	.
12.917	1.0747	2.61	.Q	.V	.	.	.
12.933	1.0783	2.62	.Q	.V	.	.	.
12.950	1.0820	2.63	.Q	.V	.	.	.
12.967	1.0856	2.64	.Q	.V	.	.	.
12.983	1.0892	2.65	.Q	.V	.	.	.
13.000	1.0929	2.66	.Q	.V	.	.	.
13.017	1.0966	2.67	.Q	.V	.	.	.
13.033	1.1003	2.68	.Q	.V	.	.	.
13.050	1.1040	2.69	.Q	.V	.	.	.
13.067	1.1077	2.70	.Q	.V	.	.	.
13.083	1.1114	2.70	.Q	.V	.	.	.
13.100	1.1152	2.71	.Q	.V	.	.	.
13.117	1.1189	2.72	.Q	.V	.	.	.
13.133	1.1226	2.72	.Q	.V	.	.	.
13.150	1.1264	2.73	.Q	.V	.	.	.
13.167	1.1302	2.74	.Q	.V	.	.	.
13.183	1.1340	2.75	.Q	.V	.	.	.
13.200	1.1378	2.76	.Q	.V	.	.	.
13.217	1.1416	2.77	.Q	.V	.	.	.
13.233	1.1454	2.79	.Q	.V	.	.	.
13.250	1.1493	2.80	.Q	.V	.	.	.
13.267	1.1532	2.81	.Q	.V	.	.	.

13.283	1.1570	2.82	.Q	.V	.	.	.
13.300	1.1609	2.83	.Q	.V	.	.	.
13.317	1.1648	2.83	.Q	.V	.	.	.
13.333	1.1687	2.84	.Q	.V	.	.	.
13.350	1.1727	2.85	.Q	.V	.	.	.
13.367	1.1766	2.85	.Q	.V	.	.	.
13.383	1.1805	2.86	.Q	.V	.	.	.
13.400	1.1845	2.88	.Q	.V	.	.	.
13.417	1.1885	2.89	.Q	.V	.	.	.
13.433	1.1925	2.90	.Q	.V	.	.	.
13.450	1.1965	2.92	.Q	.V	.	.	.
13.467	1.2005	2.93	.Q	.V	.	.	.
13.483	1.2046	2.95	.Q	.V	.	.	.
13.500	1.2087	2.95	.Q	.V	.	.	.
13.517	1.2127	2.96	.Q	.V	.	.	.
13.533	1.2168	2.97	.Q	.V	.	.	.
13.550	1.2209	2.98	.Q	.V	.	.	.
13.567	1.2250	2.98	.Q	.V	.	.	.
13.583	1.2292	2.99	.Q	.V	.	.	.
13.600	1.2333	3.00	.Q	.V	.	.	.
13.617	1.2374	3.02	.Q	.V	.	.	.
13.633	1.2416	3.03	.Q	.V	.	.	.
13.650	1.2458	3.05	.Q	.V	.	.	.
13.667	1.2501	3.07	.Q	.V	.	.	.
13.683	1.2543	3.08	.Q	.V	.	.	.
13.700	1.2586	3.10	.Q	.V	.	.	.
13.717	1.2628	3.11	.Q	.V	.	.	.
13.733	1.2671	3.12	.Q	.V	.	.	.
13.750	1.2714	3.13	.Q	.V	.	.	.
13.767	1.2758	3.14	.Q	.V	.	.	.
13.783	1.2801	3.14	.Q	.V	.	.	.
13.800	1.2844	3.15	.Q	.V	.	.	.
13.817	1.2888	3.16	.Q	.V	.	.	.
13.833	1.2932	3.18	.Q	.V	.	.	.
13.850	1.2976	3.20	.Q	.V	.	.	.
13.867	1.3020	3.22	.Q	.V	.	.	.
13.883	1.3065	3.24	.Q	.V	.	.	.
13.900	1.3110	3.25	.Q	.V	.	.	.
13.917	1.3155	3.27	.Q	.V	.	.	.
13.933	1.3200	3.29	.Q	.V	.	.	.
13.950	1.3245	3.30	.Q	.V	.	.	.
13.967	1.3291	3.31	.Q	.V	.	.	.
13.983	1.3337	3.32	.Q	.V	.	.	.
14.000	1.3382	3.33	.Q	.V	.	.	.
14.017	1.3428	3.34	.Q	.V	.	.	.
14.033	1.3474	3.35	.Q	.V	.	.	.
14.050	1.3521	3.36	.Q	.V	.	.	.
14.067	1.3567	3.38	.Q	.V	.	.	.
14.083	1.3614	3.39	.Q	.V	.	.	.
14.100	1.3661	3.40	.Q	.V	.	.	.

14.117	1.3708	3.42	. Q	.	V	.	.	.
14.133	1.3755	3.43	. Q	.	V	.	.	.
14.150	1.3803	3.45	. Q	.	V	.	.	.
14.167	1.3850	3.46	. Q	.	V	.	.	.
14.183	1.3898	3.47	. Q	.	V	.	.	.
14.200	1.3946	3.48	. Q	.	V	.	.	.
14.217	1.3994	3.49	. Q	.	V	.	.	.
14.233	1.4042	3.50	. Q	.	V	.	.	.
14.250	1.4091	3.52	. Q	.	V	.	.	.
14.267	1.4139	3.54	. Q	.	V	.	.	.
14.283	1.4189	3.56	. Q	.	V	.	.	.
14.300	1.4238	3.59	. Q	.	V	.	.	.
14.317	1.4288	3.62	. Q	.	V	.	.	.
14.333	1.4338	3.64	. Q	.	V	.	.	.
14.350	1.4388	3.67	. Q	.	V	.	.	.
14.367	1.4439	3.69	. Q	.	V	.	.	.
14.383	1.4490	3.71	. Q	.	V	.	.	.
14.400	1.4542	3.72	. Q	.	V	.	.	.
14.417	1.4593	3.73	. Q	.	V	.	.	.
14.433	1.4645	3.75	. Q	.	V	.	.	.
14.450	1.4696	3.76	. Q	.	V	.	.	.
14.467	1.4748	3.78	. Q	.	V	.	.	.
14.483	1.4801	3.80	. Q	.	V	.	.	.
14.500	1.4854	3.83	. Q	.	V	.	.	.
14.517	1.4907	3.86	. Q	.	V	.	.	.
14.533	1.4961	3.90	. Q	.	V	.	.	.
14.550	1.5015	3.93	. Q	.	V	.	.	.
14.567	1.5069	3.96	. Q	.	V	.	.	.
14.583	1.5124	3.99	. Q	.	V	.	.	.
14.600	1.5179	4.01	. Q	.	V	.	.	.
14.617	1.5235	4.02	. Q	.	V	.	.	.
14.633	1.5290	4.04	. Q	.	V	.	.	.
14.650	1.5346	4.06	. Q	.	V	.	.	.
14.667	1.5402	4.08	. Q	.	V	.	.	.
14.683	1.5459	4.10	. Q	.	V	.	.	.
14.700	1.5516	4.12	. Q	.	V	.	.	.
14.717	1.5573	4.16	. Q	.	V	.	.	.
14.733	1.5631	4.20	. Q	.	V	.	.	.
14.750	1.5689	4.24	. Q	.	V	.	.	.
14.767	1.5748	4.28	. Q	.	V	.	.	.
14.783	1.5808	4.32	. Q	.	V	.	.	.
14.800	1.5868	4.36	. Q	.	V	.	.	.
14.817	1.5928	4.39	. Q	.	V	.	.	.
14.833	1.5989	4.41	. Q	.	V	.	.	.
14.850	1.6050	4.43	. Q	.	V	.	.	.
14.867	1.6111	4.45	. Q	.	V	.	.	.
14.883	1.6173	4.48	. Q	.	V	.	.	.
14.900	1.6235	4.50	. Q	.	V	.	.	.
14.917	1.6297	4.53	. Q	.	V	.	.	.
14.933	1.6360	4.58	. Q	.	V	.	.	.

14.950	1.6424	4.63	. Q	.	V	.	.	.
14.967	1.6489	4.69	. Q	.	V	.	.	.
14.983	1.6554	4.74	. Q	.	V	.	.	.
15.000	1.6620	4.79	. Q	.	V	.	.	.
15.017	1.6687	4.84	. Q	.	V	.	.	.
15.033	1.6754	4.88	. Q	.	V	.	.	.
15.050	1.6821	4.91	. Q	.	V	.	.	.
15.067	1.6889	4.94	. Q	.	V	.	.	.
15.083	1.6958	4.97	. Q	.	V	.	.	.
15.100	1.7027	5.00	. Q	.	V	.	.	.
15.117	1.7096	5.03	. Q	.	V	.	.	.
15.133	1.7166	5.07	. Q	.	V	.	.	.
15.150	1.7237	5.14	. Q	.	V	.	.	.
15.167	1.7308	5.21	. Q	.	V	.	.	.
15.183	1.7381	5.28	. Q	.	V	.	.	.
15.200	1.7455	5.35	. Q	.	V	.	.	.
15.217	1.7530	5.43	. Q	.	V	.	.	.
15.233	1.7605	5.50	. Q	.	V	.	.	.
15.250	1.7682	5.55	. Q	.	V	.	.	.
15.267	1.7759	5.60	. Q	.	V	.	.	.
15.283	1.7837	5.64	. Q	.	V	.	.	.
15.300	1.7915	5.69	. Q	.	V	.	.	.
15.317	1.7994	5.73	. Q	.	V	.	.	.
15.333	1.8073	5.77	. Q	.	V	.	.	.
15.350	1.8153	5.81	. Q	.	V	.	.	.
15.367	1.8233	5.77	. Q	.	V	.	.	.
15.383	1.8312	5.73	. Q	.	V	.	.	.
15.400	1.8390	5.68	. Q	.	V	.	.	.
15.417	1.8468	5.63	. Q	.	V	.	.	.
15.433	1.8544	5.58	. Q	.	V	.	.	.
15.450	1.8621	5.54	. Q	.	V	.	.	.
15.467	1.8697	5.54	. Q	.	V	.	.	.
15.483	1.8774	5.61	. Q	.	V	.	.	.
15.500	1.8852	5.68	. Q	.	V	.	.	.
15.517	1.8932	5.74	. Q	.	V	.	.	.
15.533	1.9012	5.81	. Q	.	V	.	.	.
15.550	1.9093	5.88	. Q	.	V	.	.	.
15.567	1.9175	5.96	. Q	.	V	.	.	.
15.583	1.9259	6.13	. Q	.	V	.	.	.
15.600	1.9346	6.32	. Q	.	V	.	.	.
15.617	1.9436	6.52	. Q	.	V	.	.	.
15.633	1.9529	6.72	. Q	.	V	.	.	.
15.650	1.9624	6.91	. Q	.	V	.	.	.
15.667	1.9722	7.11	. Q	.	V	.	.	.
15.683	1.9822	7.31	. Q	.	V	.	.	.
15.700	1.9926	7.51	. Q	.	V	.	.	.
15.717	2.0032	7.72	. Q	.	V	.	.	.
15.733	2.0141	7.92	. Q	.	V	.	.	.
15.750	2.0253	8.13	. Q	.	V	.	.	.
15.767	2.0368	8.33	. Q	.	V	.	.	.

15.783	2.0486	8.54	.	Q	.	V	.	.
15.800	2.0610	9.01	.	Q	.	.V	.	.
15.817	2.0742	9.62	.	Q	.	.V	.	.
15.833	2.0883	10.22	.	Q	.	.V	.	.
15.850	2.1032	10.83	.	Q	.	.V	.	.
15.867	2.1190	11.44	.	Q.	.	.V	.	.
15.883	2.1356	12.05	.	Q.	.	.V	.	.
15.900	2.1530	12.67	.	Q	.	.V	.	.
15.917	2.1714	13.35	.	Q	.	.V	.	.
15.933	2.1908	14.04	.	.Q	.	.V	.	.
15.950	2.2111	14.74	.	.Q	.	.V	.	.
15.967	2.2323	15.43	.	.Q	.	.V	.	.
15.983	2.2545	16.12	.	.Q	.	.V	.	.
16.000	2.2777	16.81	.	.Q	.	.V	.	.
16.017	2.3047	19.62	.	.	Q	.V	.	.
16.033	2.3385	24.55	.	.	Q.	.V	.	.
16.050	2.3791	29.48	.	.	.	QV	.	.
16.067	2.4265	34.41	.	.	.	V	Q	.
16.083	2.4807	39.34	.	.	.	V	.Q	.
16.100	2.5417	44.27	.	.	.	V	.	Q
16.117	2.6100	49.59	.	.	.	V	.	Q
16.133	2.6707	44.10	.	.	.	V	.	Q
16.150	2.7232	38.13	.	.	.	V	Q	.
16.167	2.7675	32.17	.	.	.	Q	V	.
16.183	2.8036	26.20	.	.	.Q	.	V	.
16.200	2.8315	20.23	.	.	Q	.	V	.
16.217	2.8512	14.26	.	.	.Q	.	V	.
16.233	2.8652	10.20	.	.	Q	.	V	.
16.250	2.8784	9.55	.	.	Q	.	V	.
16.267	2.8907	8.98	.	.	Q	.	V	.
16.283	2.9023	8.40	.	.	Q	.	V	.
16.300	2.9131	7.82	.	.	Q	.	V	.
16.317	2.9230	7.25	.	.	Q	.	V	.
16.333	2.9323	6.69	.	.	Q	.	V	.
16.350	2.9412	6.47	.	.	Q	.	V	.
16.367	2.9500	6.40	.	.	Q	.	V	.
16.383	2.9587	6.32	.	.	Q	.	V	.
16.400	2.9673	6.25	.	.	Q	.	V	.
16.417	2.9758	6.17	.	.	Q	.	V	.
16.433	2.9842	6.09	.	.	Q	.	V	.
16.450	2.9925	6.01	.	.	Q	.	V	.
16.467	3.0006	5.90	.	.	Q	.	V	.
16.483	3.0085	5.78	.	.	Q	.	V	.
16.500	3.0163	5.67	.	.	Q	.	V	.
16.517	3.0240	5.55	.	.	Q	.	V	.
16.533	3.0315	5.44	.	.	Q	.	.V	.
16.550	3.0388	5.32	.	.	Q	.	.V	.
16.567	3.0460	5.22	.	.	Q	.	.V	.
16.583	3.0531	5.13	.	.	Q	.	.V	.
16.600	3.0600	5.04	.	.	Q	.	.V	.

16.617	3.0668	4.95	.	Q	.	.	.	.V	.
16.633	3.0735	4.86	.	Q	.	.	.	.V	.
16.650	3.0801	4.77	.	Q	.	.	.	.V	.
16.667	3.0865	4.68	.	Q	.	.	.	.V	.
16.683	3.0929	4.61	.	Q	.	.	.	.V	.
16.700	3.0991	4.54	.	Q	.	.	.	.V	.
16.717	3.1053	4.47	.	Q	.	.	.	.V	.
16.733	3.1114	4.40	.	Q	.	.	.	.V	.
16.750	3.1173	4.34	.	Q	.	.	.	.V	.
16.767	3.1232	4.27	.	Q	.	.	.	.V	.
16.783	3.1290	4.21	.	Q	.	.	.	.V	.
16.800	3.1347	4.15	.	Q	.	.	.	.V	.
16.817	3.1404	4.10	.	Q	.	.	.	.V	.
16.833	3.1460	4.05	.	Q	.	.	.	.V	.
16.850	3.1515	3.99	.	Q	.	.	.	.V	.
16.867	3.1569	3.94	.	Q	.	.	.	.V	.
16.883	3.1622	3.89	.	Q	.	.	.	.V	.
16.900	3.1675	3.84	.	Q	.	.	.	.V	.
16.917	3.1728	3.80	.	Q	.	.	.	.V	.
16.933	3.1780	3.76	.	Q	.	.	.	.V	.
16.950	3.1831	3.72	.	Q	.	.	.	.V	.
16.967	3.1881	3.67	.	Q	.	.	.	.V	.
16.983	3.1931	3.63	.	Q	.	.	.	.V	.
17.000	3.1981	3.59	.	Q	.	.	.	.V	.
17.017	3.2030	3.56	.	Q	.	.	.	.V	.
17.033	3.2079	3.53	.	Q	.	.	.	.V	.
17.050	3.2127	3.50	.	Q	.	.	.	.V	.
17.067	3.2175	3.47	.	Q	.	.	.	.V	.
17.083	3.2222	3.44	.	Q	.	.	.	.V	.
17.100	3.2269	3.41	.	Q	.	.	.	.V	.
17.117	3.2315	3.38	.	Q	.	.	.	.V	.
17.133	3.2362	3.35	.	Q	.	.	.	.V	.
17.150	3.2407	3.33	.	Q	.	.	.	.V	.
17.167	3.2453	3.30	.	Q	.	.	.	.V	.
17.183	3.2498	3.27	.	Q	.	.	.	.V	.
17.200	3.2543	3.24	.	Q	.	.	.	.V	.
17.217	3.2587	3.22	.	Q	.	.	.	.V	.
17.233	3.2631	3.19	.	Q	.	.	.	.V	.
17.250	3.2674	3.16	.	Q	.	.	.	.V	.
17.267	3.2718	3.14	.	Q	.	.	.	.V	.
17.283	3.2761	3.11	.	Q	.	.	.	.V	.
17.300	3.2803	3.09	.	Q	.	.	.	.V	.
17.317	3.2845	3.06	.	Q	.	.	.	.V	.
17.333	3.2887	3.04	.	Q	.	.	.	.V	.
17.350	3.2929	3.01	.	Q	.	.	.	.V	.
17.367	3.2970	2.99	.	Q	.	.	.	.V	.
17.383	3.3011	2.97	.	Q	.	.	.	.V	.
17.400	3.3051	2.95	.	Q	.	.	.	.V	.
17.417	3.3092	2.92	.	Q	.	.	.	.V	.
17.433	3.3132	2.90	.	Q	.	.	.	.V	.

17.450	3.3171	2.88	. Q	.	.	.	V	.
17.467	3.3211	2.86	. Q	.	.	.	V	.
17.483	3.3250	2.84	. Q	.	.	.	V	.
17.500	3.3289	2.82	. Q	.	.	.	V	.
17.517	3.3327	2.80	. Q	.	.	.	V	.
17.533	3.3366	2.78	. Q	.	.	.	V	.
17.550	3.3404	2.76	. Q	.	.	.	V	.
17.567	3.3441	2.75	. Q	.	.	.	V	.
17.583	3.3479	2.73	. Q	.	.	.	V	.
17.600	3.3516	2.71	. Q	.	.	.	V	.
17.617	3.3553	2.69	. Q	.	.	.	V	.
17.633	3.3590	2.67	. Q	.	.	.	V	.
17.650	3.3627	2.66	. Q	.	.	.	V	.
17.667	3.3663	2.64	. Q	.	.	.	V	.
17.683	3.3699	2.62	. Q	.	.	.	V	.
17.700	3.3735	2.61	. Q	.	.	.	V	.
17.717	3.3771	2.59	. Q	.	.	.	V	.
17.733	3.3807	2.58	. Q	.	.	.	V	.
17.750	3.3842	2.56	. Q	.	.	.	V	.
17.767	3.3877	2.55	. Q	.	.	.	V	.
17.783	3.3912	2.53	. Q	.	.	.	V	.
17.800	3.3946	2.52	. Q	.	.	.	V	.
17.817	3.3981	2.50	. Q	.	.	.	V	.
17.833	3.4015	2.49	. Q	.	.	.	V	.
17.850	3.4049	2.47	. Q	.	.	.	V	.
17.867	3.4083	2.46	. Q	.	.	.	V	.
17.883	3.4117	2.45	. Q	.	.	.	V	.
17.900	3.4150	2.43	. Q	.	.	.	V	.
17.917	3.4184	2.42	. Q	.	.	.	V	.
17.933	3.4217	2.41	. Q	.	.	.	V	.
17.950	3.4250	2.39	. Q	.	.	.	V	.
17.967	3.4283	2.38	. Q	.	.	.	V	.
17.983	3.4315	2.36	. Q	.	.	.	V	.
18.000	3.4347	2.32	. Q	.	.	.	V	.
18.017	3.4379	2.28	. Q	.	.	.	V	.
18.033	3.4410	2.24	. Q	.	.	.	V	.
18.050	3.4440	2.20	. Q	.	.	.	V	.
18.067	3.4470	2.16	. Q	.	.	.	V	.
18.083	3.4499	2.12	. Q	.	.	.	V	.
18.100	3.4527	2.06	. Q	.	.	.	V	.
18.117	3.4555	1.98	. Q	.	.	.	V	.
18.133	3.4581	1.90	. Q	.	.	.	V	.
18.150	3.4606	1.82	. Q	.	.	.	V	.
18.167	3.4630	1.74	. Q	.	.	.	V	.
18.183	3.4653	1.66	. Q	.	.	.	V	.
18.200	3.4675	1.59	. Q	.	.	.	V	.
18.217	3.4696	1.56	. Q	.	.	.	V	.
18.233	3.4718	1.56	. Q	.	.	.	V	.
18.250	3.4739	1.55	. Q	.	.	.	V	.
18.267	3.4760	1.54	. Q	.	.	.	V	.

18.283	3.4781	1.53	. Q	.	.	.	V	.
18.300	3.4802	1.52	. Q	.	.	.	V	.
18.317	3.4823	1.51	. Q	.	.	.	V	.
18.333	3.4844	1.50	. Q	.	.	.	V	.
18.350	3.4864	1.49	. Q	.	.	.	V	.
18.367	3.4884	1.48	. Q	.	.	.	V	.
18.383	3.4905	1.47	. Q	.	.	.	V	.
18.400	3.4925	1.47	. Q	.	.	.	V	.
18.417	3.4945	1.46	. Q	.	.	.	V	.
18.433	3.4965	1.45	. Q	.	.	.	V	.
18.450	3.4985	1.44	. Q	.	.	.	V	.
18.467	3.5005	1.43	. Q	.	.	.	V	.
18.483	3.5024	1.42	. Q	.	.	.	V	.
18.500	3.5044	1.42	. Q	.	.	.	V	.
18.517	3.5063	1.41	. Q	.	.	.	V	.
18.533	3.5082	1.40	. Q	.	.	.	V	.
18.550	3.5102	1.39	. Q	.	.	.	V	.
18.567	3.5121	1.39	. Q	.	.	.	V	.
18.583	3.5140	1.38	. Q	.	.	.	V	.
18.600	3.5159	1.37	. Q	.	.	.	V	.
18.617	3.5177	1.36	. Q	.	.	.	V	.
18.633	3.5196	1.36	. Q	.	.	.	V	.
18.650	3.5215	1.35	. Q	.	.	.	V	.
18.667	3.5233	1.34	. Q	.	.	.	V	.
18.683	3.5252	1.34	. Q	.	.	.	V	.
18.700	3.5270	1.33	. Q	.	.	.	V	.
18.717	3.5288	1.32	. Q	.	.	.	V	.
18.733	3.5306	1.31	. Q	.	.	.	V	.
18.750	3.5324	1.31	. Q	.	.	.	V	.
18.767	3.5342	1.30	. Q	.	.	.	V	.
18.783	3.5360	1.29	. Q	.	.	.	V	.
18.800	3.5378	1.29	. Q	.	.	.	V	.
18.817	3.5395	1.28	. Q	.	.	.	V	.
18.833	3.5413	1.28	. Q	.	.	.	V	.
18.850	3.5430	1.27	. Q	.	.	.	V	.
18.867	3.5448	1.26	. Q	.	.	.	V	.
18.883	3.5465	1.26	. Q	.	.	.	V	.
18.900	3.5482	1.25	. Q	.	.	.	V	.
18.917	3.5499	1.24	. Q	.	.	.	V	.
18.933	3.5516	1.24	Q	.	.	.	V	.
18.950	3.5533	1.23	Q	.	.	.	V	.
18.967	3.5550	1.23	Q	.	.	.	V	.
18.983	3.5567	1.22	Q	.	.	.	V	.
19.000	3.5584	1.21	Q	.	.	.	V	.
19.017	3.5600	1.21	Q	.	.	.	V	.
19.033	3.5617	1.20	Q	.	.	.	V	.
19.050	3.5634	1.20	Q	.	.	.	V	.
19.067	3.5650	1.19	Q	.	.	.	V	.
19.083	3.5666	1.19	Q	.	.	.	V	.
19.100	3.5683	1.18	Q	.	.	.	V	.

19.117	3.5699	1.18	Q	.	.	.	V	.
19.133	3.5715	1.17	Q	.	.	.	V	.
19.150	3.5731	1.16	Q	.	.	.	V	.
19.167	3.5747	1.16	Q	.	.	.	V	.
19.183	3.5763	1.15	Q	.	.	.	V	.
19.200	3.5779	1.15	Q	.	.	.	V	.
19.217	3.5794	1.14	Q	.	.	.	V	.
19.233	3.5810	1.14	Q	.	.	.	V	.
19.250	3.5826	1.13	Q	.	.	.	V	.
19.267	3.5841	1.13	Q	.	.	.	V	.
19.283	3.5857	1.12	Q	.	.	.	V	.
19.300	3.5872	1.12	Q	.	.	.	V	.
19.317	3.5887	1.11	Q	.	.	.	V	.
19.333	3.5903	1.11	Q	.	.	.	V	.
19.350	3.5918	1.11	Q	.	.	.	V	.
19.367	3.5933	1.10	Q	.	.	.	V	.
19.383	3.5948	1.10	Q	.	.	.	V	.
19.400	3.5963	1.09	Q	.	.	.	V	.
19.417	3.5978	1.09	Q	.	.	.	V	.
19.433	3.5993	1.08	Q	.	.	.	V	.
19.450	3.6008	1.08	Q	.	.	.	V	.
19.467	3.6023	1.08	Q	.	.	.	V	.
19.483	3.6038	1.07	Q	.	.	.	V	.
19.500	3.6052	1.07	Q	.	.	.	V	.
19.517	3.6067	1.07	Q	.	.	.	V	.
19.533	3.6082	1.06	Q	.	.	.	V	.
19.550	3.6096	1.06	Q	.	.	.	V	.
19.567	3.6111	1.06	Q	.	.	.	V	.
19.583	3.6126	1.05	Q	.	.	.	V	.
19.600	3.6140	1.05	Q	.	.	.	V	.
19.617	3.6154	1.05	Q	.	.	.	V	.
19.633	3.6169	1.04	Q	.	.	.	V	.
19.650	3.6183	1.04	Q	.	.	.	V	.
19.667	3.6197	1.04	Q	.	.	.	V	.
19.683	3.6212	1.04	Q	.	.	.	V	.
19.700	3.6226	1.03	Q	.	.	.	V	.
19.717	3.6240	1.03	Q	.	.	.	V	.
19.733	3.6254	1.03	Q	.	.	.	V	.
19.750	3.6268	1.02	Q	.	.	.	V	.
19.767	3.6282	1.02	Q	.	.	.	V	.
19.783	3.6296	1.02	Q	.	.	.	V	.
19.800	3.6310	1.01	Q	.	.	.	V	.
19.817	3.6324	1.01	Q	.	.	.	V	.
19.833	3.6338	1.01	Q	.	.	.	V	.
19.850	3.6352	1.01	Q	.	.	.	V	.
19.867	3.6366	1.00	Q	.	.	.	V	.
19.883	3.6380	1.00	Q	.	.	.	V	.
19.900	3.6393	1.00	Q	.	.	.	V	.
19.917	3.6407	0.99	Q	.	.	.	V	.
19.933	3.6421	0.99	Q	.	.	.	V	.

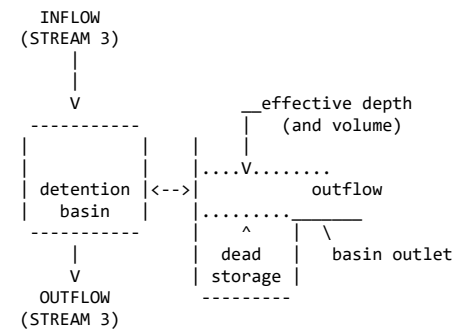
19.950	3.6434	0.99	Q	.	.	.	V	.
19.967	3.6448	0.99	Q	.	.	.	V	.
19.983	3.6462	0.98	Q	.	.	.	V	.
20.000	3.6475	0.98	Q	.	.	.	V	.

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
=====	=====
0%	1201.0
10%	460.0
20%	125.0
30%	75.0
40%	55.0
50%	45.0
60%	35.0
70%	25.0
80%	15.0
90%	5.0

FLOW PROCESS FROM NODE 540.00 TO NODE 540.00 IS CODE = 3.2

>>>>FLOW-THROUGH DETENTION BASIN ROUTING MODEL APPLIED TO STREAM #3<<<<
=====



ROUTE RUNOFF HYDROGRAPH FROM STREAM NUMBER 3
THROUGH A FLOW-THROUGH DETENTION BASIN

SPECIFIED BASIN CONDITIONS ARE AS FOLLOWS:

DEAD STORAGE(AF) = 0.000
 SPECIFIED DEAD STORAGE(AF) FILLED = 0.000
 SPECIFIED EFFECTIVE VOLUME(AF) FILLED ABOVE OUTLET = 0.000
 DETENTION BASIN CONSTANT LOSS RATE(CFS) = 0.00

BASIN DEPTH VERSUS OUTFLOW AND STORAGE INFORMATION:

INTERVAL NUMBER	DEPTH (FT)	OUTFLOW (CFS)	STORAGE (AF)
1	0.00	0.00	0.000
2	0.25	0.01	0.043
3	0.50	0.02	0.087
4	0.75	0.03	0.144
5	1.00	4.25	0.213
6	1.25	6.02	0.289
7	1.50	7.37	0.368
8	1.75	8.51	0.450
9	2.00	9.51	0.534
10	2.25	10.42	0.619
11	2.50	11.26	0.704
12	2.75	12.03	0.788
13	3.00	12.76	0.870
14	3.25	13.45	0.950
15	3.50	14.11	1.025
16	3.75	14.74	1.094
17	4.00	15.34	1.152
18	4.25	18.04	1.195
19	4.50	22.48	1.238
20	4.75	28.05	1.282
21	5.00	34.52	1.325

=====

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

CLOCK TIME (HRS)	DEAD-STORAGE FILLED(AF)	INFLOW (CFS)	LOSS (CFS)	EFFECTIVE DEPTH(FT)	MEAN OUTFLOW (CFS)	EFFECTIVE VOLUME(AF)
10.000	0.000	1.17	0.00	0.82	1.1	0.162
10.017	0.000	1.17	0.00	0.82	1.1	0.162
10.033	0.000	1.17	0.00	0.82	1.1	0.162
10.050	0.000	1.17	0.00	0.82	1.1	0.162
10.067	0.000	1.17	0.00	0.82	1.1	0.162
10.083	0.000	1.18	0.00	0.82	1.1	0.162
10.100	0.000	1.18	0.00	0.82	1.2	0.162

10.117	0.000	1.18	0.00	0.82	1.2	0.162
10.133	0.000	1.19	0.00	0.82	1.2	0.162
10.150	0.000	1.19	0.00	0.82	1.2	0.162
10.167	0.000	1.19	0.00	0.82	1.2	0.162
10.183	0.000	1.20	0.00	0.82	1.2	0.163
10.200	0.000	1.20	0.00	0.82	1.2	0.163
10.217	0.000	1.20	0.00	0.82	1.2	0.163
10.233	0.000	1.20	0.00	0.82	1.2	0.163
10.250	0.000	1.21	0.00	0.82	1.2	0.163
10.267	0.000	1.21	0.00	0.82	1.2	0.163
10.283	0.000	1.21	0.00	0.82	1.2	0.163
10.300	0.000	1.21	0.00	0.82	1.2	0.163
10.317	0.000	1.22	0.00	0.82	1.2	0.163
10.333	0.000	1.22	0.00	0.82	1.2	0.163
10.350	0.000	1.22	0.00	0.82	1.2	0.163
10.367	0.000	1.23	0.00	0.82	1.2	0.163
10.383	0.000	1.23	0.00	0.82	1.2	0.163
10.400	0.000	1.23	0.00	0.82	1.2	0.163
10.417	0.000	1.24	0.00	0.82	1.2	0.163
10.433	0.000	1.24	0.00	0.82	1.2	0.163
10.450	0.000	1.24	0.00	0.82	1.2	0.163
10.467	0.000	1.24	0.00	0.82	1.2	0.163
10.483	0.000	1.25	0.00	0.82	1.2	0.163
10.500	0.000	1.25	0.00	0.82	1.2	0.163
10.517	0.000	1.25	0.00	0.82	1.2	0.163
10.533	0.000	1.25	0.00	0.82	1.2	0.163
10.550	0.000	1.26	0.00	0.82	1.2	0.163
10.567	0.000	1.26	0.00	0.82	1.2	0.164
10.583	0.000	1.27	0.00	0.82	1.2	0.164
10.600	0.000	1.27	0.00	0.82	1.2	0.164
10.617	0.000	1.27	0.00	0.82	1.2	0.164
10.633	0.000	1.28	0.00	0.82	1.2	0.164
10.650	0.000	1.28	0.00	0.82	1.2	0.164
10.667	0.000	1.28	0.00	0.82	1.2	0.164
10.683	0.000	1.29	0.00	0.82	1.2	0.164
10.700	0.000	1.29	0.00	0.82	1.3	0.164
10.717	0.000	1.29	0.00	0.82	1.3	0.164
10.733	0.000	1.29	0.00	0.82	1.3	0.164
10.750	0.000	1.29	0.00	0.82	1.3	0.164
10.767	0.000	1.30	0.00	0.82	1.3	0.164
10.783	0.000	1.30	0.00	0.82	1.3	0.164
10.800	0.000	1.31	0.00	0.82	1.3	0.164
10.817	0.000	1.31	0.00	0.82	1.3	0.164
10.833	0.000	1.32	0.00	0.82	1.3	0.164
10.850	0.000	1.32	0.00	0.82	1.3	0.164
10.867	0.000	1.32	0.00	0.82	1.3	0.164
10.883	0.000	1.33	0.00	0.82	1.3	0.165
10.900	0.000	1.33	0.00	0.82	1.3	0.165
10.917	0.000	1.33	0.00	0.82	1.3	0.165
10.933	0.000	1.33	0.00	0.82	1.3	0.165

10.950	0.000	1.34	0.00	0.83	1.3	0.165
10.967	0.000	1.34	0.00	0.83	1.3	0.165
10.983	0.000	1.34	0.00	0.83	1.3	0.165
11.000	0.000	1.35	0.00	0.83	1.3	0.165
11.017	0.000	1.35	0.00	0.83	1.3	0.165
11.033	0.000	1.36	0.00	0.83	1.3	0.165
11.050	0.000	1.36	0.00	0.83	1.3	0.165
11.067	0.000	1.37	0.00	0.83	1.3	0.165
11.083	0.000	1.37	0.00	0.83	1.3	0.165
11.100	0.000	1.37	0.00	0.83	1.3	0.165
11.117	0.000	1.38	0.00	0.83	1.3	0.165
11.133	0.000	1.38	0.00	0.83	1.3	0.165
11.150	0.000	1.38	0.00	0.83	1.3	0.165
11.167	0.000	1.38	0.00	0.83	1.3	0.165
11.183	0.000	1.39	0.00	0.83	1.3	0.166
11.200	0.000	1.39	0.00	0.83	1.4	0.166
11.217	0.000	1.40	0.00	0.83	1.4	0.166
11.233	0.000	1.40	0.00	0.83	1.4	0.166
11.250	0.000	1.41	0.00	0.83	1.4	0.166
11.267	0.000	1.41	0.00	0.83	1.4	0.166
11.283	0.000	1.42	0.00	0.83	1.4	0.166
11.300	0.000	1.42	0.00	0.83	1.4	0.166
11.317	0.000	1.42	0.00	0.83	1.4	0.166
11.333	0.000	1.43	0.00	0.83	1.4	0.166
11.350	0.000	1.43	0.00	0.83	1.4	0.166
11.367	0.000	1.43	0.00	0.83	1.4	0.166
11.383	0.000	1.43	0.00	0.83	1.4	0.166
11.400	0.000	1.44	0.00	0.83	1.4	0.166
11.417	0.000	1.44	0.00	0.83	1.4	0.166
11.433	0.000	1.45	0.00	0.83	1.4	0.166
11.450	0.000	1.45	0.00	0.83	1.4	0.166
11.467	0.000	1.46	0.00	0.83	1.4	0.167
11.483	0.000	1.46	0.00	0.83	1.4	0.167
11.500	0.000	1.47	0.00	0.83	1.4	0.167
11.517	0.000	1.47	0.00	0.83	1.4	0.167
11.533	0.000	1.48	0.00	0.83	1.4	0.167
11.550	0.000	1.48	0.00	0.83	1.4	0.167
11.567	0.000	1.48	0.00	0.83	1.4	0.167
11.583	0.000	1.49	0.00	0.83	1.4	0.167
11.600	0.000	1.49	0.00	0.83	1.4	0.167
11.617	0.000	1.49	0.00	0.83	1.4	0.167
11.633	0.000	1.50	0.00	0.83	1.5	0.167
11.650	0.000	1.50	0.00	0.83	1.5	0.167
11.667	0.000	1.51	0.00	0.83	1.5	0.167
11.683	0.000	1.51	0.00	0.83	1.5	0.167
11.700	0.000	1.52	0.00	0.84	1.5	0.167
11.717	0.000	1.53	0.00	0.84	1.5	0.168
11.733	0.000	1.53	0.00	0.84	1.5	0.168
11.750	0.000	1.54	0.00	0.84	1.5	0.168
11.767	0.000	1.54	0.00	0.84	1.5	0.168

11.783	0.000	1.54	0.00	0.84	1.5	0.168
11.800	0.000	1.54	0.00	0.84	1.5	0.168
11.817	0.000	1.55	0.00	0.84	1.5	0.168
11.833	0.000	1.55	0.00	0.84	1.5	0.168
11.850	0.000	1.56	0.00	0.84	1.5	0.168
11.867	0.000	1.56	0.00	0.84	1.5	0.168
11.883	0.000	1.57	0.00	0.84	1.5	0.168
11.900	0.000	1.58	0.00	0.84	1.5	0.168
11.917	0.000	1.58	0.00	0.84	1.5	0.168
11.933	0.000	1.59	0.00	0.84	1.5	0.169
11.950	0.000	1.59	0.00	0.84	1.5	0.169
11.967	0.000	1.60	0.00	0.84	1.5	0.169
11.983	0.000	1.60	0.00	0.84	1.5	0.169
12.000	0.000	1.61	0.00	0.84	1.5	0.169
12.017	0.000	1.61	0.00	0.84	1.6	0.169
12.033	0.000	1.61	0.00	0.84	1.6	0.169
12.050	0.000	1.62	0.00	0.84	1.6	0.169
12.067	0.000	1.66	0.00	0.84	1.6	0.169
12.083	0.000	1.76	0.00	0.84	1.6	0.169
12.100	0.000	1.87	0.00	0.84	1.6	0.170
12.117	0.000	1.98	0.00	0.85	1.6	0.170
12.133	0.000	2.08	0.00	0.85	1.7	0.171
12.150	0.000	2.19	0.00	0.85	1.7	0.172
12.167	0.000	2.29	0.00	0.85	1.7	0.172
12.183	0.000	2.32	0.00	0.86	1.8	0.173
12.200	0.000	2.32	0.00	0.86	1.8	0.174
12.217	0.000	2.33	0.00	0.86	1.9	0.174
12.233	0.000	2.33	0.00	0.86	1.9	0.175
12.250	0.000	2.33	0.00	0.86	1.9	0.175
12.267	0.000	2.34	0.00	0.87	2.0	0.176
12.283	0.000	2.34	0.00	0.87	2.0	0.176
12.300	0.000	2.35	0.00	0.87	2.0	0.177
12.317	0.000	2.36	0.00	0.87	2.1	0.177
12.333	0.000	2.37	0.00	0.87	2.1	0.178
12.350	0.000	2.38	0.00	0.87	2.1	0.178
12.367	0.000	2.38	0.00	0.87	2.1	0.178
12.383	0.000	2.39	0.00	0.88	2.1	0.179
12.400	0.000	2.40	0.00	0.88	2.2	0.179
12.417	0.000	2.40	0.00	0.88	2.2	0.179
12.433	0.000	2.41	0.00	0.88	2.2	0.180
12.450	0.000	2.41	0.00	0.88	2.2	0.180
12.467	0.000	2.42	0.00	0.88	2.2	0.180
12.483	0.000	2.42	0.00	0.88	2.3	0.180
12.500	0.000	2.43	0.00	0.88	2.3	0.181
12.517	0.000	2.43	0.00	0.88	2.3	0.181
12.533	0.000	2.44	0.00	0.88	2.3	0.181
12.550	0.000	2.45	0.00	0.88	2.3	0.181
12.567	0.000	2.46	0.00	0.89	2.3	0.181
12.583	0.000	2.47	0.00	0.89	2.3	0.182
12.600	0.000	2.48	0.00	0.89	2.3	0.182

12.617	0.000	2.49	0.00	0.89	2.4	0.182
12.633	0.000	2.49	0.00	0.89	2.4	0.182
12.650	0.000	2.50	0.00	0.89	2.4	0.182
12.667	0.000	2.50	0.00	0.89	2.4	0.183
12.683	0.000	2.51	0.00	0.89	2.4	0.183
12.700	0.000	2.51	0.00	0.89	2.4	0.183
12.717	0.000	2.52	0.00	0.89	2.4	0.183
12.733	0.000	2.53	0.00	0.89	2.4	0.183
12.750	0.000	2.54	0.00	0.89	2.4	0.183
12.767	0.000	2.55	0.00	0.89	2.4	0.183
12.783	0.000	2.56	0.00	0.89	2.4	0.184
12.800	0.000	2.57	0.00	0.89	2.5	0.184
12.817	0.000	2.58	0.00	0.89	2.5	0.184
12.833	0.000	2.58	0.00	0.89	2.5	0.184
12.850	0.000	2.59	0.00	0.90	2.5	0.184
12.867	0.000	2.59	0.00	0.90	2.5	0.184
12.883	0.000	2.60	0.00	0.90	2.5	0.184
12.900	0.000	2.61	0.00	0.90	2.5	0.185
12.917	0.000	2.61	0.00	0.90	2.5	0.185
12.933	0.000	2.62	0.00	0.90	2.5	0.185
12.950	0.000	2.63	0.00	0.90	2.5	0.185
12.967	0.000	2.64	0.00	0.90	2.5	0.185
12.983	0.000	2.65	0.00	0.90	2.5	0.185
13.000	0.000	2.66	0.00	0.90	2.6	0.185
13.017	0.000	2.67	0.00	0.90	2.6	0.185
13.033	0.000	2.68	0.00	0.90	2.6	0.186
13.050	0.000	2.69	0.00	0.90	2.6	0.186
13.067	0.000	2.70	0.00	0.90	2.6	0.186
13.083	0.000	2.70	0.00	0.90	2.6	0.186
13.100	0.000	2.71	0.00	0.90	2.6	0.186
13.117	0.000	2.72	0.00	0.90	2.6	0.186
13.133	0.000	2.72	0.00	0.90	2.6	0.186
13.150	0.000	2.73	0.00	0.90	2.6	0.187
13.167	0.000	2.74	0.00	0.90	2.6	0.187
13.183	0.000	2.75	0.00	0.91	2.7	0.187
13.200	0.000	2.76	0.00	0.91	2.7	0.187
13.217	0.000	2.77	0.00	0.91	2.7	0.187
13.233	0.000	2.79	0.00	0.91	2.7	0.187
13.250	0.000	2.80	0.00	0.91	2.7	0.187
13.267	0.000	2.81	0.00	0.91	2.7	0.188
13.283	0.000	2.82	0.00	0.91	2.7	0.188
13.300	0.000	2.83	0.00	0.91	2.7	0.188
13.317	0.000	2.83	0.00	0.91	2.7	0.188
13.333	0.000	2.84	0.00	0.91	2.7	0.188
13.350	0.000	2.85	0.00	0.91	2.7	0.188
13.367	0.000	2.85	0.00	0.91	2.8	0.188
13.383	0.000	2.86	0.00	0.91	2.8	0.189
13.400	0.000	2.88	0.00	0.91	2.8	0.189
13.417	0.000	2.89	0.00	0.91	2.8	0.189
13.433	0.000	2.90	0.00	0.91	2.8	0.189

13.450	0.000	2.92	0.00	0.91	2.8	0.189
13.467	0.000	2.93	0.00	0.91	2.8	0.189
13.483	0.000	2.95	0.00	0.92	2.8	0.190
13.500	0.000	2.95	0.00	0.92	2.8	0.190
13.517	0.000	2.96	0.00	0.92	2.8	0.190
13.533	0.000	2.97	0.00	0.92	2.8	0.190
13.550	0.000	2.98	0.00	0.92	2.9	0.190
13.567	0.000	2.98	0.00	0.92	2.9	0.190
13.583	0.000	2.99	0.00	0.92	2.9	0.191
13.600	0.000	3.00	0.00	0.92	2.9	0.191
13.617	0.000	3.02	0.00	0.92	2.9	0.191
13.633	0.000	3.03	0.00	0.92	2.9	0.191
13.650	0.000	3.05	0.00	0.92	2.9	0.191
13.667	0.000	3.07	0.00	0.92	2.9	0.191
13.683	0.000	3.08	0.00	0.92	2.9	0.192
13.700	0.000	3.10	0.00	0.92	3.0	0.192
13.717	0.000	3.11	0.00	0.92	3.0	0.192
13.733	0.000	3.12	0.00	0.92	3.0	0.192
13.750	0.000	3.13	0.00	0.93	3.0	0.192
13.767	0.000	3.14	0.00	0.93	3.0	0.193
13.783	0.000	3.14	0.00	0.93	3.0	0.193
13.800	0.000	3.15	0.00	0.93	3.0	0.193
13.817	0.000	3.16	0.00	0.93	3.0	0.193
13.833	0.000	3.18	0.00	0.93	3.0	0.193
13.850	0.000	3.20	0.00	0.93	3.1	0.194
13.867	0.000	3.22	0.00	0.93	3.1	0.194
13.883	0.000	3.24	0.00	0.93	3.1	0.194
13.900	0.000	3.25	0.00	0.93	3.1	0.194
13.917	0.000	3.27	0.00	0.93	3.1	0.194
13.933	0.000	3.29	0.00	0.93	3.1	0.195
13.950	0.000	3.30	0.00	0.93	3.1	0.195
13.967	0.000	3.31	0.00	0.93	3.1	0.195
13.983	0.000	3.32	0.00	0.94	3.2	0.195
14.000	0.000	3.33	0.00	0.94	3.2	0.195
14.017	0.000	3.34	0.00	0.94	3.2	0.196
14.033	0.000	3.35	0.00	0.94	3.2	0.196
14.050	0.000	3.36	0.00	0.94	3.2	0.196
14.067	0.000	3.38	0.00	0.94	3.2	0.196
14.083	0.000	3.39	0.00	0.94	3.2	0.197
14.100	0.000	3.40	0.00	0.94	3.3	0.197
14.117	0.000	3.42	0.00	0.94	3.3	0.197
14.133	0.000	3.43	0.00	0.94	3.3	0.197
14.150	0.000	3.45	0.00	0.94	3.3	0.197
14.167	0.000	3.46	0.00	0.94	3.3	0.198
14.183	0.000	3.47	0.00	0.94	3.3	0.198
14.200	0.000	3.48	0.00	0.95	3.3	0.198
14.217	0.000	3.49	0.00	0.95	3.3	0.198
14.233	0.000	3.50	0.00	0.95	3.4	0.198
14.250	0.000	3.52	0.00	0.95	3.4	0.199
14.267	0.000	3.54	0.00	0.95	3.4	0.199

14.283	0.000	3.56	0.00	0.95	3.4	0.199
14.300	0.000	3.59	0.00	0.95	3.4	0.199
14.317	0.000	3.62	0.00	0.95	3.4	0.200
14.333	0.000	3.64	0.00	0.95	3.4	0.200
14.350	0.000	3.67	0.00	0.95	3.5	0.200
14.367	0.000	3.69	0.00	0.95	3.5	0.200
14.383	0.000	3.71	0.00	0.96	3.5	0.201
14.400	0.000	3.72	0.00	0.96	3.5	0.201
14.417	0.000	3.73	0.00	0.96	3.5	0.201
14.433	0.000	3.75	0.00	0.96	3.5	0.202
14.450	0.000	3.76	0.00	0.96	3.6	0.202
14.467	0.000	3.78	0.00	0.96	3.6	0.202
14.483	0.000	3.80	0.00	0.96	3.6	0.202
14.500	0.000	3.83	0.00	0.96	3.6	0.203
14.517	0.000	3.86	0.00	0.96	3.6	0.203
14.533	0.000	3.90	0.00	0.97	3.7	0.203
14.550	0.000	3.93	0.00	0.97	3.7	0.204
14.567	0.000	3.96	0.00	0.97	3.7	0.204
14.583	0.000	3.99	0.00	0.97	3.7	0.204
14.600	0.000	4.01	0.00	0.97	3.7	0.205
14.617	0.000	4.02	0.00	0.97	3.8	0.205
14.633	0.000	4.04	0.00	0.97	3.8	0.206
14.650	0.000	4.06	0.00	0.97	3.8	0.206
14.667	0.000	4.08	0.00	0.98	3.8	0.206
14.683	0.000	4.10	0.00	0.98	3.8	0.207
14.700	0.000	4.12	0.00	0.98	3.9	0.207
14.717	0.000	4.16	0.00	0.98	3.9	0.207
14.733	0.000	4.20	0.00	0.98	3.9	0.208
14.750	0.000	4.24	0.00	0.98	3.9	0.208
14.767	0.000	4.28	0.00	0.98	4.0	0.209
14.783	0.000	4.32	0.00	0.99	4.0	0.209
14.800	0.000	4.36	0.00	0.99	4.0	0.209
14.817	0.000	4.39	0.00	0.99	4.0	0.210
14.833	0.000	4.41	0.00	0.99	4.1	0.210
14.850	0.000	4.43	0.00	0.99	4.1	0.211
14.867	0.000	4.45	0.00	0.99	4.1	0.211
14.883	0.000	4.48	0.00	1.00	4.2	0.212
14.900	0.000	4.50	0.00	1.00	4.2	0.212
14.917	0.000	4.53	0.00	1.00	4.2	0.213
14.933	0.000	4.58	0.00	1.00	4.2	0.213
14.950	0.000	4.63	0.00	1.00	4.3	0.214
14.967	0.000	4.69	0.00	1.00	4.3	0.214
14.983	0.000	4.74	0.00	1.01	4.3	0.215
15.000	0.000	4.79	0.00	1.01	4.3	0.215
15.017	0.000	4.84	0.00	1.01	4.3	0.216
15.033	0.000	4.88	0.00	1.01	4.3	0.217
15.050	0.000	4.91	0.00	1.02	4.4	0.218
15.067	0.000	4.94	0.00	1.02	4.4	0.218
15.083	0.000	4.97	0.00	1.02	4.4	0.219
15.100	0.000	5.00	0.00	1.02	4.4	0.220

15.117	0.000	5.03	0.00	1.03	4.4	0.221
15.133	0.000	5.07	0.00	1.03	4.4	0.222
15.150	0.000	5.14	0.00	1.03	4.5	0.223
15.167	0.000	5.21	0.00	1.03	4.5	0.224
15.183	0.000	5.28	0.00	1.04	4.5	0.225
15.200	0.000	5.35	0.00	1.04	4.5	0.226
15.217	0.000	5.43	0.00	1.05	4.6	0.227
15.233	0.000	5.50	0.00	1.05	4.6	0.228
15.250	0.000	5.55	0.00	1.05	4.6	0.230
15.267	0.000	5.60	0.00	1.06	4.7	0.231
15.283	0.000	5.64	0.00	1.06	4.7	0.232
15.300	0.000	5.69	0.00	1.07	4.7	0.233
15.317	0.000	5.73	0.00	1.07	4.7	0.235
15.333	0.000	5.77	0.00	1.08	4.8	0.236
15.350	0.000	5.81	0.00	1.08	4.8	0.238
15.367	0.000	5.77	0.00	1.09	4.8	0.239
15.383	0.000	5.73	0.00	1.09	4.9	0.240
15.400	0.000	5.68	0.00	1.09	4.9	0.241
15.417	0.000	5.63	0.00	1.10	4.9	0.242
15.433	0.000	5.58	0.00	1.10	4.9	0.243
15.450	0.000	5.54	0.00	1.10	5.0	0.244
15.467	0.000	5.54	0.00	1.10	5.0	0.245
15.483	0.000	5.61	0.00	1.11	5.0	0.245
15.500	0.000	5.68	0.00	1.11	5.0	0.246
15.517	0.000	5.74	0.00	1.11	5.0	0.247
15.533	0.000	5.81	0.00	1.12	5.1	0.248
15.550	0.000	5.88	0.00	1.12	5.1	0.249
15.567	0.000	5.96	0.00	1.12	5.1	0.251
15.583	0.000	6.13	0.00	1.13	5.1	0.252
15.600	0.000	6.32	0.00	1.13	5.2	0.254
15.617	0.000	6.52	0.00	1.14	5.2	0.255
15.633	0.000	6.72	0.00	1.15	5.3	0.257
15.650	0.000	6.91	0.00	1.15	5.3	0.260
15.667	0.000	7.11	0.00	1.16	5.4	0.262
15.683	0.000	7.31	0.00	1.17	5.4	0.265
15.700	0.000	7.51	0.00	1.18	5.5	0.267
15.717	0.000	7.72	0.00	1.19	5.5	0.270
15.733	0.000	7.92	0.00	1.20	5.6	0.274
15.750	0.000	8.13	0.00	1.21	5.7	0.277
15.767	0.000	8.33	0.00	1.22	5.8	0.280
15.783	0.000	8.54	0.00	1.23	5.9	0.284
15.800	0.000	9.01	0.00	1.25	6.0	0.288
15.817	0.000	9.62	0.00	1.26	6.0	0.293
15.833	0.000	10.22	0.00	1.28	6.1	0.299
15.850	0.000	10.83	0.00	1.30	6.2	0.305
15.867	0.000	11.44	0.00	1.32	6.4	0.312
15.883	0.000	12.05	0.00	1.35	6.5	0.320
15.900	0.000	12.67	0.00	1.37	6.6	0.328
15.917	0.000	13.35	0.00	1.40	6.8	0.337
15.933	0.000	14.04	0.00	1.43	6.9	0.347

15.950	0.000	14.74	0.00	1.47	7.1	0.358
15.967	0.000	15.43	0.00	1.50	7.3	0.369
15.983	0.000	16.12	0.00	1.54	7.5	0.381
16.000	0.000	16.81	0.00	1.58	7.6	0.393
16.017	0.000	19.62	0.00	1.63	7.8	0.410
16.033	0.000	24.55	0.00	1.70	8.1	0.432
16.050	0.000	29.48	0.00	1.78	8.5	0.461
16.067	0.000	34.41	0.00	1.89	8.9	0.496
16.083	0.000	39.34	0.00	2.01	9.3	0.538
16.100	0.000	44.27	0.00	2.15	9.8	0.585
16.117	0.000	49.59	0.00	2.31	10.3	0.639
16.133	0.000	44.10	0.00	2.44	10.8	0.685
16.150	0.000	38.13	0.00	2.55	11.2	0.722
16.167	0.000	32.17	0.00	2.64	11.6	0.751
16.183	0.000	26.20	0.00	2.70	11.8	0.770
16.200	0.000	20.23	0.00	2.73	11.9	0.782
16.217	0.000	14.26	0.00	2.74	12.0	0.785
16.233	0.000	10.20	0.00	2.73	12.0	0.783
16.250	0.000	9.55	0.00	2.72	12.0	0.779
16.267	0.000	8.98	0.00	2.71	11.9	0.775
16.283	0.000	8.40	0.00	2.70	11.9	0.770
16.300	0.000	7.82	0.00	2.68	11.8	0.765
16.317	0.000	7.25	0.00	2.66	11.8	0.759
16.333	0.000	6.69	0.00	2.64	11.7	0.752
16.350	0.000	6.47	0.00	2.62	11.7	0.744
16.367	0.000	6.40	0.00	2.60	11.6	0.737
16.383	0.000	6.32	0.00	2.58	11.5	0.730
16.400	0.000	6.25	0.00	2.56	11.5	0.723
16.417	0.000	6.17	0.00	2.53	11.4	0.716
16.433	0.000	6.09	0.00	2.51	11.3	0.708
16.450	0.000	6.01	0.00	2.49	11.3	0.701
16.467	0.000	5.90	0.00	2.47	11.2	0.694
16.483	0.000	5.78	0.00	2.45	11.1	0.687
16.500	0.000	5.67	0.00	2.43	11.0	0.679
16.517	0.000	5.55	0.00	2.41	11.0	0.672
16.533	0.000	5.44	0.00	2.38	10.9	0.664
16.550	0.000	5.32	0.00	2.36	10.8	0.657
16.567	0.000	5.22	0.00	2.34	10.8	0.649
16.583	0.000	5.13	0.00	2.32	10.7	0.641
16.600	0.000	5.04	0.00	2.29	10.6	0.634
16.617	0.000	4.95	0.00	2.27	10.5	0.626
16.633	0.000	4.86	0.00	2.25	10.5	0.618
16.650	0.000	4.77	0.00	2.23	10.4	0.611
16.667	0.000	4.68	0.00	2.20	10.3	0.603
16.683	0.000	4.61	0.00	2.18	10.2	0.595
16.700	0.000	4.54	0.00	2.16	10.1	0.587
16.717	0.000	4.47	0.00	2.13	10.0	0.580
16.733	0.000	4.40	0.00	2.11	10.0	0.572
16.750	0.000	4.34	0.00	2.09	9.9	0.564
16.767	0.000	4.27	0.00	2.07	9.8	0.557

16.783	0.000	4.21	0.00	2.04	9.7	0.549
16.800	0.000	4.15	0.00	2.02	9.6	0.542
16.817	0.000	4.10	0.00	2.00	9.6	0.534
16.833	0.000	4.05	0.00	1.98	9.5	0.527
16.850	0.000	3.99	0.00	1.96	9.4	0.519
16.867	0.000	3.94	0.00	1.93	9.3	0.512
16.883	0.000	3.89	0.00	1.91	9.2	0.505
16.900	0.000	3.84	0.00	1.89	9.1	0.497
16.917	0.000	3.80	0.00	1.87	9.0	0.490
16.933	0.000	3.76	0.00	1.85	8.9	0.483
16.950	0.000	3.72	0.00	1.83	8.9	0.476
16.967	0.000	3.67	0.00	1.81	8.8	0.469
16.983	0.000	3.63	0.00	1.79	8.7	0.462
17.000	0.000	3.59	0.00	1.76	8.6	0.455
17.017	0.000	3.56	0.00	1.74	8.5	0.448
17.033	0.000	3.53	0.00	1.72	8.4	0.441
17.050	0.000	3.50	0.00	1.70	8.3	0.435
17.067	0.000	3.47	0.00	1.68	8.3	0.428
17.083	0.000	3.44	0.00	1.66	8.2	0.422
17.100	0.000	3.41	0.00	1.64	8.1	0.415
17.117	0.000	3.38	0.00	1.62	8.0	0.409
17.133	0.000	3.35	0.00	1.61	7.9	0.403
17.150	0.000	3.33	0.00	1.59	7.8	0.396
17.167	0.000	3.30	0.00	1.57	7.7	0.390
17.183	0.000	3.27	0.00	1.55	7.6	0.384
17.200	0.000	3.24	0.00	1.53	7.6	0.378
17.217	0.000	3.22	0.00	1.51	7.5	0.373
17.233	0.000	3.19	0.00	1.50	7.4	0.367
17.250	0.000	3.16	0.00	1.48	7.3	0.361
17.267	0.000	3.14	0.00	1.46	7.2	0.355
17.283	0.000	3.11	0.00	1.44	7.1	0.350
17.300	0.000	3.09	0.00	1.43	7.0	0.345
17.317	0.000	3.06	0.00	1.41	6.9	0.339
17.333	0.000	3.04	0.00	1.39	6.8	0.334
17.350	0.000	3.01	0.00	1.38	6.7	0.329
17.367	0.000	2.99	0.00	1.36	6.7	0.324
17.383	0.000	2.97	0.00	1.34	6.6	0.319
17.400	0.000	2.95	0.00	1.33	6.5	0.314
17.417	0.000	2.92	0.00	1.31	6.4	0.309
17.433	0.000	2.90	0.00	1.30	6.3	0.304
17.450	0.000	2.88	0.00	1.28	6.2	0.300
17.467	0.000	2.86	0.00	1.27	6.2	0.295
17.483	0.000	2.84	0.00	1.26	6.1	0.291
17.500	0.000	2.82	0.00	1.24	6.0	0.286
17.517	0.000	2.80	0.00	1.23	5.9	0.282
17.533	0.000	2.78	0.00	1.21	5.8	0.278
17.550	0.000	2.76	0.00	1.20	5.7	0.274
17.567	0.000	2.75	0.00	1.19	5.6	0.270
17.583	0.000	2.73	0.00	1.17	5.5	0.266
17.600	0.000	2.71	0.00	1.16	5.4	0.262

17.617	0.000	2.69	0.00	1.15	5.4	0.259
17.633	0.000	2.67	0.00	1.14	5.3	0.255
17.650	0.000	2.66	0.00	1.13	5.2	0.252
17.667	0.000	2.64	0.00	1.12	5.1	0.248
17.683	0.000	2.62	0.00	1.10	5.0	0.245
17.700	0.000	2.61	0.00	1.09	5.0	0.242
17.717	0.000	2.59	0.00	1.08	4.9	0.239
17.733	0.000	2.58	0.00	1.07	4.8	0.235
17.750	0.000	2.56	0.00	1.06	4.7	0.232
17.767	0.000	2.55	0.00	1.05	4.7	0.230
17.783	0.000	2.53	0.00	1.04	4.6	0.227
17.800	0.000	2.52	0.00	1.04	4.5	0.224
17.817	0.000	2.50	0.00	1.03	4.5	0.221
17.833	0.000	2.49	0.00	1.02	4.4	0.219
17.850	0.000	2.47	0.00	1.01	4.4	0.216
17.867	0.000	2.46	0.00	1.00	4.3	0.213
17.883	0.000	2.45	0.00	0.99	4.2	0.211
17.900	0.000	2.43	0.00	0.98	4.1	0.209
17.917	0.000	2.42	0.00	0.98	3.9	0.207
17.933	0.000	2.41	0.00	0.97	3.8	0.205
17.950	0.000	2.39	0.00	0.96	3.7	0.203
17.967	0.000	2.38	0.00	0.96	3.6	0.201
17.983	0.000	2.36	0.00	0.95	3.5	0.200
18.000	0.000	2.32	0.00	0.95	3.4	0.198
18.017	0.000	2.28	0.00	0.94	3.3	0.197
18.033	0.000	2.24	0.00	0.94	3.2	0.195
18.050	0.000	2.20	0.00	0.93	3.1	0.194
18.067	0.000	2.16	0.00	0.93	3.1	0.193
18.083	0.000	2.12	0.00	0.92	3.0	0.192
18.100	0.000	2.06	0.00	0.92	2.9	0.191
18.117	0.000	1.98	0.00	0.91	2.8	0.189
18.133	0.000	1.90	0.00	0.91	2.8	0.188
18.150	0.000	1.82	0.00	0.91	2.7	0.187
18.167	0.000	1.74	0.00	0.90	2.6	0.186
18.183	0.000	1.66	0.00	0.90	2.6	0.185
18.200	0.000	1.59	0.00	0.89	2.5	0.183
18.217	0.000	1.56	0.00	0.89	2.4	0.182
18.233	0.000	1.56	0.00	0.88	2.3	0.181
18.250	0.000	1.55	0.00	0.88	2.3	0.180
18.267	0.000	1.54	0.00	0.88	2.2	0.179
18.283	0.000	1.53	0.00	0.87	2.2	0.178
18.300	0.000	1.52	0.00	0.87	2.1	0.177
18.317	0.000	1.51	0.00	0.87	2.1	0.177
18.333	0.000	1.50	0.00	0.87	2.0	0.176
18.350	0.000	1.49	0.00	0.86	2.0	0.175
18.367	0.000	1.48	0.00	0.86	1.9	0.175
18.383	0.000	1.47	0.00	0.86	1.9	0.174
18.400	0.000	1.47	0.00	0.86	1.9	0.174
18.417	0.000	1.46	0.00	0.86	1.8	0.173
18.433	0.000	1.45	0.00	0.85	1.8	0.173

18.450	0.000	1.44	0.00	0.85	1.8	0.172
18.467	0.000	1.43	0.00	0.85	1.7	0.172
18.483	0.000	1.42	0.00	0.85	1.7	0.171
18.500	0.000	1.42	0.00	0.85	1.7	0.171
18.517	0.000	1.41	0.00	0.85	1.7	0.171
18.533	0.000	1.40	0.00	0.85	1.6	0.170
18.550	0.000	1.39	0.00	0.84	1.6	0.170
18.567	0.000	1.39	0.00	0.84	1.6	0.170
18.583	0.000	1.38	0.00	0.84	1.6	0.169
18.600	0.000	1.37	0.00	0.84	1.6	0.169
18.617	0.000	1.36	0.00	0.84	1.6	0.169
18.633	0.000	1.36	0.00	0.84	1.5	0.169
18.650	0.000	1.35	0.00	0.84	1.5	0.168
18.667	0.000	1.34	0.00	0.84	1.5	0.168
18.683	0.000	1.34	0.00	0.84	1.5	0.168
18.700	0.000	1.33	0.00	0.84	1.5	0.168
18.717	0.000	1.32	0.00	0.83	1.5	0.167
18.733	0.000	1.31	0.00	0.83	1.5	0.167
18.750	0.000	1.31	0.00	0.83	1.4	0.167
18.767	0.000	1.30	0.00	0.83	1.4	0.167
18.783	0.000	1.29	0.00	0.83	1.4	0.167
18.800	0.000	1.29	0.00	0.83	1.4	0.166
18.817	0.000	1.28	0.00	0.83	1.4	0.166
18.833	0.000	1.28	0.00	0.83	1.4	0.166
18.850	0.000	1.27	0.00	0.83	1.4	0.166
18.867	0.000	1.26	0.00	0.83	1.4	0.166
18.883	0.000	1.26	0.00	0.83	1.4	0.166
18.900	0.000	1.25	0.00	0.83	1.4	0.166
18.917	0.000	1.24	0.00	0.83	1.3	0.165
18.933	0.000	1.24	0.00	0.83	1.3	0.165
18.950	0.000	1.23	0.00	0.83	1.3	0.165
18.967	0.000	1.23	0.00	0.83	1.3	0.165
18.983	0.000	1.22	0.00	0.83	1.3	0.165
19.000	0.000	1.21	0.00	0.83	1.3	0.165
19.017	0.000	1.21	0.00	0.82	1.3	0.165
19.033	0.000	1.20	0.00	0.82	1.3	0.165
19.050	0.000	1.20	0.00	0.82	1.3	0.164
19.067	0.000	1.19	0.00	0.82	1.3	0.164
19.083	0.000	1.19	0.00	0.82	1.3	0.164
19.100	0.000	1.18	0.00	0.82	1.3	0.164
19.117	0.000	1.18	0.00	0.82	1.3	0.164
19.133	0.000	1.17	0.00	0.82	1.2	0.164
19.150	0.000	1.16	0.00	0.82	1.2	0.164
19.167	0.000	1.16	0.00	0.82	1.2	0.164
19.183	0.000	1.15	0.00	0.82	1.2	0.164
19.200	0.000	1.15	0.00	0.82	1.2	0.163
19.217	0.000	1.14	0.00	0.82	1.2	0.163
19.233	0.000	1.14	0.00	0.82	1.2	0.163
19.250	0.000	1.13	0.00	0.82	1.2	0.163
19.267	0.000	1.13	0.00	0.82	1.2	0.163

19.283	0.000	1.12	0.00	0.82	1.2	0.163
19.300	0.000	1.12	0.00	0.82	1.2	0.163
19.317	0.000	1.11	0.00	0.82	1.2	0.163
19.333	0.000	1.11	0.00	0.82	1.2	0.163
19.350	0.000	1.11	0.00	0.82	1.2	0.163
19.367	0.000	1.10	0.00	0.82	1.2	0.162
19.383	0.000	1.10	0.00	0.82	1.2	0.162
19.400	0.000	1.09	0.00	0.82	1.2	0.162
19.417	0.000	1.09	0.00	0.82	1.1	0.162
19.433	0.000	1.08	0.00	0.82	1.1	0.162
19.450	0.000	1.08	0.00	0.82	1.1	0.162
19.467	0.000	1.08	0.00	0.82	1.1	0.162
19.483	0.000	1.07	0.00	0.81	1.1	0.162
19.500	0.000	1.07	0.00	0.81	1.1	0.162
19.517	0.000	1.07	0.00	0.81	1.1	0.162
19.533	0.000	1.06	0.00	0.81	1.1	0.162
19.550	0.000	1.06	0.00	0.81	1.1	0.162
19.567	0.000	1.06	0.00	0.81	1.1	0.162
19.583	0.000	1.05	0.00	0.81	1.1	0.161
19.600	0.000	1.05	0.00	0.81	1.1	0.161
19.617	0.000	1.05	0.00	0.81	1.1	0.161
19.633	0.000	1.04	0.00	0.81	1.1	0.161
19.650	0.000	1.04	0.00	0.81	1.1	0.161
19.667	0.000	1.04	0.00	0.81	1.1	0.161
19.683	0.000	1.04	0.00	0.81	1.1	0.161
19.700	0.000	1.03	0.00	0.81	1.1	0.161
19.717	0.000	1.03	0.00	0.81	1.1	0.161
19.733	0.000	1.03	0.00	0.81	1.1	0.161
19.750	0.000	1.02	0.00	0.81	1.1	0.161
19.767	0.000	1.02	0.00	0.81	1.1	0.161
19.783	0.000	1.02	0.00	0.81	1.1	0.161
19.800	0.000	1.01	0.00	0.81	1.1	0.161
19.817	0.000	1.01	0.00	0.81	1.1	0.161
19.833	0.000	1.01	0.00	0.81	1.0	0.161
19.850	0.000	1.01	0.00	0.81	1.0	0.161
19.867	0.000	1.00	0.00	0.81	1.0	0.160
19.883	0.000	1.00	0.00	0.81	1.0	0.160
19.900	0.000	1.00	0.00	0.81	1.0	0.160
19.917	0.000	0.99	0.00	0.81	1.0	0.160
19.933	0.000	0.99	0.00	0.81	1.0	0.160
19.950	0.000	0.99	0.00	0.81	1.0	0.160
19.967	0.000	0.99	0.00	0.81	1.0	0.160
19.983	0.000	0.98	0.00	0.81	1.0	0.160
20.000	0.000	0.98	0.00	0.81	1.0	0.160

PROCESS SUMMARY OF STORAGE:

INFLOW VOLUME =	3.905 AF
BASIN STORAGE =	0.007 AF (WITH 0.000 AF INITIALLY FILLED)
OUTFLOW VOLUME =	3.898 AF
LOSS VOLUME =	0.000 AF

FLOW PROCESS FROM NODE 700.00 TO NODE 700.00 IS CODE = 7

>>>>STREAM NUMBER 3 ADDED TO STREAM NUMBER 2<<<<<

FLOW PROCESS FROM NODE 700.00 TO NODE 700.00 IS CODE = 7

>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<

FLOW PROCESS FROM NODE 700.00 TO NODE 700.00 IS CODE = 11

>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<

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

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	12.5	25.0	37.5	50.0
10.000	2.0469	4.71	. Q V	.	.	.	.
10.017	2.0534	4.72	. Q V	.	.	.	.
10.033	2.0599	4.73	. Q V	.	.	.	.
10.050	2.0664	4.74	. Q V	.	.	.	.
10.067	2.0730	4.75	. Q V	.	.	.	.
10.083	2.0795	4.76	. Q V	.	.	.	.
10.100	2.0861	4.77	. Q V	.	.	.	.
10.117	2.0927	4.78	. Q V	.	.	.	.
10.133	2.0993	4.79	. Q V	.	.	.	.
10.150	2.1059	4.80	. Q V	.	.	.	.
10.167	2.1125	4.81	. Q V	.	.	.	.
10.183	2.1192	4.82	. Q V	.	.	.	.
10.200	2.1258	4.83	. Q V	.	.	.	.
10.217	2.1325	4.84	. Q V	.	.	.	.
10.233	2.1391	4.85	. Q V	.	.	.	.
10.250	2.1458	4.86	. Q V	.	.	.	.
10.267	2.1525	4.87	. Q V	.	.	.	.
10.283	2.1593	4.88	. Q V	.	.	.	.
10.300	2.1660	4.89	. Q V	.	.	.	.
10.317	2.1727	4.90	. Q V	.	.	.	.
10.333	2.1795	4.91	. Q V	.	.	.	.

10.350	2.1863	4.92	.	Q	V	.	.	.	.
10.367	2.1930	4.93	.	Q	V	.	.	.	.
10.383	2.1998	4.94	.	Q	V	.	.	.	.
10.400	2.2067	4.95	.	Q	V	.	.	.	.
10.417	2.2135	4.96	.	Q	V	.	.	.	.
10.433	2.2203	4.97	.	Q	V	.	.	.	.
10.450	2.2272	4.98	.	Q	V	.	.	.	.
10.467	2.2341	4.99	.	Q	V	.	.	.	.
10.483	2.2409	5.00	.	Q	V	.	.	.	.
10.500	2.2478	5.01	.	QV	.	.	.	.	.
10.517	2.2548	5.02	.	QV	.	.	.	.	.
10.533	2.2617	5.03	.	QV	.	.	.	.	.
10.550	2.2686	5.04	.	QV	.	.	.	.	.
10.567	2.2756	5.05	.	QV	.	.	.	.	.
10.583	2.2826	5.06	.	QV	.	.	.	.	.
10.600	2.2896	5.07	.	QV	.	.	.	.	.
10.617	2.2966	5.09	.	QV	.	.	.	.	.
10.633	2.3036	5.10	.	QV	.	.	.	.	.
10.650	2.3106	5.11	.	QV	.	.	.	.	.
10.667	2.3177	5.12	.	QV	.	.	.	.	.
10.683	2.3247	5.13	.	QV	.	.	.	.	.
10.700	2.3318	5.14	.	QV	.	.	.	.	.
10.717	2.3389	5.15	.	QV	.	.	.	.	.
10.733	2.3460	5.16	.	QV	.	.	.	.	.
10.750	2.3532	5.18	.	QV	.	.	.	.	.
10.767	2.3603	5.19	.	QV	.	.	.	.	.
10.783	2.3675	5.20	.	QV	.	.	.	.	.
10.800	2.3746	5.21	.	QV	.	.	.	.	.
10.817	2.3818	5.22	.	QV	.	.	.	.	.
10.833	2.3890	5.23	.	QV	.	.	.	.	.
10.850	2.3963	5.25	.	QV	.	.	.	.	.
10.867	2.4035	5.26	.	QV	.	.	.	.	.
10.883	2.4108	5.27	.	QV	.	.	.	.	.
10.900	2.4180	5.28	.	QV	.	.	.	.	.
10.917	2.4253	5.29	.	QV	.	.	.	.	.
10.933	2.4326	5.31	.	QV	.	.	.	.	.
10.950	2.4400	5.32	.	Q	V	.	.	.	.
10.967	2.4473	5.33	.	Q	V	.	.	.	.
10.983	2.4547	5.34	.	Q	V	.	.	.	.
11.000	2.4620	5.35	.	Q	V	.	.	.	.
11.017	2.4694	5.37	.	Q	V	.	.	.	.
11.033	2.4768	5.38	.	Q	V	.	.	.	.
11.050	2.4843	5.39	.	Q	V	.	.	.	.
11.067	2.4917	5.41	.	Q	V	.	.	.	.
11.083	2.4992	5.42	.	Q	V	.	.	.	.
11.100	2.5067	5.43	.	Q	V	.	.	.	.
11.117	2.5142	5.44	.	Q	V	.	.	.	.
11.133	2.5217	5.46	.	Q	V	.	.	.	.
11.150	2.5292	5.47	.	Q	V	.	.	.	.
11.167	2.5368	5.48	.	Q	V	.	.	.	.

11.183	2.5443	5.49	.	Q	V	.	.	.	.
11.200	2.5519	5.51	.	Q	V	.	.	.	.
11.217	2.5595	5.52	.	Q	V	.	.	.	.
11.233	2.5671	5.53	.	Q	V	.	.	.	.
11.250	2.5748	5.55	.	Q	V	.	.	.	.
11.267	2.5824	5.56	.	Q	V	.	.	.	.
11.283	2.5901	5.58	.	Q	V	.	.	.	.
11.300	2.5978	5.59	.	Q	V	.	.	.	.
11.317	2.6055	5.60	.	Q	V	.	.	.	.
11.333	2.6133	5.62	.	Q	V	.	.	.	.
11.350	2.6210	5.63	.	Q	V	.	.	.	.
11.367	2.6288	5.64	.	Q	V	.	.	.	.
11.383	2.6366	5.66	.	Q	V	.	.	.	.
11.400	2.6444	5.67	.	Q	V	.	.	.	.
11.417	2.6522	5.68	.	Q	V	.	.	.	.
11.433	2.6601	5.70	.	Q	V	.	.	.	.
11.450	2.6679	5.71	.	Q	V	.	.	.	.
11.467	2.6758	5.73	.	Q	V	.	.	.	.
11.483	2.6837	5.74	.	Q	V	.	.	.	.
11.500	2.6917	5.76	.	Q	V	.	.	.	.
11.517	2.6996	5.77	.	Q	V	.	.	.	.
11.533	2.7076	5.79	.	Q	V	.	.	.	.
11.550	2.7156	5.80	.	Q	V	.	.	.	.
11.567	2.7236	5.82	.	Q	V	.	.	.	.
11.583	2.7316	5.83	.	Q	V	.	.	.	.
11.600	2.7397	5.85	.	Q	V	.	.	.	.
11.617	2.7478	5.86	.	Q	V	.	.	.	.
11.633	2.7558	5.87	.	Q	V	.	.	.	.
11.650	2.7640	5.89	.	Q	V	.	.	.	.
11.667	2.7721	5.90	.	Q	V	.	.	.	.
11.683	2.7802	5.92	.	Q	V	.	.	.	.
11.700	2.7884	5.94	.	Q	V	.	.	.	.
11.717	2.7966	5.95	.	Q	V	.	.	.	.
11.733	2.8048	5.97	.	Q	V	.	.	.	.
11.750	2.8131	5.99	.	Q	V	.	.	.	.
11.767	2.8214	6.00	.	Q	V	.	.	.	.
11.783	2.8297	6.02	.	Q	V	.	.	.	.
11.800	2.8380	6.03	.	Q	V	.	.	.	.
11.817	2.8463	6.05	.	Q	V	.	.	.	.
11.833	2.8546	6.06	.	Q	V	.	.	.	.
11.850	2.8630	6.08	.	Q	V	.	.	.	.
11.867	2.8714	6.10	.	Q	V	.	.	.	.
11.883	2.8798	6.11	.	Q	V	.	.	.	.
11.900	2.8883	6.13	.	Q	V	.	.	.	.
11.917	2.8967	6.15	.	Q	V	.	.	.	.
11.933	2.9052	6.16	.	Q	V	.	.	.	.
11.950	2.9138	6.18	.	Q	V	.	.	.	.
11.967	2.9223	6.20	.	Q	V	.	.	.	.
11.983	2.9309	6.22	.	Q	V	.	.	.	.
12.000	2.9395	6.24	.	Q	V	.	.	.	.

12.017	2.9481	6.25	.	Q V	.	.	.	.
12.033	2.9567	6.28	.	Q V	.	.	.	.
12.050	2.9654	6.31	.	Q V	.	.	.	.
12.067	2.9741	6.35	.	Q V	.	.	.	.
12.083	2.9830	6.40	.	Q V	.	.	.	.
12.100	2.9919	6.48	.	Q V	.	.	.	.
12.117	3.0009	6.57	.	Q V	.	.	.	.
12.133	3.0102	6.69	.	Q V	.	.	.	.
12.150	3.0195	6.81	.	Q V	.	.	.	.
12.167	3.0291	6.94	.	Q V	.	.	.	.
12.183	3.0388	7.07	.	Q V	.	.	.	.
12.200	3.0487	7.20	.	Q V	.	.	.	.
12.217	3.0588	7.33	.	Q V	.	.	.	.
12.233	3.0691	7.45	.	Q V	.	.	.	.
12.250	3.0795	7.56	.	QV	.	.	.	.
12.267	3.0901	7.67	.	QV	.	.	.	.
12.283	3.1008	7.78	.	QV	.	.	.	.
12.300	3.1117	7.88	.	QV	.	.	.	.
12.317	3.1226	7.97	.	QV	.	.	.	.
12.333	3.1337	8.07	.	QV	.	.	.	.
12.350	3.1450	8.15	.	QV	.	.	.	.
12.367	3.1563	8.24	.	QV	.	.	.	.
12.383	3.1678	8.32	.	QV	.	.	.	.
12.400	3.1794	8.40	.	QV	.	.	.	.
12.417	3.1911	8.48	.	QV	.	.	.	.
12.433	3.2028	8.55	.	QV	.	.	.	.
12.450	3.2147	8.63	.	QV	.	.	.	.
12.467	3.2267	8.69	.	QV	.	.	.	.
12.483	3.2388	8.76	.	Q	.	.	.	.
12.500	3.2509	8.82	.	QV	.	.	.	.
12.517	3.2631	8.89	.	QV	.	.	.	.
12.533	3.2755	8.95	.	QV	.	.	.	.
12.550	3.2879	9.01	.	QV	.	.	.	.
12.567	3.3004	9.06	.	QV	.	.	.	.
12.583	3.3129	9.12	.	QV	.	.	.	.
12.600	3.3256	9.18	.	QV	.	.	.	.
12.617	3.3383	9.23	.	QV	.	.	.	.
12.633	3.3511	9.28	.	QV	.	.	.	.
12.650	3.3639	9.33	.	QV	.	.	.	.
12.667	3.3768	9.38	.	QV	.	.	.	.
12.683	3.3898	9.43	.	QV	.	.	.	.
12.700	3.4029	9.48	.	QV	.	.	.	.
12.717	3.4160	9.53	.	QV	.	.	.	.
12.733	3.4292	9.57	.	QV	.	.	.	.
12.750	3.4425	9.62	.	QV	.	.	.	.
12.767	3.4558	9.66	.	QV	.	.	.	.
12.783	3.4691	9.71	.	QV	.	.	.	.
12.800	3.4826	9.75	.	QV	.	.	.	.
12.817	3.4961	9.80	.	QV	.	.	.	.
12.833	3.5096	9.84	.	QV	.	.	.	.

12.850	3.5232	9.88	.	QV	.	.	.	.
12.867	3.5369	9.92	.	QV	.	.	.	.
12.883	3.5506	9.97	.	QV	.	.	.	.
12.900	3.5644	10.01	.	Q	.	.	.	.
12.917	3.5782	10.05	.	Q	.	.	.	.
12.933	3.5921	10.09	.	Q	.	.	.	.
12.950	3.6061	10.13	.	Q	.	.	.	.
12.967	3.6201	10.17	.	Q	.	.	.	.
12.983	3.6342	10.21	.	Q	.	.	.	.
13.000	3.6483	10.24	.	Q	.	.	.	.
13.017	3.6624	10.28	.	QV.	.	.	.	.
13.033	3.6766	10.32	.	QV.	.	.	.	.
13.050	3.6909	10.36	.	QV.	.	.	.	.
13.067	3.7052	10.40	.	QV.	.	.	.	.
13.083	3.7196	10.44	.	QV.	.	.	.	.
13.100	3.7341	10.48	.	QV.	.	.	.	.
13.117	3.7485	10.52	.	QV.	.	.	.	.
13.133	3.7631	10.56	.	QV.	.	.	.	.
13.150	3.7777	10.60	.	QV.	.	.	.	.
13.167	3.7923	10.63	.	QV.	.	.	.	.
13.183	3.8070	10.67	.	QV.	.	.	.	.
13.200	3.8218	10.71	.	QV.	.	.	.	.
13.217	3.8366	10.75	.	QV.	.	.	.	.
13.233	3.8514	10.79	.	QV.	.	.	.	.
13.250	3.8664	10.83	.	QV.	.	.	.	.
13.267	3.8813	10.87	.	QV.	.	.	.	.
13.283	3.8963	10.90	.	QV.	.	.	.	.
13.300	3.9114	10.94	.	QV.	.	.	.	.
13.317	3.9265	10.98	.	QV.	.	.	.	.
13.333	3.9417	11.02	.	QV.	.	.	.	.
13.350	3.9570	11.06	.	QV.	.	.	.	.
13.367	3.9723	11.10	.	QV.	.	.	.	.
13.383	3.9876	11.14	.	QV.	.	.	.	.
13.400	4.0030	11.18	.	QV.	.	.	.	.
13.417	4.0184	11.21	.	QV.	.	.	.	.
13.433	4.0339	11.24	.	QV.	.	.	.	.
13.450	4.0494	11.27	.	Q	.	.	.	.
13.467	4.0650	11.30	.	QV	.	.	.	.
13.483	4.0806	11.33	.	QV	.	.	.	.
13.500	4.0963	11.37	.	QV	.	.	.	.
13.517	4.1120	11.40	.	QV	.	.	.	.
13.533	4.1277	11.42	.	QV	.	.	.	.
13.550	4.1435	11.45	.	QV	.	.	.	.
13.567	4.1593	11.47	.	QV	.	.	.	.
13.583	4.1751	11.50	.	QV	.	.	.	.
13.600	4.1910	11.52	.	QV	.	.	.	.
13.617	4.2069	11.55	.	QV	.	.	.	.
13.633	4.2228	11.57	.	QV	.	.	.	.
13.650	4.2388	11.60	.	QV	.	.	.	.
13.667	4.2548	11.63	.	QV	.	.	.	.

13.683	4.2709	11.66	.	QV	.	.	.
13.700	4.2870	11.69	.	QV	.	.	.
13.717	4.3031	11.72	.	QV	.	.	.
13.733	4.3193	11.75	.	QV	.	.	.
13.750	4.3355	11.78	.	QV	.	.	.
13.767	4.3518	11.81	.	QV	.	.	.
13.783	4.3681	11.84	.	QV	.	.	.
13.800	4.3844	11.87	.	QV	.	.	.
13.817	4.4008	11.90	.	QV	.	.	.
13.833	4.4173	11.93	.	QV	.	.	.
13.850	4.4338	11.97	.	QV	.	.	.
13.867	4.4503	12.00	.	QV	.	.	.
13.883	4.4669	12.04	.	QV	.	.	.
13.900	4.4835	12.07	.	Q.V	.	.	.
13.917	4.5002	12.11	.	Q.V	.	.	.
13.933	4.5169	12.14	.	Q.V	.	.	.
13.950	4.5337	12.18	.	Q.V	.	.	.
13.967	4.5505	12.22	.	Q.V	.	.	.
13.983	4.5674	12.26	.	Q.V	.	.	.
14.000	4.5843	12.29	.	Q.V	.	.	.
14.017	4.6013	12.33	.	Q.V	.	.	.
14.033	4.6183	12.37	.	Q.V	.	.	.
14.050	4.6354	12.41	.	Q.V	.	.	.
14.067	4.6526	12.45	.	Q.V	.	.	.
14.083	4.6698	12.49	.	Q.V	.	.	.
14.100	4.6870	12.53	.	QV	.	.	.
14.117	4.7044	12.57	.	QV	.	.	.
14.133	4.7217	12.61	.	QV	.	.	.
14.150	4.7391	12.65	.	QV	.	.	.
14.167	4.7566	12.69	.	QV	.	.	.
14.183	4.7741	12.73	.	QV	.	.	.
14.200	4.7917	12.77	.	QV	.	.	.
14.217	4.8094	12.81	.	QV	.	.	.
14.233	4.8271	12.85	.	QV	.	.	.
14.250	4.8448	12.89	.	QV	.	.	.
14.267	4.8626	12.94	.	QV	.	.	.
14.283	4.8805	12.98	.	Q V	.	.	.
14.300	4.8985	13.03	.	Q V	.	.	.
14.317	4.9165	13.07	.	Q V	.	.	.
14.333	4.9346	13.12	.	Q V	.	.	.
14.350	4.9527	13.17	.	Q V	.	.	.
14.367	4.9709	13.22	.	Q V	.	.	.
14.383	4.9892	13.27	.	Q V	.	.	.
14.400	5.0075	13.32	.	Q V	.	.	.
14.417	5.0260	13.38	.	Q V	.	.	.
14.433	5.0445	13.43	.	Q V	.	.	.
14.450	5.0630	13.48	.	Q V	.	.	.
14.467	5.0817	13.54	.	Q V	.	.	.
14.483	5.1004	13.59	.	Q V	.	.	.
14.500	5.1192	13.65	.	Q V	.	.	.

14.517	5.1381	13.71	.	Q V	.	.	.
14.533	5.1570	13.76	.	.QV	.	.	.
14.550	5.1761	13.82	.	.QV	.	.	.
14.567	5.1952	13.89	.	.QV	.	.	.
14.583	5.2144	13.95	.	.QV	.	.	.
14.600	5.2337	14.01	.	.QV	.	.	.
14.617	5.2531	14.08	.	.QV	.	.	.
14.633	5.2726	14.14	.	.QV	.	.	.
14.650	5.2922	14.21	.	.Q V	.	.	.
14.667	5.3118	14.27	.	.Q V	.	.	.
14.683	5.3316	14.34	.	.Q V	.	.	.
14.700	5.3514	14.41	.	.Q V	.	.	.
14.717	5.3714	14.48	.	.Q V	.	.	.
14.733	5.3914	14.55	.	.Q V	.	.	.
14.750	5.4116	14.62	.	.Q V	.	.	.
14.767	5.4318	14.70	.	.Q V	.	.	.
14.783	5.4522	14.78	.	.Q V	.	.	.
14.800	5.4726	14.86	.	.Q V	.	.	.
14.817	5.4932	14.94	.	.Q V	.	.	.
14.833	5.5139	15.02	.	.QV	.	.	.
14.850	5.5347	15.10	.	.QV	.	.	.
14.867	5.5556	15.18	.	.QV	.	.	.
14.883	5.5766	15.26	.	.QV	.	.	.
14.900	5.5977	15.35	.	.QV	.	.	.
14.917	5.6190	15.43	.	.QV	.	.	.
14.933	5.6404	15.52	.	.QV	.	.	.
14.950	5.6619	15.60	.	.QV	.	.	.
14.967	5.6834	15.67	.	.QV	.	.	.
14.983	5.7051	15.75	.	.Q V	.	.	.
15.000	5.7269	15.83	.	.Q V	.	.	.
15.017	5.7489	15.91	.	.Q V	.	.	.
15.033	5.7709	15.99	.	.Q V	.	.	.
15.050	5.7930	16.08	.	.Q V	.	.	.
15.067	5.8153	16.16	.	.Q V	.	.	.
15.083	5.8377	16.25	.	.QV	.	.	.
15.100	5.8602	16.34	.	.QV	.	.	.
15.117	5.8828	16.42	.	.QV	.	.	.
15.133	5.9055	16.51	.	.QV	.	.	.
15.150	5.9284	16.59	.	.QV	.	.	.
15.167	5.9513	16.67	.	.QV	.	.	.
15.183	5.9744	16.75	.	.QV	.	.	.
15.200	5.9976	16.83	.	.QV	.	.	.
15.217	6.0209	16.92	.	.QV	.	.	.
15.233	6.0443	17.01	.	.QV	.	.	.
15.250	6.0679	17.11	.	.QV	.	.	.
15.267	6.0916	17.20	.	.QV	.	.	.
15.283	6.1154	17.30	.	.Q V	.	.	.
15.300	6.1394	17.40	.	.Q V	.	.	.
15.317	6.1635	17.50	.	.QV	.	.	.
15.333	6.1878	17.60	.	.QV	.	.	.

15.350	6.2121	17.71	.	.	QV	.	.	.
15.367	6.2367	17.81	.	.	QV	.	.	.
15.383	6.2613	17.91	.	.	QV	.	.	.
15.400	6.2861	18.00	.	.	QV	.	.	.
15.417	6.3111	18.10	.	.	QV	.	.	.
15.433	6.3361	18.18	.	.	QV	.	.	.
15.450	6.3613	18.27	.	.	QV	.	.	.
15.467	6.3865	18.35	.	.	QV	.	.	.
15.483	6.4119	18.43	.	.	QV	.	.	.
15.500	6.4374	18.51	.	.	QV	.	.	.
15.517	6.4630	18.59	.	.	QV	.	.	.
15.533	6.4888	18.68	.	.	QV	.	.	.
15.550	6.5146	18.77	.	.	QV	.	.	.
15.567	6.5406	18.86	.	.	QV	.	.	.
15.583	6.5667	18.96	.	.	QV	.	.	.
15.600	6.5930	19.08	.	.	QV	.	.	.
15.617	6.6195	19.20	.	.	QV	.	.	.
15.633	6.6461	19.33	.	.	QV	.	.	.
15.650	6.6729	19.48	.	.	QV	.	.	.
15.667	6.7000	19.64	.	.	QV	.	.	.
15.683	6.7273	19.81	.	.	QV	.	.	.
15.700	6.7548	19.99	.	.	QV	.	.	.
15.717	6.7826	20.18	.	.	Q	.	.	.
15.733	6.8106	20.37	.	.	Q	.	.	.
15.750	6.8390	20.57	.	.	Q	.	.	.
15.767	6.8676	20.77	.	.	Q	.	.	.
15.783	6.8965	20.98	.	.	Q	.	.	.
15.800	6.9257	21.21	.	.	QV	.	.	.
15.817	6.9552	21.45	.	.	Q	.	.	.
15.833	6.9851	21.72	.	.	Q	.	.	.
15.850	7.0155	22.01	.	.	Q	.	.	.
15.867	7.0462	22.33	.	.	Q	.	.	.
15.883	7.0775	22.69	.	.	VQ	.	.	.
15.900	7.1093	23.07	.	.	VQ	.	.	.
15.917	7.1416	23.48	.	.	VQ	.	.	.
15.933	7.1746	23.92	.	.	V Q.	.	.	.
15.950	7.2081	24.37	.	.	V Q.	.	.	.
15.967	7.2423	24.84	.	.	V Q.	.	.	.
15.983	7.2772	25.32	.	.	V Q	.	.	.
16.000	7.3127	25.80	.	.	V Q	.	.	.
16.017	7.3491	26.37	.	.	V .Q	.	.	.
16.033	7.3864	27.10	.	.	V .Q	.	.	.
16.050	7.4250	28.02	.	.	V . Q	.	.	.
16.067	7.4651	29.11	.	.	V . Q	.	.	.
16.083	7.5069	30.35	.	.	V . Q	.	.	.
16.100	7.5506	31.72	.	.	V . Q	.	.	.
16.117	7.5963	33.22	.	.	V . Q	.	.	.
16.133	7.6441	34.66	.	.	V . Q	.	.	.
16.150	7.6934	35.78	.	.	V . Q	.	.	.
16.167	7.7439	36.66	.	.	V . Q.	.	.	.

16.183	7.7961	37.93	.	.	V.	Q	.	.
16.200	7.8501	39.24	.	.	V.	.Q	.	.
16.217	7.9063	40.74	.	.	V.	. Q	.	.
16.233	7.9645	42.31	.	.	V.	. Q	.	.
16.250	8.0235	42.81	.	.	V.	. Q	.	.
16.267	8.0822	42.62	.	.	V.	. Q	.	.
16.283	8.1403	42.22	.	.	V	. Q	.	.
16.300	8.1977	41.65	.	.	V	. Q	.	.
16.317	8.2541	40.93	.	.	V	. Q	.	.
16.333	8.3093	40.10	.	.	V	. Q	.	.
16.350	8.3633	39.20	.	.	V	.Q	.	.
16.367	8.4165	38.58	.	.	V	Q	.	.
16.383	8.4692	38.27	.	.	V	Q	.	.
16.400	8.5215	37.97	.	.	V	Q	.	.
16.417	8.5734	37.67	.	.	.V	Q	.	.
16.433	8.6249	37.37	.	.	.V	Q.	.	.
16.450	8.6759	37.07	.	.	.V	Q.	.	.
16.467	8.7266	36.78	.	.	.V	Q.	.	.
16.483	8.7769	36.56	.	.	.V	Q.	.	.
16.500	8.8271	36.42	.	.	.V	Q.	.	.
16.517	8.8771	36.31	.	.	.V	Q.	.	.
16.533	8.9270	36.19	.	.	.V	Q .	.	.
16.550	8.9766	36.07	.	.	. V	Q .	.	.
16.567	9.0262	35.94	.	.	. V	Q .	.	.
16.583	9.0755	35.82	.	.	. V	Q .	.	.
16.600	9.1246	35.69	.	.	. V	Q .	.	.
16.617	9.1736	35.56	.	.	. V	Q .	.	.
16.633	9.2224	35.43	.	.	. V	Q .	.	.
16.650	9.2711	35.30	.	.	. V	Q .	.	.
16.667	9.3195	35.16	.	.	. V	Q .	.	.
16.683	9.3677	35.02	.	.	. V	Q .	.	.
16.700	9.4158	34.87	.	.	. V	Q .	.	.
16.717	9.4636	34.73	.	.	. V	Q .	.	.
16.733	9.5112	34.59	.	.	. V	Q .	.	.
16.750	9.5587	34.45	.	.	. V	Q .	.	.
16.767	9.6059	34.30	.	.	. V	Q .	.	.
16.783	9.6530	34.16	.	.	. V	Q .	.	.
16.800	9.6998	34.01	.	.	. V	Q .	.	.
16.817	9.7465	33.87	.	.	. V	Q .	.	.
16.833	9.7929	33.72	.	.	. V Q	.	.	.
16.850	9.8391	33.56	.	.	. V Q	.	.	.
16.867	9.8851	33.40	.	.	. V Q	.	.	.
16.883	9.9309	33.25	.	.	. V Q	.	.	.
16.900	9.9765	33.09	.	.	. V Q	.	.	.
16.917	10.0219	32.94	.	.	. V Q	.	.	.
16.933	10.0670	32.78	.	.	. V Q	.	.	.
16.950	10.1120	32.62	.	.	. V Q	.	.	.
16.967	10.1567	32.45	.	.	. VQ	.	.	.
16.983	10.2011	32.28	.	.	. Q	.	.	.
17.000	10.2454	32.10	.	.	. Q	.	.	.

17.017	10.2893	31.93	.	.	.	Q	.	.
17.033	10.3331	31.75	.	.	.	Q	.	.
17.050	10.3765	31.57	.	.	.	Q	.	.
17.067	10.4198	31.38	.	.	.	Q	.	.
17.083	10.4627	31.20	.	.	.	QV	.	.
17.100	10.5055	31.02	.	.	.	QV	.	.
17.117	10.5479	30.84	.	.	.	QV	.	.
17.133	10.5902	30.66	.	.	.	Q V	.	.
17.150	10.6322	30.48	.	.	.	Q V	.	.
17.167	10.6739	30.31	.	.	.	Q V	.	.
17.183	10.7154	30.13	.	.	.	Q V	.	.
17.200	10.7567	29.95	.	.	.	Q V	.	.
17.217	10.7977	29.78	.	.	.	Q V	.	.
17.233	10.8385	29.60	.	.	.	Q V	.	.
17.250	10.8790	29.42	.	.	.	Q V	.	.
17.267	10.9193	29.23	.	.	.	Q V	.	.
17.283	10.9593	29.04	.	.	.	Q V	.	.
17.300	10.9990	28.85	.	.	.	Q V	.	.
17.317	11.0385	28.67	.	.	.	Q V	.	.
17.333	11.0777	28.48	.	.	.	Q V	.	.
17.350	11.1167	28.30	.	.	.	Q V	.	.
17.367	11.1554	28.12	.	.	.	Q V	.	.
17.383	11.1939	27.94	.	.	.	Q V	.	.
17.400	11.2322	27.77	.	.	.	Q V	.	.
17.417	11.2702	27.59	.	.	.	Q V	.	.
17.433	11.3080	27.42	.	.	.	Q V	.	.
17.450	11.3455	27.24	.	.	.	Q V	.	.
17.467	11.3828	27.07	.	.	.	Q V	.	.
17.483	11.4198	26.90	.	.	.	Q V	.	.
17.500	11.4566	26.72	.	.	.	Q V	.	.
17.517	11.4932	26.53	.	.	.	Q V	.	.
17.533	11.5294	26.33	.	.	.	Q V	.	.
17.550	11.5654	26.14	.	.	.	Q V	.	.
17.567	11.6012	25.95	.	.	.	Q V	.	.
17.583	11.6367	25.76	.	.	.	Q V	.	.
17.600	11.6719	25.57	.	.	.	Q V	.	.
17.617	11.7069	25.39	.	.	.	Q V	.	.
17.633	11.7416	25.21	.	.	.	Q V	.	.
17.650	11.7761	25.03	.	.	.	Q V	.	.
17.667	11.8103	24.86	.	.	.	Q.	V.	.
17.683	11.8443	24.68	.	.	.	Q.	V.	.
17.700	11.8781	24.51	.	.	.	Q.	V.	.
17.717	11.9116	24.35	.	.	.	Q.	V.	.
17.733	11.9449	24.18	.	.	.	Q.	V.	.
17.750	11.9780	24.01	.	.	.	Q.	V.	.
17.767	12.0109	23.85	.	.	.	Q.	V.	.
17.783	12.0435	23.69	.	.	.	Q .	V.	.
17.800	12.0759	23.53	.	.	.	Q .	V.	.
17.817	12.1081	23.37	.	.	.	Q .	V.	.
17.833	12.1400	23.20	.	.	.	Q .	V.	.

17.850	12.1718	23.04	.	.	.	Q .	V.	.
17.867	12.2033	22.88	.	.	.	Q .	V	.
17.883	12.2345	22.69	.	.	.	Q .	V	.
17.900	12.2655	22.45	.	.	.	Q .	V	.
17.917	12.2961	22.22	.	.	.	Q .	V	.
17.933	12.3264	22.00	.	.	.	Q .	V	.
17.950	12.3564	21.79	.	.	.	Q .	V	.
17.967	12.3861	21.59	.	.	.	Q .	V	.
17.983	12.4156	21.39	.	.	.	Q .	V	.
18.000	12.4448	21.21	.	.	.	Q .	V	.
18.017	12.4738	21.02	.	.	.	Q .	V	.
18.033	12.5025	20.84	.	.	.	Q .	V	.
18.050	12.5309	20.66	.	.	.	Q .	V	.
18.067	12.5591	20.48	.	.	.	Q .	V	.
18.083	12.5871	20.31	.	.	.	Q .	V	.
18.100	12.6149	20.13	.	.	.	Q .	.V	.
18.117	12.6423	19.95	.	.	.	Q .	.V	.
18.133	12.6696	19.77	.	.	.	Q .	.V	.
18.150	12.6965	19.58	.	.	.	Q .	.V	.
18.167	12.7232	19.39	.	.	.	Q .	.V	.
18.183	12.7497	19.19	.	.	.	Q .	.V	.
18.200	12.7758	18.99	.	.	.	Q .	.V	.
18.217	12.8017	18.80	.	.	.	Q .	.V	.
18.233	12.8273	18.61	.	.	.	Q .	.V	.
18.250	12.8527	18.42	.	.	.	Q .	.V	.
18.267	12.8778	18.24	.	.	.	Q .	.V	.
18.283	12.9027	18.07	.	.	.	Q .	.V	.
18.300	12.9274	17.90	.	.	.	Q .	.V	.
18.317	12.9518	17.73	.	.	.	Q .	.V	.
18.333	12.9760	17.57	.	.	.	Q .	.V	.
18.350	13.0000	17.42	.	.	.	Q .	.V	.
18.367	13.0238	17.26	.	.	.	Q .	. V	.
18.383	13.0474	17.11	.	.	.	Q .	. V	.
18.400	13.0707	16.97	.	.	.	Q .	. V	.
18.417	13.0939	16.82	.	.	.	Q .	. V	.
18.433	13.1169	16.68	.	.	.	Q .	. V	.
18.450	13.1396	16.54	.	.	.	Q .	. V	.
18.467	13.1622	16.39	.	.	.	Q .	. V	.
18.483	13.1846	16.24	.	.	.	Q .	. V	.
18.500	13.2067	16.08	.	.	.	Q .	. V	.
18.517	13.2287	15.93	.	.	.	Q .	. V	.
18.533	13.2504	15.78	.	.	.	Q .	. V	.
18.550	13.2720	15.64	.	.	.	Q .	. V	.
18.567	13.2933	15.50	.	.	.	Q .	. V	.
18.583	13.3145	15.35	.	.	.	Q .	. V	.
18.600	13.3354	15.22	.	.	.	Q .	. V	.
18.617	13.3562	15.08	.	.	.	Q .	. V	.
18.633	13.3768	14.94	.	.	.	.Q	. V	.
18.650	13.3972	14.81	.	.	.	.Q	. V	.
18.667	13.4174	14.68	.	.	.	.Q	. V	.

18.683	13.4374	14.55	.	.Q	.	.	V	.
18.700	13.4573	14.43	.	.Q	.	.	V	.
18.717	13.4770	14.30	.	.Q	.	.	V	.
18.733	13.4965	14.18	.	.Q	.	.	V	.
18.750	13.5159	14.06	.	.Q	.	.	V	.
18.767	13.5351	13.93	.	.Q	.	.	V	.
18.783	13.5541	13.82	.	.Q	.	.	V	.
18.800	13.5730	13.70	.	Q	.	.	V	.
18.817	13.5917	13.58	.	Q	.	.	V	.
18.833	13.6102	13.47	.	Q	.	.	V	.
18.850	13.6286	13.33	.	Q	.	.	V	.
18.867	13.6468	13.18	.	Q	.	.	V	.
18.883	13.6647	13.04	.	Q	.	.	V	.
18.900	13.6825	12.89	.	Q	.	.	V	.
18.917	13.7000	12.75	.	Q	.	.	V	.
18.933	13.7174	12.61	.	Q	.	.	V	.
18.950	13.7346	12.47	.	Q.	.	.	V	.
18.967	13.7516	12.33	.	Q.	.	.	V	.
18.983	13.7684	12.20	.	Q.	.	.	V	.
19.000	13.7850	12.07	.	Q.	.	.	V	.
19.017	13.8014	11.94	.	Q.	.	.	V	.
19.033	13.8177	11.81	.	Q.	.	.	V	.
19.050	13.8338	11.68	.	Q.	.	.	V	.
19.067	13.8497	11.56	.	Q.	.	.	V	.
19.083	13.8655	11.44	.	Q.	.	.	V	.
19.100	13.8811	11.32	.	Q.	.	.	V	.
19.117	13.8965	11.20	.	Q	.	.	V	.
19.133	13.9118	11.09	.	Q.	.	.	V	.
19.150	13.9269	10.97	.	Q.	.	.	V	.
19.167	13.9418	10.86	.	Q.	.	.	V	.
19.183	13.9566	10.75	.	Q.	.	.	V	.
19.200	13.9713	10.64	.	Q.	.	.	V	.
19.217	13.9858	10.53	.	Q.	.	.	V	.
19.233	14.0002	10.42	.	Q.	.	.	V	.
19.250	14.0144	10.32	.	Q.	.	.	V	.
19.267	14.0284	10.22	.	Q.	.	.	V	.
19.283	14.0424	10.12	.	Q.	.	.	V	.
19.300	14.0562	10.02	.	Q.	.	.	V	.
19.317	14.0698	9.92	.	Q	.	.	V	.
19.333	14.0834	9.82	.	Q	.	.	V	.
19.350	14.0967	9.69	.	Q	.	.	V	.
19.367	14.1098	9.53	.	Q	.	.	V	.
19.383	14.1227	9.34	.	Q	.	.	V	.
19.400	14.1353	9.14	.	Q	.	.	V	.
19.417	14.1476	8.93	.	Q	.	.	V	.
19.433	14.1596	8.73	.	Q	.	.	V	.
19.450	14.1714	8.54	.	Q	.	.	V	.
19.467	14.1829	8.36	.	Q	.	.	V	.
19.483	14.1942	8.19	.	Q	.	.	V	.
19.500	14.2052	8.02	.	Q	.	.	V	.

19.517	14.2160	7.86	.	Q	.	.	.	V	.
19.533	14.2267	7.71	.	Q	.	.	.	V	.
19.550	14.2371	7.56	.	Q	.	.	.	V	.
19.567	14.2473	7.42	.	Q	.	.	.	V	.
19.583	14.2573	7.28	.	Q	.	.	.	V	.
19.600	14.2672	7.15	.	Q	.	.	.	V	.
19.617	14.2768	7.03	.	Q	.	.	.	V	.
19.633	14.2864	6.91	.	Q	.	.	.	V	.
19.650	14.2957	6.79	.	Q	.	.	.	V	.
19.667	14.3049	6.68	.	Q	.	.	.	V	.
19.683	14.3140	6.58	.	Q	.	.	.	V	.
19.700	14.3229	6.48	.	Q	.	.	.	V	.
19.717	14.3317	6.38	.	Q	.	.	.	V	.
19.733	14.3404	6.29	.	Q	.	.	.	V	.
19.750	14.3489	6.20	.	Q	.	.	.	V	.
19.767	14.3573	6.11	.	Q	.	.	.	V	.
19.783	14.3656	6.03	.	Q	.	.	.	V	.
19.800	14.3738	5.95	.	Q	.	.	.	V	.
19.817	14.3819	5.87	.	Q	.	.	.	V	.
19.833	14.3899	5.80	.	Q	.	.	.	V	.
19.850	14.3978	5.73	.	Q	.	.	.	V	.
19.867	14.4055	5.66	.	Q	.	.	.	V	.
19.883	14.4133	5.59	.	Q	.	.	.	V	.
19.900	14.4209	5.53	.	Q	.	.	.	V	.
19.917	14.4284	5.47	.	Q	.	.	.	V	.
19.933	14.4358	5.41	.	Q	.	.	.	V	.
19.950	14.4432	5.35	.	Q	.	.	.	V	.
19.967	14.4505	5.30	.	Q	.	.	.	V	.
19.983	14.4577	5.24	.	Q	.	.	.	V	.
20.000	14.4649	5.19	.	Q	.	.	.	V	.

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
=====	=====
0%	1201.0
10%	1201.0
20%	1201.0
30%	1201.0
40%	935.0
50%	650.0
60%	480.0
70%	335.0
80%	195.0
90%	55.0
=====	=====

END OF FLOODSCx ROUTING ANALYSIS

FLOOD ROUTING ANALYSIS
USING COUNTY HYDROLOGY MANUAL OF ORANGE(1986)
(c) Copyright 1989-2016 Advanced Engineering Software (aes)
Ver. 23.0 Release Date: 07/01/2016 License ID 1334

Analysis prepared by:

***** DESCRIPTION OF STUDY *****
* SP8454 - GOODMAN LOGISTICS CENTER FULLERTON *
* PROPOSED SMALL AREA UNIT HYDROGRAPH WITH RM TC *
* 100 YEAR STORM *

FILE NAME: GL100HP.DAT
TIME/DATE OF STUDY: 10:59 10/15/2021

The Small Area Unit Hydrograph Procedures in Section J
of the Hydrology Manual provides estimates of runoff
hydrograph and runoff volume for watersheds whose time of
concentration is less than 25 minutes. The PROGRAM User
should check the applicability of using the small area unit
hydrograph procedures, and follow the guidelines in
Sections J and K.5 in complex watershed modeling.

FLOW PROCESS FROM NODE 100.00 TO NODE 580.00 IS CODE = 1.2

>>>>SUBAREA RUNOFF (SMALL AREA UNIT-HYDROGRAPH ANALYSIS) <<<<
=====

(SMALL AREA UNIT-HYDROGRAPH ADDED TO STREAM #1)

RATIONAL METHOD CALIBRATION COEFFICIENT = 0.90
TOTAL CATCHMENT AREA(ACRES) = 22.00
SOIL-LOSS RATE, Fm,(INCH/HR) = 0.040
LOW LOSS FRACTION = 0.040
TIME OF CONCENTRATION(MIN.) = 6.28
SMALL AREA PEAK Q COMPUTED USING PEAK FLOW RATE FORMULA
ORANGE COUNTY "VALLEY" RAINFALL VALUES ARE USED:
RETURN FREQUENCY(YEARS) = 100
5-MINUTE POINT RAINFALL VALUE(INCHES) = 0.52

30-MINUTE POINT RAINFALL VALUE(INCHES) = 1.09
1-HOUR POINT RAINFALL VALUE(INCHES) = 1.45
3-HOUR POINT RAINFALL VALUE(INCHES) = 2.43
6-HOUR POINT RAINFALL VALUE(INCHES) = 3.36
24-HOUR POINT RAINFALL VALUE(INCHES) = 5.63

TOTAL CATCHMENT RUNOFF VOLUME(ACRE-FEET) = 8.90
TOTAL CATCHMENT SOIL-LOSS VOLUME(ACRE-FEET) = 1.42

▲

=====

24 - HOUR STORM
RUNOFF HYDROGRAPH

=====

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

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	26.8	53.6	80.5	107.3
0.017	0.0002	0.15	Q	.	.	.	.
0.033	0.0008	0.46	Q	.	.	.	.
0.050	0.0019	0.76	Q	.	.	.	.
0.067	0.0034	1.07	Q	.	.	.	.
0.083	0.0053	1.37	Q	.	.	.	.
0.100	0.0075	1.63	Q	.	.	.	.
0.117	0.0098	1.66	Q	.	.	.	.
0.133	0.0121	1.66	Q	.	.	.	.
0.150	0.0144	1.66	Q	.	.	.	.
0.167	0.0167	1.67	Q	.	.	.	.
0.183	0.0190	1.67	Q	.	.	.	.
0.200	0.0213	1.67	Q	.	.	.	.
0.217	0.0236	1.67	Q	.	.	.	.
0.233	0.0259	1.67	Q	.	.	.	.
0.250	0.0282	1.67	Q	.	.	.	.
0.267	0.0305	1.67	Q	.	.	.	.
0.283	0.0328	1.67	Q	.	.	.	.
0.300	0.0351	1.67	Q	.	.	.	.
0.317	0.0374	1.67	Q	.	.	.	.
0.333	0.0397	1.68	Q	.	.	.	.
0.350	0.0420	1.68	Q	.	.	.	.
0.367	0.0443	1.68	Q	.	.	.	.
0.383	0.0466	1.68	Q	.	.	.	.
0.400	0.0489	1.68	Q	.	.	.	.
0.417	0.0513	1.68	Q	.	.	.	.

0.433	0.0536	1.68	Q	.	.	.	.
0.450	0.0559	1.68	Q	.	.	.	.
0.467	0.0582	1.68	Q	.	.	.	.
0.483	0.0605	1.69	Q	.	.	.	.
0.500	0.0629	1.69	Q	.	.	.	.
0.517	0.0652	1.69	Q	.	.	.	.
0.533	0.0675	1.69	Q	.	.	.	.
0.550	0.0698	1.69	Q	.	.	.	.
0.567	0.0722	1.69	Q	.	.	.	.
0.583	0.0745	1.69	Q	.	.	.	.
0.600	0.0768	1.69	Q	.	.	.	.
0.617	0.0792	1.70	Q	.	.	.	.
0.633	0.0815	1.70	Q	.	.	.	.
0.650	0.0839	1.70	Q	.	.	.	.
0.667	0.0862	1.70	Q	.	.	.	.
0.683	0.0885	1.70	Q	.	.	.	.
0.700	0.0909	1.70	Q	.	.	.	.
0.717	0.0932	1.70	Q	.	.	.	.
0.733	0.0956	1.70	Q	.	.	.	.
0.750	0.0979	1.70	Q	.	.	.	.
0.767	0.1003	1.71	Q	.	.	.	.
0.783	0.1026	1.71	Q	.	.	.	.
0.800	0.1050	1.71	Q	.	.	.	.
0.817	0.1073	1.71	Q	.	.	.	.
0.833	0.1097	1.71	Q	.	.	.	.
0.850	0.1120	1.71	Q	.	.	.	.
0.867	0.1144	1.71	Q	.	.	.	.
0.883	0.1168	1.71	Q	.	.	.	.
0.900	0.1191	1.71	Q	.	.	.	.
0.917	0.1215	1.72	Q	.	.	.	.
0.933	0.1238	1.72	Q	.	.	.	.
0.950	0.1262	1.72	Q	.	.	.	.
0.967	0.1286	1.72	Q	.	.	.	.
0.983	0.1309	1.72	Q	.	.	.	.
1.000	0.1333	1.72	Q	.	.	.	.
1.017	0.1357	1.72	Q	.	.	.	.
1.033	0.1381	1.73	Q	.	.	.	.
1.050	0.1404	1.73	Q	.	.	.	.
1.067	0.1428	1.73	Q	.	.	.	.
1.083	0.1452	1.73	Q	.	.	.	.
1.100	0.1476	1.73	Q	.	.	.	.
1.117	0.1500	1.73	Q	.	.	.	.
1.133	0.1524	1.73	Q	.	.	.	.
1.150	0.1547	1.73	Q	.	.	.	.
1.167	0.1571	1.73	Q	.	.	.	.
1.183	0.1595	1.73	Q	.	.	.	.
1.200	0.1619	1.74	Q	.	.	.	.
1.217	0.1643	1.74	Q	.	.	.	.
1.233	0.1667	1.74	Q	.	.	.	.
1.250	0.1691	1.74	Q	.	.	.	.

1.267	0.1715	1.74	Q	.	.	.	.
1.283	0.1739	1.74	Q	.	.	.	.
1.300	0.1763	1.74	Q	.	.	.	.
1.317	0.1787	1.74	Q	.	.	.	.
1.333	0.1811	1.75	Q	.	.	.	.
1.350	0.1835	1.75	Q	.	.	.	.
1.367	0.1859	1.75	Q	.	.	.	.
1.383	0.1883	1.75	Q	.	.	.	.
1.400	0.1907	1.75	Q	.	.	.	.
1.417	0.1932	1.75	Q	.	.	.	.
1.433	0.1956	1.75	Q	.	.	.	.
1.450	0.1980	1.76	Q	.	.	.	.
1.467	0.2004	1.76	Q	.	.	.	.
1.483	0.2028	1.76	Q	.	.	.	.
1.500	0.2053	1.76	Q	.	.	.	.
1.517	0.2077	1.76	Q	.	.	.	.
1.533	0.2101	1.76	Q	.	.	.	.
1.550	0.2125	1.76	Q	.	.	.	.
1.567	0.2150	1.76	Q	.	.	.	.
1.583	0.2174	1.76	Q	.	.	.	.
1.600	0.2198	1.77	Q	.	.	.	.
1.617	0.2223	1.77	Q	.	.	.	.
1.633	0.2247	1.77	QV	.	.	.	.
1.650	0.2271	1.77	QV	.	.	.	.
1.667	0.2296	1.77	QV	.	.	.	.
1.683	0.2320	1.77	QV	.	.	.	.
1.700	0.2345	1.77	QV	.	.	.	.
1.717	0.2369	1.78	QV	.	.	.	.
1.733	0.2394	1.78	QV	.	.	.	.
1.750	0.2418	1.78	QV	.	.	.	.
1.767	0.2443	1.78	QV	.	.	.	.
1.783	0.2467	1.78	QV	.	.	.	.
1.800	0.2492	1.78	QV	.	.	.	.
1.817	0.2516	1.78	QV	.	.	.	.
1.833	0.2541	1.78	QV	.	.	.	.
1.850	0.2565	1.79	QV	.	.	.	.
1.867	0.2590	1.79	QV	.	.	.	.
1.883	0.2615	1.79	QV	.	.	.	.
1.900	0.2639	1.79	QV	.	.	.	.
1.917	0.2664	1.79	QV	.	.	.	.
1.933	0.2689	1.79	QV	.	.	.	.
1.950	0.2713	1.79	QV	.	.	.	.
1.967	0.2738	1.79	QV	.	.	.	.
1.983	0.2763	1.80	QV	.	.	.	.
2.000	0.2788	1.80	QV	.	.	.	.
2.017	0.2812	1.80	QV	.	.	.	.
2.033	0.2837	1.80	QV	.	.	.	.
2.050	0.2862	1.80	QV	.	.	.	.
2.067	0.2887	1.80	QV	.	.	.	.
2.083	0.2912	1.81	QV	.	.	.	.

2.100	0.2937	1.81	QV	.	.	.	.
2.117	0.2961	1.81	QV	.	.	.	.
2.133	0.2986	1.81	QV	.	.	.	.
2.150	0.3011	1.81	QV	.	.	.	.
2.167	0.3036	1.81	QV	.	.	.	.
2.183	0.3061	1.81	QV	.	.	.	.
2.200	0.3086	1.81	QV	.	.	.	.
2.217	0.3111	1.81	QV	.	.	.	.
2.233	0.3136	1.82	QV	.	.	.	.
2.250	0.3161	1.82	QV	.	.	.	.
2.267	0.3186	1.82	QV	.	.	.	.
2.283	0.3211	1.82	QV	.	.	.	.
2.300	0.3236	1.82	QV	.	.	.	.
2.317	0.3262	1.82	QV	.	.	.	.
2.333	0.3287	1.83	QV	.	.	.	.
2.350	0.3312	1.83	QV	.	.	.	.
2.367	0.3337	1.83	QV	.	.	.	.
2.383	0.3362	1.83	QV	.	.	.	.
2.400	0.3387	1.83	QV	.	.	.	.
2.417	0.3413	1.83	QV	.	.	.	.
2.433	0.3438	1.83	QV	.	.	.	.
2.450	0.3463	1.83	QV	.	.	.	.
2.467	0.3488	1.84	QV	.	.	.	.
2.483	0.3514	1.84	QV	.	.	.	.
2.500	0.3539	1.84	QV	.	.	.	.
2.517	0.3564	1.84	QV	.	.	.	.
2.533	0.3590	1.84	QV	.	.	.	.
2.550	0.3615	1.84	QV	.	.	.	.
2.567	0.3641	1.84	QV	.	.	.	.
2.583	0.3666	1.85	QV	.	.	.	.
2.600	0.3692	1.85	QV	.	.	.	.
2.617	0.3717	1.85	QV	.	.	.	.
2.633	0.3742	1.85	QV	.	.	.	.
2.650	0.3768	1.85	QV	.	.	.	.
2.667	0.3793	1.85	QV	.	.	.	.
2.683	0.3819	1.86	QV	.	.	.	.
2.700	0.3845	1.86	QV	.	.	.	.
2.717	0.3870	1.86	QV	.	.	.	.
2.733	0.3896	1.86	QV	.	.	.	.
2.750	0.3921	1.86	QV	.	.	.	.
2.767	0.3947	1.86	QV	.	.	.	.
2.783	0.3973	1.86	QV	.	.	.	.
2.800	0.3998	1.86	QV	.	.	.	.
2.817	0.4024	1.86	QV	.	.	.	.
2.833	0.4050	1.87	QV	.	.	.	.
2.850	0.4076	1.87	QV	.	.	.	.
2.867	0.4101	1.87	QV	.	.	.	.
2.883	0.4127	1.87	QV	.	.	.	.
2.900	0.4153	1.87	QV	.	.	.	.
2.917	0.4179	1.88	QV	.	.	.	.

2.933	0.4205	1.88	QV	.	.	.	.
2.950	0.4231	1.88	QV	.	.	.	.
2.967	0.4256	1.88	QV	.	.	.	.
2.983	0.4282	1.88	QV	.	.	.	.
3.000	0.4308	1.88	QV	.	.	.	.
3.017	0.4334	1.88	QV	.	.	.	.
3.033	0.4360	1.88	QV	.	.	.	.
3.050	0.4386	1.89	QV	.	.	.	.
3.067	0.4412	1.89	QV	.	.	.	.
3.083	0.4438	1.89	QV	.	.	.	.
3.100	0.4464	1.89	Q V	.	.	.	.
3.117	0.4490	1.89	Q V	.	.	.	.
3.133	0.4516	1.90	Q V	.	.	.	.
3.150	0.4543	1.90	Q V	.	.	.	.
3.167	0.4569	1.90	Q V	.	.	.	.
3.183	0.4595	1.90	Q V	.	.	.	.
3.200	0.4621	1.90	Q V	.	.	.	.
3.217	0.4647	1.90	Q V	.	.	.	.
3.233	0.4674	1.90	Q V	.	.	.	.
3.250	0.4700	1.90	Q V	.	.	.	.
3.267	0.4726	1.91	Q V	.	.	.	.
3.283	0.4752	1.91	Q V	.	.	.	.
3.300	0.4779	1.91	Q V	.	.	.	.
3.317	0.4805	1.91	Q V	.	.	.	.
3.333	0.4831	1.91	Q V	.	.	.	.
3.350	0.4858	1.92	Q V	.	.	.	.
3.367	0.4884	1.92	Q V	.	.	.	.
3.383	0.4911	1.92	Q V	.	.	.	.
3.400	0.4937	1.92	Q V	.	.	.	.
3.417	0.4963	1.92	Q V	.	.	.	.
3.433	0.4990	1.92	Q V	.	.	.	.
3.450	0.5016	1.92	Q V	.	.	.	.
3.467	0.5043	1.92	Q V	.	.	.	.
3.483	0.5069	1.93	Q V	.	.	.	.
3.500	0.5096	1.93	Q V	.	.	.	.
3.517	0.5123	1.93	Q V	.	.	.	.
3.533	0.5149	1.93	Q V	.	.	.	.
3.550	0.5176	1.94	Q V	.	.	.	.
3.567	0.5203	1.94	Q V	.	.	.	.
3.583	0.5229	1.94	Q V	.	.	.	.
3.600	0.5256	1.94	Q V	.	.	.	.
3.617	0.5283	1.94	Q V	.	.	.	.
3.633	0.5309	1.94	Q V	.	.	.	.
3.650	0.5336	1.94	Q V	.	.	.	.
3.667	0.5363	1.94	Q V	.	.	.	.
3.683	0.5390	1.95	Q V	.	.	.	.
3.700	0.5417	1.95	Q V	.	.	.	.
3.717	0.5444	1.95	Q V	.	.	.	.
3.733	0.5470	1.95	Q V	.	.	.	.
3.750	0.5497	1.96	Q V	.	.	.	.

3.767	0.5524	1.96	Q V	.	.	.	.
3.783	0.5551	1.96	Q V	.	.	.	.
3.800	0.5578	1.96	Q V	.	.	.	.
3.817	0.5605	1.96	Q V	.	.	.	.
3.833	0.5632	1.96	Q V	.	.	.	.
3.850	0.5659	1.96	Q V	.	.	.	.
3.867	0.5686	1.96	Q V	.	.	.	.
3.883	0.5713	1.97	Q V	.	.	.	.
3.900	0.5741	1.97	Q V	.	.	.	.
3.917	0.5768	1.97	Q V	.	.	.	.
3.933	0.5795	1.97	Q V	.	.	.	.
3.950	0.5822	1.97	Q V	.	.	.	.
3.967	0.5849	1.98	Q V	.	.	.	.
3.983	0.5877	1.98	Q V	.	.	.	.
4.000	0.5904	1.98	Q V	.	.	.	.
4.017	0.5931	1.98	Q V	.	.	.	.
4.033	0.5958	1.98	Q V	.	.	.	.
4.050	0.5986	1.98	Q V	.	.	.	.
4.067	0.6013	1.98	Q V	.	.	.	.
4.083	0.6040	1.99	Q V	.	.	.	.
4.100	0.6068	1.99	Q V	.	.	.	.
4.117	0.6095	1.99	Q V	.	.	.	.
4.133	0.6123	1.99	Q V	.	.	.	.
4.150	0.6150	2.00	Q V	.	.	.	.
4.167	0.6178	2.00	Q V	.	.	.	.
4.183	0.6205	2.00	Q V	.	.	.	.
4.200	0.6233	2.00	Q V	.	.	.	.
4.217	0.6260	2.00	Q V	.	.	.	.
4.233	0.6288	2.00	Q V	.	.	.	.
4.250	0.6316	2.00	Q V	.	.	.	.
4.267	0.6343	2.01	Q V	.	.	.	.
4.283	0.6371	2.01	Q V	.	.	.	.
4.300	0.6398	2.01	Q V	.	.	.	.
4.317	0.6426	2.01	Q V	.	.	.	.
4.333	0.6454	2.01	Q V	.	.	.	.
4.350	0.6482	2.02	Q V	.	.	.	.
4.367	0.6510	2.02	Q V	.	.	.	.
4.383	0.6537	2.02	Q V	.	.	.	.
4.400	0.6565	2.02	Q V	.	.	.	.
4.417	0.6593	2.02	Q V	.	.	.	.
4.433	0.6621	2.03	Q V	.	.	.	.
4.450	0.6649	2.03	Q V	.	.	.	.
4.467	0.6677	2.03	Q V	.	.	.	.
4.483	0.6705	2.03	Q V	.	.	.	.
4.500	0.6733	2.03	Q V	.	.	.	.
4.517	0.6761	2.03	Q V	.	.	.	.
4.533	0.6789	2.04	Q V	.	.	.	.
4.550	0.6817	2.04	Q V	.	.	.	.
4.567	0.6845	2.04	Q V	.	.	.	.
4.583	0.6873	2.04	Q V	.	.	.	.

4.600	0.6901	2.04	Q V	.	.	.	.
4.617	0.6929	2.05	Q V	.	.	.	.
4.633	0.6958	2.05	Q V	.	.	.	.
4.650	0.6986	2.05	Q V	.	.	.	.
4.667	0.7014	2.05	Q V	.	.	.	.
4.683	0.7042	2.05	Q V	.	.	.	.
4.700	0.7071	2.05	Q V	.	.	.	.
4.717	0.7099	2.05	Q V	.	.	.	.
4.733	0.7127	2.06	Q V	.	.	.	.
4.750	0.7156	2.06	Q V	.	.	.	.
4.767	0.7184	2.06	Q V	.	.	.	.
4.783	0.7212	2.07	Q V	.	.	.	.
4.800	0.7241	2.07	Q V	.	.	.	.
4.817	0.7269	2.07	Q V	.	.	.	.
4.833	0.7298	2.07	Q V	.	.	.	.
4.850	0.7327	2.07	Q V	.	.	.	.
4.867	0.7355	2.07	Q V	.	.	.	.
4.883	0.7384	2.07	Q V	.	.	.	.
4.900	0.7412	2.08	Q V	.	.	.	.
4.917	0.7441	2.08	Q V	.	.	.	.
4.933	0.7470	2.08	Q V	.	.	.	.
4.950	0.7498	2.08	Q V	.	.	.	.
4.967	0.7527	2.09	Q V	.	.	.	.
4.983	0.7556	2.09	Q V	.	.	.	.
5.000	0.7584	2.09	Q V	.	.	.	.
5.017	0.7613	2.09	Q V	.	.	.	.
5.033	0.7642	2.09	Q V	.	.	.	.
5.050	0.7671	2.10	Q V	.	.	.	.
5.067	0.7700	2.10	Q V	.	.	.	.
5.083	0.7729	2.10	Q V	.	.	.	.
5.100	0.7758	2.10	Q V	.	.	.	.
5.117	0.7787	2.10	Q V	.	.	.	.
5.133	0.7816	2.10	Q V	.	.	.	.
5.150	0.7845	2.11	Q V	.	.	.	.
5.167	0.7874	2.11	Q V	.	.	.	.
5.183	0.7903	2.11	Q V	.	.	.	.
5.200	0.7932	2.11	Q V	.	.	.	.
5.217	0.7961	2.12	Q V	.	.	.	.
5.233	0.7990	2.12	Q V	.	.	.	.
5.250	0.8019	2.12	Q V	.	.	.	.
5.267	0.8049	2.12	Q V	.	.	.	.
5.283	0.8078	2.12	Q V	.	.	.	.
5.300	0.8107	2.12	Q V	.	.	.	.
5.317	0.8136	2.13	Q V	.	.	.	.
5.333	0.8166	2.13	Q V	.	.	.	.
5.350	0.8195	2.13	Q V	.	.	.	.
5.367	0.8224	2.13	Q V	.	.	.	.
5.383	0.8254	2.14	Q V	.	.	.	.
5.400	0.8283	2.14	Q V	.	.	.	.
5.417	0.8313	2.14	Q V	.	.	.	.

5.433	0.8342	2.14	Q	V	.	.	.	.
5.450	0.8372	2.15	Q	V	.	.	.	.
5.467	0.8402	2.15	Q	V	.	.	.	.
5.483	0.8431	2.15	Q	V	.	.	.	.
5.500	0.8461	2.15	Q	V	.	.	.	.
5.517	0.8490	2.15	Q	V	.	.	.	.
5.533	0.8520	2.15	Q	V	.	.	.	.
5.550	0.8550	2.15	Q	V	.	.	.	.
5.567	0.8579	2.16	Q	V	.	.	.	.
5.583	0.8609	2.16	Q	V	.	.	.	.
5.600	0.8639	2.16	Q	V	.	.	.	.
5.617	0.8669	2.17	Q	V	.	.	.	.
5.633	0.8699	2.17	Q	V	.	.	.	.
5.650	0.8729	2.17	Q	V	.	.	.	.
5.667	0.8759	2.17	Q	V	.	.	.	.
5.683	0.8789	2.17	Q	V	.	.	.	.
5.700	0.8818	2.18	Q	V	.	.	.	.
5.717	0.8848	2.18	Q	V	.	.	.	.
5.733	0.8879	2.18	Q	V	.	.	.	.
5.750	0.8909	2.18	Q	V	.	.	.	.
5.767	0.8939	2.18	Q	V	.	.	.	.
5.783	0.8969	2.19	Q	V	.	.	.	.
5.800	0.8999	2.19	Q	V	.	.	.	.
5.817	0.9029	2.19	Q	V	.	.	.	.
5.833	0.9059	2.20	Q	V	.	.	.	.
5.850	0.9090	2.20	Q	V	.	.	.	.
5.867	0.9120	2.20	Q	V	.	.	.	.
5.883	0.9150	2.20	Q	V	.	.	.	.
5.900	0.9181	2.20	Q	V	.	.	.	.
5.917	0.9211	2.20	Q	V	.	.	.	.
5.933	0.9241	2.21	Q	V	.	.	.	.
5.950	0.9272	2.21	Q	V	.	.	.	.
5.967	0.9302	2.21	Q	V	.	.	.	.
5.983	0.9333	2.21	Q	V	.	.	.	.
6.000	0.9363	2.22	Q	V	.	.	.	.
6.017	0.9394	2.22	Q	V	.	.	.	.
6.033	0.9424	2.22	Q	V	.	.	.	.
6.050	0.9455	2.23	Q	V	.	.	.	.
6.067	0.9486	2.23	Q	V	.	.	.	.
6.083	0.9516	2.23	Q	V	.	.	.	.
6.100	0.9547	2.23	Q	V	.	.	.	.
6.117	0.9578	2.23	Q	V	.	.	.	.
6.133	0.9609	2.23	Q	V	.	.	.	.
6.150	0.9640	2.24	Q	V	.	.	.	.
6.167	0.9670	2.24	Q	V	.	.	.	.
6.183	0.9701	2.24	Q	V	.	.	.	.
6.200	0.9732	2.24	Q	V	.	.	.	.
6.217	0.9763	2.25	Q	V	.	.	.	.
6.233	0.9794	2.25	Q	V	.	.	.	.
6.250	0.9825	2.25	Q	V	.	.	.	.

6.267	0.9856	2.26	Q	V	.	.	.	.
6.283	0.9887	2.26	Q	V	.	.	.	.
6.300	0.9918	2.26	Q	V	.	.	.	.
6.317	0.9950	2.26	Q	V	.	.	.	.
6.333	0.9981	2.26	Q	V	.	.	.	.
6.350	1.0012	2.27	Q	V	.	.	.	.
6.367	1.0043	2.27	Q	V	.	.	.	.
6.383	1.0074	2.27	Q	V	.	.	.	.
6.400	1.0106	2.27	Q	V	.	.	.	.
6.417	1.0137	2.28	Q	V	.	.	.	.
6.433	1.0168	2.28	Q	V	.	.	.	.
6.450	1.0200	2.28	Q	V	.	.	.	.
6.467	1.0231	2.29	Q	V	.	.	.	.
6.483	1.0263	2.29	Q	V	.	.	.	.
6.500	1.0294	2.29	Q	V	.	.	.	.
6.517	1.0326	2.29	Q	V	.	.	.	.
6.533	1.0358	2.29	Q	V	.	.	.	.
6.550	1.0389	2.30	Q	V	.	.	.	.
6.567	1.0421	2.30	Q	V	.	.	.	.
6.583	1.0452	2.30	Q	V	.	.	.	.
6.600	1.0484	2.30	Q	V	.	.	.	.
6.617	1.0516	2.30	Q	V	.	.	.	.
6.633	1.0548	2.31	Q	V	.	.	.	.
6.650	1.0580	2.31	Q	V	.	.	.	.
6.667	1.0611	2.32	Q	V	.	.	.	.
6.683	1.0643	2.32	Q	V	.	.	.	.
6.700	1.0675	2.32	Q	V	.	.	.	.
6.717	1.0707	2.32	Q	V	.	.	.	.
6.733	1.0739	2.32	Q	V	.	.	.	.
6.750	1.0771	2.33	Q	V	.	.	.	.
6.767	1.0804	2.33	Q	V	.	.	.	.
6.783	1.0836	2.33	Q	V	.	.	.	.
6.800	1.0868	2.33	Q	V	.	.	.	.
6.817	1.0900	2.34	Q	V	.	.	.	.
6.833	1.0932	2.34	Q	V	.	.	.	.
6.850	1.0964	2.34	Q	V	.	.	.	.
6.867	1.0997	2.35	Q	V	.	.	.	.
6.883	1.1029	2.35	Q	V	.	.	.	.
6.900	1.1061	2.35	Q	V	.	.	.	.
6.917	1.1094	2.36	Q	V	.	.	.	.
6.933	1.1126	2.36	Q	V	.	.	.	.
6.950	1.1159	2.36	Q	V	.	.	.	.
6.967	1.1191	2.36	Q	V	.	.	.	.
6.983	1.1224	2.36	Q	V	.	.	.	.
7.000	1.1256	2.36	Q	V	.	.	.	.
7.017	1.1289	2.37	Q	V	.	.	.	.
7.033	1.1322	2.37	Q	V	.	.	.	.
7.050	1.1354	2.37	Q	V	.	.	.	.
7.067	1.1387	2.38	Q	V	.	.	.	.
7.083	1.1420	2.38	Q	V	.	.	.	.

7.100	1.1453	2.39	Q	V	.	.	.	.
7.117	1.1486	2.39	Q	V	.	.	.	.
7.133	1.1519	2.39	Q	V	.	.	.	.
7.150	1.1552	2.39	Q	V	.	.	.	.
7.167	1.1585	2.39	Q	V	.	.	.	.
7.183	1.1618	2.40	Q	V	.	.	.	.
7.200	1.1651	2.40	Q	V	.	.	.	.
7.217	1.1684	2.40	Q	V	.	.	.	.
7.233	1.1717	2.40	Q	V	.	.	.	.
7.250	1.1750	2.41	Q	V	.	.	.	.
7.267	1.1783	2.41	Q	V	.	.	.	.
7.283	1.1816	2.42	Q	V	.	.	.	.
7.300	1.1850	2.42	Q	V	.	.	.	.
7.317	1.1883	2.42	Q	V	.	.	.	.
7.333	1.1917	2.43	Q	V	.	.	.	.
7.350	1.1950	2.43	Q	V	.	.	.	.
7.367	1.1983	2.43	Q	V	.	.	.	.
7.383	1.2017	2.43	Q	V	.	.	.	.
7.400	1.2050	2.43	Q	V	.	.	.	.
7.417	1.2084	2.43	Q	V	.	.	.	.
7.433	1.2118	2.44	Q	V	.	.	.	.
7.450	1.2151	2.44	Q	V	.	.	.	.
7.467	1.2185	2.45	Q	V	.	.	.	.
7.483	1.2219	2.45	Q	V	.	.	.	.
7.500	1.2252	2.45	Q	V	.	.	.	.
7.517	1.2286	2.46	Q	V	.	.	.	.
7.533	1.2320	2.46	Q	V	.	.	.	.
7.550	1.2354	2.46	Q	V	.	.	.	.
7.567	1.2388	2.47	Q	V	.	.	.	.
7.583	1.2422	2.47	Q	V	.	.	.	.
7.600	1.2456	2.47	Q	V	.	.	.	.
7.617	1.2490	2.47	Q	V	.	.	.	.
7.633	1.2524	2.47	Q	V	.	.	.	.
7.650	1.2558	2.48	Q	V	.	.	.	.
7.667	1.2592	2.48	Q	V	.	.	.	.
7.683	1.2627	2.49	Q	V	.	.	.	.
7.700	1.2661	2.49	Q	V	.	.	.	.
7.717	1.2695	2.49	Q	V	.	.	.	.
7.733	1.2730	2.50	Q	V	.	.	.	.
7.750	1.2764	2.50	Q	V	.	.	.	.
7.767	1.2799	2.50	Q	V	.	.	.	.
7.783	1.2833	2.50	Q	V	.	.	.	.
7.800	1.2868	2.51	Q	V	.	.	.	.
7.817	1.2902	2.51	Q	V	.	.	.	.
7.833	1.2937	2.51	Q	V	.	.	.	.
7.850	1.2971	2.51	Q	V	.	.	.	.
7.867	1.3006	2.52	Q	V	.	.	.	.
7.883	1.3041	2.52	Q	V	.	.	.	.
7.900	1.3076	2.53	Q	V	.	.	.	.
7.917	1.3111	2.53	Q	V	.	.	.	.

7.933	1.3145	2.54	Q	V	.	.	.	.
7.950	1.3180	2.54	Q	V	.	.	.	.
7.967	1.3215	2.54	Q	V	.	.	.	.
7.983	1.3251	2.54	Q	V	.	.	.	.
8.000	1.3286	2.55	Q	V	.	.	.	.
8.017	1.3321	2.55	Q	V	.	.	.	.
8.033	1.3356	2.55	Q	V	.	.	.	.
8.050	1.3391	2.55	Q	V	.	.	.	.
8.067	1.3426	2.56	Q	V	.	.	.	.
8.083	1.3461	2.56	Q	V	.	.	.	.
8.100	1.3497	2.57	Q	V	.	.	.	.
8.117	1.3532	2.57	Q	V	.	.	.	.
8.133	1.3568	2.57	Q	V	.	.	.	.
8.150	1.3603	2.58	Q	V	.	.	.	.
8.167	1.3639	2.58	Q	V	.	.	.	.
8.183	1.3674	2.58	Q	V	.	.	.	.
8.200	1.3710	2.59	Q	V	.	.	.	.
8.217	1.3746	2.59	Q	V	.	.	.	.
8.233	1.3781	2.59	Q	V	.	.	.	.
8.250	1.3817	2.59	Q	V	.	.	.	.
8.267	1.3853	2.60	Q	V	.	.	.	.
8.283	1.3889	2.60	Q	V	.	.	.	.
8.300	1.3925	2.61	Q	V	.	.	.	.
8.317	1.3961	2.61	Q	V	.	.	.	.
8.333	1.3997	2.62	Q	V	.	.	.	.
8.350	1.4033	2.62	Q	V	.	.	.	.
8.367	1.4069	2.62	Q	V	.	.	.	.
8.383	1.4105	2.63	Q	V	.	.	.	.
8.400	1.4141	2.63	Q	V	.	.	.	.
8.417	1.4178	2.63	Q	V	.	.	.	.
8.433	1.4214	2.63	Q	V	.	.	.	.
8.450	1.4250	2.64	Q	V	.	.	.	.
8.467	1.4287	2.64	Q	V	.	.	.	.
8.483	1.4323	2.64	Q	V	.	.	.	.
8.500	1.4359	2.65	Q	V	.	.	.	.
8.517	1.4396	2.65	Q	V	.	.	.	.
8.533	1.4433	2.66	Q	V	.	.	.	.
8.550	1.4469	2.66	Q	V	.	.	.	.
8.567	1.4506	2.67	Q	V	.	.	.	.
8.583	1.4543	2.67	Q	V	.	.	.	.
8.600	1.4580	2.67	Q	V	.	.	.	.
8.617	1.4616	2.68	Q	V	.	.	.	.
8.633	1.4653	2.68	Q	V	.	.	.	.
8.650	1.4690	2.68	Q	V	.	.	.	.
8.667	1.4727	2.68	.Q	V	.	.	.	.
8.683	1.4764	2.69	.Q	V	.	.	.	.
8.700	1.4801	2.69	.Q	V	.	.	.	.
8.717	1.4839	2.70	.Q	V	.	.	.	.
8.733	1.4876	2.70	.Q	V	.	.	.	.
8.750	1.4913	2.71	.Q	V	.	.	.	.

8.767	1.4950	2.71	.Q	V	.	.	.	.
8.783	1.4988	2.72	.Q	V	.	.	.	.
8.800	1.5025	2.72	.Q	V	.	.	.	.
8.817	1.5063	2.72	.Q	V	.	.	.	.
8.833	1.5100	2.73	.Q	V	.	.	.	.
8.850	1.5138	2.73	.Q	V	.	.	.	.
8.867	1.5176	2.73	.Q	V	.	.	.	.
8.883	1.5213	2.73	.Q	V	.	.	.	.
8.900	1.5251	2.74	.Q	V	.	.	.	.
8.917	1.5289	2.74	.Q	V	.	.	.	.
8.933	1.5327	2.75	.Q	V	.	.	.	.
8.950	1.5365	2.75	.Q	V	.	.	.	.
8.967	1.5403	2.76	.Q	V	.	.	.	.
8.983	1.5441	2.77	.Q	V	.	.	.	.
9.000	1.5479	2.77	.Q	V	.	.	.	.
9.017	1.5517	2.77	.Q	V	.	.	.	.
9.033	1.5555	2.78	.Q	V	.	.	.	.
9.050	1.5594	2.78	.Q	V	.	.	.	.
9.067	1.5632	2.78	.Q	V	.	.	.	.
9.083	1.5670	2.78	.Q	V	.	.	.	.
9.100	1.5709	2.79	.Q	V	.	.	.	.
9.117	1.5747	2.79	.Q	V	.	.	.	.
9.133	1.5786	2.80	.Q	V	.	.	.	.
9.150	1.5824	2.80	.Q	V	.	.	.	.
9.167	1.5863	2.81	.Q	V	.	.	.	.
9.183	1.5902	2.81	.Q	V	.	.	.	.
9.200	1.5940	2.82	.Q	V	.	.	.	.
9.217	1.5979	2.82	.Q	V	.	.	.	.
9.233	1.6018	2.83	.Q	V	.	.	.	.
9.250	1.6057	2.83	.Q	V	.	.	.	.
9.267	1.6096	2.83	.Q	V	.	.	.	.
9.283	1.6135	2.84	.Q	V	.	.	.	.
9.300	1.6174	2.84	.Q	V	.	.	.	.
9.317	1.6214	2.84	.Q	V	.	.	.	.
9.333	1.6253	2.85	.Q	V	.	.	.	.
9.350	1.6292	2.85	.Q	V	.	.	.	.
9.367	1.6332	2.86	.Q	V	.	.	.	.
9.383	1.6371	2.87	.Q	V	.	.	.	.
9.400	1.6411	2.87	.Q	V	.	.	.	.
9.417	1.6450	2.88	.Q	V	.	.	.	.
9.433	1.6490	2.88	.Q	V	.	.	.	.
9.450	1.6530	2.88	.Q	V	.	.	.	.
9.467	1.6569	2.89	.Q	V	.	.	.	.
9.483	1.6609	2.89	.Q	V	.	.	.	.
9.500	1.6649	2.89	.Q	V	.	.	.	.
9.517	1.6689	2.90	.Q	V	.	.	.	.
9.533	1.6729	2.90	.Q	V	.	.	.	.
9.550	1.6769	2.91	.Q	V	.	.	.	.
9.567	1.6809	2.91	.Q	V	.	.	.	.
9.583	1.6849	2.92	.Q	V	.	.	.	.

9.600	1.6890	2.93	.Q	V	.	.	.	.
9.617	1.6930	2.93	.Q	V	.	.	.	.
9.633	1.6970	2.94	.Q	V	.	.	.	.
9.650	1.7011	2.94	.Q	V	.	.	.	.
9.667	1.7051	2.94	.Q	V	.	.	.	.
9.683	1.7092	2.95	.Q	V	.	.	.	.
9.700	1.7133	2.95	.Q	V	.	.	.	.
9.717	1.7173	2.95	.Q	V	.	.	.	.
9.733	1.7214	2.96	.Q	V	.	.	.	.
9.750	1.7255	2.96	.Q	V	.	.	.	.
9.767	1.7296	2.97	.Q	V	.	.	.	.
9.783	1.7337	2.98	.Q	V	.	.	.	.
9.800	1.7378	2.98	.Q	V	.	.	.	.
9.817	1.7419	2.99	.Q	V	.	.	.	.
9.833	1.7460	3.00	.Q	V	.	.	.	.
9.850	1.7502	3.00	.Q	V	.	.	.	.
9.867	1.7543	3.00	.Q	V	.	.	.	.
9.883	1.7584	3.01	.Q	V	.	.	.	.
9.900	1.7626	3.01	.Q	V	.	.	.	.
9.917	1.7667	3.01	.Q	V	.	.	.	.
9.933	1.7709	3.02	.Q	V	.	.	.	.
9.950	1.7751	3.02	.Q	V	.	.	.	.
9.967	1.7792	3.03	.Q	V	.	.	.	.
9.983	1.7834	3.04	.Q	V	.	.	.	.
10.000	1.7876	3.04	.Q	V	.	.	.	.
10.017	1.7918	3.05	.Q	V	.	.	.	.
10.033	1.7960	3.06	.Q	V	.	.	.	.
10.050	1.8002	3.06	.Q	V	.	.	.	.
10.067	1.8045	3.07	.Q	V	.	.	.	.
10.083	1.8087	3.07	.Q	V	.	.	.	.
10.100	1.8129	3.07	.Q	V	.	.	.	.
10.117	1.8172	3.08	.Q	V	.	.	.	.
10.133	1.8214	3.08	.Q	V	.	.	.	.
10.150	1.8257	3.09	.Q	V	.	.	.	.
10.167	1.8299	3.09	.Q	V	.	.	.	.
10.183	1.8342	3.10	.Q	V	.	.	.	.
10.200	1.8385	3.11	.Q	V	.	.	.	.
10.217	1.8428	3.11	.Q	V	.	.	.	.
10.233	1.8471	3.12	.Q	V	.	.	.	.
10.250	1.8514	3.13	.Q	V	.	.	.	.
10.267	1.8557	3.13	.Q	V	.	.	.	.
10.283	1.8600	3.14	.Q	V	.	.	.	.
10.300	1.8643	3.14	.Q	V	.	.	.	.
10.317	1.8687	3.14	.Q	V	.	.	.	.
10.333	1.8730	3.15	.Q	V	.	.	.	.
10.350	1.8773	3.15	.Q	V	.	.	.	.
10.367	1.8817	3.16	.Q	V	.	.	.	.
10.383	1.8861	3.17	.Q	V	.	.	.	.
10.400	1.8904	3.17	.Q	V	.	.	.	.
10.417	1.8948	3.18	.Q	V	.	.	.	.

10.433	1.8992	3.19	.Q	V .	.	.	.
10.450	1.9036	3.20	.Q	V .	.	.	.
10.467	1.9080	3.20	.Q	V .	.	.	.
10.483	1.9124	3.21	.Q	V .	.	.	.
10.500	1.9169	3.21	.Q	V .	.	.	.
10.517	1.9213	3.22	.Q	V .	.	.	.
10.533	1.9257	3.22	.Q	V .	.	.	.
10.550	1.9302	3.22	.Q	V .	.	.	.
10.567	1.9346	3.23	.Q	V .	.	.	.
10.583	1.9391	3.24	.Q	V .	.	.	.
10.600	1.9436	3.24	.Q	V .	.	.	.
10.617	1.9480	3.25	.Q	V .	.	.	.
10.633	1.9525	3.26	.Q	V .	.	.	.
10.650	1.9570	3.27	.Q	V .	.	.	.
10.667	1.9615	3.28	.Q	V .	.	.	.
10.683	1.9661	3.28	.Q	V .	.	.	.
10.700	1.9706	3.29	.Q	V .	.	.	.
10.717	1.9751	3.29	.Q	V .	.	.	.
10.733	1.9797	3.30	.Q	V .	.	.	.
10.750	1.9842	3.30	.Q	V .	.	.	.
10.767	1.9888	3.30	.Q	V .	.	.	.
10.783	1.9933	3.31	.Q	V .	.	.	.
10.800	1.9979	3.32	.Q	V .	.	.	.
10.817	2.0025	3.33	.Q	V .	.	.	.
10.833	2.0071	3.34	.Q	V .	.	.	.
10.850	2.0117	3.35	.Q	V .	.	.	.
10.867	2.0163	3.36	.Q	V .	.	.	.
10.883	2.0209	3.36	.Q	V .	.	.	.
10.900	2.0256	3.37	.Q	V .	.	.	.
10.917	2.0302	3.37	.Q	V .	.	.	.
10.933	2.0349	3.38	.Q	V .	.	.	.
10.950	2.0395	3.38	.Q	V .	.	.	.
10.967	2.0442	3.39	.Q	V .	.	.	.
10.983	2.0489	3.39	.Q	V .	.	.	.
11.000	2.0536	3.40	.Q	V .	.	.	.
11.017	2.0583	3.41	.Q	V .	.	.	.
11.033	2.0630	3.42	.Q	V .	.	.	.
11.050	2.0677	3.43	.Q	V .	.	.	.
11.067	2.0724	3.44	.Q	V .	.	.	.
11.083	2.0772	3.45	.Q	V .	.	.	.
11.100	2.0819	3.45	.Q	V .	.	.	.
11.117	2.0867	3.46	.Q	V .	.	.	.
11.133	2.0915	3.46	.Q	V .	.	.	.
11.150	2.0962	3.47	.Q	V .	.	.	.
11.167	2.1010	3.47	.Q	V .	.	.	.
11.183	2.1058	3.48	.Q	V .	.	.	.
11.200	2.1106	3.48	.Q	V .	.	.	.
11.217	2.1154	3.49	.Q	V .	.	.	.
11.233	2.1202	3.50	.Q	V .	.	.	.
11.250	2.1251	3.51	.Q	V .	.	.	.

11.267	2.1299	3.52	.Q	V .	.	.	.
11.283	2.1348	3.54	.Q	V .	.	.	.
11.300	2.1397	3.54	.Q	V .	.	.	.
11.317	2.1446	3.55	.Q	V .	.	.	.
11.333	2.1495	3.56	.Q	V .	.	.	.
11.350	2.1544	3.56	.Q	V .	.	.	.
11.367	2.1593	3.57	.Q	V .	.	.	.
11.383	2.1642	3.57	.Q	V .	.	.	.
11.400	2.1691	3.58	.Q	V .	.	.	.
11.417	2.1741	3.59	.Q	V .	.	.	.
11.433	2.1790	3.60	.Q	V .	.	.	.
11.450	2.1840	3.61	.Q	V .	.	.	.
11.467	2.1890	3.62	.Q	V .	.	.	.
11.483	2.1940	3.63	.Q	V .	.	.	.
11.500	2.1990	3.64	.Q	V .	.	.	.
11.517	2.2040	3.65	.Q	V .	.	.	.
11.533	2.2091	3.65	.Q	V .	.	.	.
11.550	2.2141	3.66	.Q	V .	.	.	.
11.567	2.2192	3.67	.Q	V .	.	.	.
11.583	2.2242	3.67	.Q	V .	.	.	.
11.600	2.2293	3.68	.Q	V	.	.	.
11.617	2.2343	3.68	.Q	V	.	.	.
11.633	2.2394	3.70	.Q	V	.	.	.
11.650	2.2445	3.71	.Q	V	.	.	.
11.667	2.2497	3.72	.Q	V	.	.	.
11.683	2.2548	3.73	.Q	V	.	.	.
11.700	2.2600	3.74	.Q	V	.	.	.
11.717	2.2651	3.75	.Q	V	.	.	.
11.733	2.2703	3.76	.Q	V	.	.	.
11.750	2.2755	3.77	.Q	V	.	.	.
11.767	2.2807	3.77	.Q	V	.	.	.
11.783	2.2859	3.78	.Q	V	.	.	.
11.800	2.2911	3.78	.Q	V	.	.	.
11.817	2.2963	3.79	.Q	V	.	.	.
11.833	2.3016	3.80	.Q	V	.	.	.
11.850	2.3068	3.81	.Q	V	.	.	.
11.867	2.3121	3.83	.Q	V	.	.	.
11.883	2.3174	3.84	.Q	V	.	.	.
11.900	2.3227	3.85	.Q	V	.	.	.
11.917	2.3280	3.86	.Q	V	.	.	.
11.933	2.3333	3.87	.Q	V	.	.	.
11.950	2.3387	3.88	.Q	V	.	.	.
11.967	2.3440	3.89	.Q	V	.	.	.
11.983	2.3494	3.89	.Q	V	.	.	.
12.000	2.3548	3.90	.Q	V	.	.	.
12.017	2.3602	3.91	.Q	V	.	.	.
12.033	2.3656	3.95	.Q	V	.	.	.
12.050	2.3713	4.11	.Q	V	.	.	.
12.067	2.3772	4.29	.Q	V	.	.	.
12.083	2.3833	4.46	.Q	V	.	.	.

12.100	2.3897	4.64	.Q	V	.	.	.
12.117	2.3963	4.81	.Q	V	.	.	.
12.133	2.4032	4.98	.Q	V	.	.	.
12.150	2.4101	5.02	.Q	V	.	.	.
12.167	2.4170	5.03	.Q	V	.	.	.
12.183	2.4240	5.04	.Q	V	.	.	.
12.200	2.4309	5.04	.Q	V	.	.	.
12.217	2.4379	5.05	.Q	V	.	.	.
12.233	2.4449	5.06	.Q	V	.	.	.
12.250	2.4518	5.07	.Q	.V	.	.	.
12.267	2.4589	5.09	.Q	.V	.	.	.
12.283	2.4659	5.10	.Q	.V	.	.	.
12.300	2.4729	5.12	.Q	.V	.	.	.
12.317	2.4800	5.14	.Q	.V	.	.	.
12.333	2.4871	5.15	.Q	.V	.	.	.
12.350	2.4942	5.17	.Q	.V	.	.	.
12.367	2.5013	5.17	.Q	.V	.	.	.
12.383	2.5085	5.18	.Q	.V	.	.	.
12.400	2.5156	5.19	.Q	.V	.	.	.
12.417	2.5228	5.20	.Q	.V	.	.	.
12.433	2.5300	5.21	.Q	.V	.	.	.
12.450	2.5372	5.22	.Q	.V	.	.	.
12.467	2.5444	5.23	.Q	.V	.	.	.
12.483	2.5516	5.25	.Q	.V	.	.	.
12.500	2.5588	5.27	.Q	.V	.	.	.
12.517	2.5661	5.28	.Q	.V	.	.	.
12.533	2.5734	5.30	.Q	.V	.	.	.
12.550	2.5808	5.32	.Q	.V	.	.	.
12.567	2.5881	5.33	.Q	.V	.	.	.
12.583	2.5955	5.34	.Q	.V	.	.	.
12.600	2.6028	5.35	.Q	.V	.	.	.
12.617	2.6102	5.36	.Q	.V	.	.	.
12.633	2.6176	5.37	.Q	.V	.	.	.
12.650	2.6250	5.38	.Q	.V	.	.	.
12.667	2.6324	5.39	.Q	.V	.	.	.
12.683	2.6399	5.41	.Q	.V	.	.	.
12.700	2.6473	5.43	.Q	.V	.	.	.
12.717	2.6548	5.45	.Q	.V	.	.	.
12.733	2.6624	5.47	.Q	.V	.	.	.
12.750	2.6699	5.48	.Q	.V	.	.	.
12.767	2.6775	5.50	.Q	.V	.	.	.
12.783	2.6851	5.51	.Q	.V	.	.	.
12.800	2.6927	5.52	.Q	.V	.	.	.
12.817	2.7003	5.53	.Q	.V	.	.	.
12.833	2.7080	5.54	.Q	.V	.	.	.
12.850	2.7156	5.55	.Q	.V	.	.	.
12.867	2.7233	5.56	.Q	.V	.	.	.
12.883	2.7310	5.58	.Q	.V	.	.	.
12.900	2.7387	5.60	.Q	.V	.	.	.
12.917	2.7464	5.62	.Q	.V	.	.	.

12.933	2.7542	5.64	.Q	.V	.	.	.
12.950	2.7620	5.67	.Q	.V	.	.	.
12.967	2.7698	5.69	.Q	.V	.	.	.
12.983	2.7777	5.70	.Q	.V	.	.	.
13.000	2.7856	5.71	.Q	.V	.	.	.
13.017	2.7934	5.72	.Q	.V	.	.	.
13.033	2.8013	5.73	.Q	.V	.	.	.
13.050	2.8093	5.75	.Q	.V	.	.	.
13.067	2.8172	5.76	.Q	.V	.	.	.
13.083	2.8251	5.77	.Q	.V	.	.	.
13.100	2.8331	5.80	.Q	.V	.	.	.
13.117	2.8411	5.82	.Q	.V	.	.	.
13.133	2.8492	5.84	.Q	.V	.	.	.
13.150	2.8573	5.87	.Q	.V	.	.	.
13.167	2.8654	5.89	.Q	.V	.	.	.
13.183	2.8735	5.91	.Q	.V	.	.	.
13.200	2.8817	5.92	.Q	.V	.	.	.
13.217	2.8898	5.94	.Q	.V	.	.	.
13.233	2.8980	5.95	.Q	.V	.	.	.
13.250	2.9063	5.96	.Q	.V	.	.	.
13.267	2.9145	5.97	.Q	.V	.	.	.
13.283	2.9227	5.99	.Q	.V	.	.	.
13.300	2.9310	6.01	.Q	.V	.	.	.
13.317	2.9393	6.03	.Q	.V	.	.	.
13.333	2.9477	6.06	.Q	.V	.	.	.
13.350	2.9560	6.09	.Q	.V	.	.	.
13.367	2.9645	6.11	.Q	.V	.	.	.
13.383	2.9729	6.14	.Q	.V	.	.	.
13.400	2.9814	6.16	.Q	.V	.	.	.
13.417	2.9899	6.17	.Q	.V	.	.	.
13.433	2.9984	6.19	.Q	.V	.	.	.
13.450	3.0070	6.20	.Q	.V	.	.	.
13.467	3.0155	6.21	.Q	.V	.	.	.
13.483	3.0241	6.23	.Q	.V	.	.	.
13.500	3.0327	6.25	.Q	.V	.	.	.
13.517	3.0413	6.27	.Q	.V	.	.	.
13.533	3.0500	6.30	.Q	.V	.	.	.
13.550	3.0587	6.33	.Q	.V	.	.	.
13.567	3.0675	6.36	.Q	.V	.	.	.
13.583	3.0763	6.39	.Q	.V	.	.	.
13.600	3.0852	6.42	.Q	.V	.	.	.
13.617	3.0940	6.44	.Q	.V	.	.	.
13.633	3.1029	6.45	.Q	.V	.	.	.
13.650	3.1118	6.47	.Q	.V	.	.	.
13.667	3.1208	6.48	.Q	.V	.	.	.
13.683	3.1297	6.50	.Q	.V	.	.	.
13.700	3.1387	6.52	.Q	.V	.	.	.
13.717	3.1477	6.54	.Q	.V	.	.	.
13.733	3.1568	6.58	.Q	.V	.	.	.
13.750	3.1659	6.61	.Q	.V	.	.	.

13.767	3.1750	6.64	. Q	.	V	.	.	.
13.783	3.1842	6.68	. Q	.	V	.	.	.
13.800	3.1935	6.71	. Q	.	V	.	.	.
13.817	3.2027	6.74	. Q	.	V	.	.	.
13.833	3.2120	6.76	. Q	.	V	.	.	.
13.850	3.2214	6.78	. Q	.	V	.	.	.
13.867	3.2307	6.79	. Q	.	V	.	.	.
13.883	3.2401	6.81	. Q	.	V	.	.	.
13.900	3.2495	6.83	. Q	.	V	.	.	.
13.917	3.2590	6.85	. Q	.	V	.	.	.
13.933	3.2684	6.89	. Q	.	V	.	.	.
13.950	3.2780	6.93	. Q	.	V	.	.	.
13.967	3.2876	6.97	. Q	.	V	.	.	.
13.983	3.2972	7.00	. Q	.	V	.	.	.
14.000	3.3069	7.04	. Q	.	V	.	.	.
14.017	3.3167	7.08	. Q	.	V	.	.	.
14.033	3.3265	7.11	. Q	.	V	.	.	.
14.050	3.3363	7.13	. Q	.	V	.	.	.
14.067	3.3462	7.16	. Q	.	V	.	.	.
14.083	3.3561	7.18	. Q	.	V	.	.	.
14.100	3.3660	7.21	. Q	.	V	.	.	.
14.117	3.3760	7.23	. Q	.	V	.	.	.
14.133	3.3860	7.27	. Q	.	V	.	.	.
14.150	3.3961	7.32	. Q	.	V	.	.	.
14.167	3.4062	7.37	. Q	.	V	.	.	.
14.183	3.4164	7.41	. Q	.	V	.	.	.
14.200	3.4267	7.46	. Q	.	V	.	.	.
14.217	3.4370	7.51	. Q	.	V	.	.	.
14.233	3.4474	7.55	. Q	.	V	.	.	.
14.250	3.4579	7.57	. Q	.	V	.	.	.
14.267	3.4683	7.60	. Q	.	V	.	.	.
14.283	3.4788	7.62	. Q	.	V	.	.	.
14.300	3.4894	7.65	. Q	.	V	.	.	.
14.317	3.4999	7.67	. Q	.	V	.	.	.
14.333	3.5105	7.70	. Q	.	V	.	.	.
14.350	3.5212	7.75	. Q	.	V	.	.	.
14.367	3.5320	7.81	. Q	.	V	.	.	.
14.383	3.5428	7.86	. Q	.	V	.	.	.
14.400	3.5537	7.91	. Q	.	V	.	.	.
14.417	3.5647	7.97	. Q	.	V	.	.	.
14.433	3.5757	8.02	. Q	.	V	.	.	.
14.450	3.5868	8.06	. Q	.	V	.	.	.
14.467	3.5980	8.09	. Q	.	V	.	.	.
14.483	3.6092	8.12	. Q	.	V	.	.	.
14.500	3.6204	8.15	. Q	.	V	.	.	.
14.517	3.6317	8.18	. Q	.	V	.	.	.
14.533	3.6430	8.21	. Q	.	V	.	.	.
14.550	3.6543	8.26	. Q	.	V	.	.	.
14.567	3.6658	8.32	. Q	.	V	.	.	.
14.583	3.6774	8.39	. Q	.	V	.	.	.

14.600	3.6890	8.45	. Q	.	V	.	.	.
14.617	3.7007	8.52	. Q	.	V	.	.	.
14.633	3.7126	8.59	. Q	.	V	.	.	.
14.650	3.7245	8.65	. Q	.	V	.	.	.
14.667	3.7364	8.69	. Q	.	V	.	.	.
14.683	3.7484	8.72	. Q	.	V	.	.	.
14.700	3.7605	8.76	. Q	.	V	.	.	.
14.717	3.7726	8.80	. Q	.	V	.	.	.
14.733	3.7848	8.83	. Q	.	V	.	.	.
14.750	3.7970	8.87	. Q	.	V	.	.	.
14.767	3.8093	8.95	. Q	.	V	.	.	.
14.783	3.8218	9.03	. Q	.	V	.	.	.
14.800	3.8343	9.11	. Q	.	V	.	.	.
14.817	3.8470	9.20	. Q	.	V	.	.	.
14.833	3.8598	9.28	. Q	.	V	.	.	.
14.850	3.8727	9.36	. Q	.	V	.	.	.
14.867	3.8857	9.43	. Q	.	V	.	.	.
14.883	3.8987	9.47	. Q	.	V	.	.	.
14.900	3.9118	9.52	. Q	.	V	.	.	.
14.917	3.9250	9.57	. Q	.	V	.	.	.
14.933	3.9383	9.62	. Q	.	V	.	.	.
14.950	3.9516	9.66	. Q	.	V	.	.	.
14.967	3.9650	9.73	. Q	.	V	.	.	.
14.983	3.9785	9.84	. Q	.	V	.	.	.
15.000	3.9922	9.95	. Q	.	V	.	.	.
15.017	4.0061	10.06	. Q	.	V	.	.	.
15.033	4.0201	10.17	. Q	.	V	.	.	.
15.050	4.0343	10.28	. Q	.	V	.	.	.
15.067	4.0486	10.38	. Q	.	V	.	.	.
15.083	4.0630	10.45	. Q	.	V	.	.	.
15.100	4.0774	10.51	. Q	.	V	.	.	.
15.117	4.0920	10.58	. Q	.	V	.	.	.
15.133	4.1067	10.64	. Q	.	V	.	.	.
15.150	4.1214	10.71	. Q	.	V	.	.	.
15.167	4.1363	10.77	. Q	.	V	.	.	.
15.183	4.1513	10.90	. Q	.	V	.	.	.
15.200	4.1665	11.05	. Q	.	V	.	.	.
15.217	4.1819	11.20	. Q	.	V	.	.	.
15.233	4.1976	11.36	. Q	.	V	.	.	.
15.250	4.2134	11.51	. Q	.	V	.	.	.
15.267	4.2295	11.66	. Q	.	V	.	.	.
15.283	4.2457	11.79	. Q	.	V	.	.	.
15.300	4.2621	11.88	. Q	.	V	.	.	.
15.317	4.2786	11.97	. Q	.	V	.	.	.
15.333	4.2952	12.06	. Q	.	V	.	.	.
15.350	4.3119	12.16	. Q	.	V	.	.	.
15.367	4.3288	12.25	. Q	.	V	.	.	.
15.383	4.3458	12.31	. Q	.	V	.	.	.
15.400	4.3627	12.29	. Q	.	V	.	.	.
15.417	4.3796	12.27	. Q	.	V	.	.	.

15.433	4.3965	12.24	.	Q	.	V.	.	.
15.450	4.4133	12.22	.	Q	.	V.	.	.
15.467	4.4301	12.19	.	Q	.	V.	.	.
15.483	4.4469	12.18	.	Q	.	V.	.	.
15.500	4.4638	12.30	.	Q	.	V	.	.
15.517	4.4809	12.44	.	Q	.	V	.	.
15.533	4.4983	12.59	.	Q	.	V	.	.
15.550	4.5158	12.74	.	Q	.	V	.	.
15.567	4.5336	12.89	.	Q	.	V	.	.
15.583	4.5515	13.04	.	Q	.	V	.	.
15.600	4.5699	13.35	.	Q	.	V	.	.
15.617	4.5889	13.77	.	Q	.	V	.	.
15.633	4.6085	14.19	.	Q	.	V	.	.
15.650	4.6286	14.61	.	Q	.	V	.	.
15.667	4.6493	15.03	.	Q	.	V	.	.
15.683	4.6706	15.45	.	Q	.	V	.	.
15.700	4.6924	15.83	.	Q	.	.V	.	.
15.717	4.7146	16.16	.	Q	.	.V	.	.
15.733	4.7373	16.48	.	Q	.	.V	.	.
15.750	4.7605	16.80	.	Q	.	.V	.	.
15.767	4.7840	17.12	.	Q	.	.V	.	.
15.783	4.8081	17.45	.	Q	.	.V	.	.
15.800	4.8327	17.91	.	Q	.	.V	.	.
15.817	4.8590	19.05	.	Q	.	.V	.	.
15.833	4.8869	20.27	.	Q	.	.V	.	.
15.850	4.9165	21.50	.	Q	.	.V	.	.
15.867	4.9478	22.73	.	Q	.	.V	.	.
15.883	4.9808	23.95	.	Q	.	.V	.	.
15.900	5.0155	25.19	.	Q	.	.V	.	.
15.917	5.0522	26.64	.	Q	.	.V	.	.
15.933	5.0910	28.16	.	Q	.	.V	.	.
15.950	5.1319	29.69	.	.Q	.	.V	.	.
15.967	5.1749	31.22	.	.Q	.	.V	.	.
15.983	5.2200	32.75	.	.Q	.	.V	.	.
16.000	5.2672	34.27	.	.Q	.	.V	.	.
16.017	5.3234	40.79	.	.	Q	.V	.	.
16.033	5.3954	52.29	.	.	Q.	.V	.	.
16.050	5.4833	63.80	.	.	.	QV	.	.
16.067	5.5870	75.30	.	.	.	.V	Q	.
16.083	5.7066	86.81	.	.	.	.V	.Q	.
16.100	5.8420	98.31	.	.	.	.V	.Q	.
16.117	5.9898	107.29	.	.	.	.V	.Q	.
16.133	6.1144	90.46	.	.	.	.V	.Q	.
16.150	6.2200	76.67	.	.	.	VQ	.	.
16.167	6.3066	62.88	.	.	Q	.V	.	.
16.183	6.3742	49.09	.	.	Q	.V	.	.
16.200	6.4229	35.30	.	Q	.	.V	.	.
16.217	6.4542	22.74	.	Q	.	.V	.	.
16.233	6.4813	19.71	.	Q	.	.V	.	.
16.250	6.5071	18.69	.	Q	.	.V	.	.

16.267	6.5314	17.67	.	Q	.	.	V.	.
16.283	6.5543	16.64	.	Q	.	.	V.	.
16.300	6.5759	15.62	.	Q	.	.	V.	.
16.317	6.5960	14.60	.	Q	.	.	V.	.
16.333	6.6153	14.02	.	Q	.	.	V.	.
16.350	6.6341	13.68	.	Q	.	.	V.	.
16.367	6.6525	13.34	.	Q	.	.	V.	.
16.383	6.6704	13.00	.	Q	.	.	V.	.
16.400	6.6878	12.66	.	Q	.	.	V	.
16.417	6.7048	12.32	.	Q	.	.	V	.
16.433	6.7214	12.05	.	Q	.	.	V	.
16.450	6.7378	11.91	.	Q	.	.	V	.
16.467	6.7540	11.78	.	Q	.	.	V	.
16.483	6.7701	11.64	.	Q	.	.	V	.
16.500	6.7859	11.50	.	Q	.	.	V	.
16.517	6.8015	11.36	.	Q	.	.	V	.
16.533	6.8170	11.21	.	Q	.	.	V	.
16.550	6.8322	11.02	.	Q	.	.	V	.
16.567	6.8471	10.83	.	Q	.	.	V	.
16.583	6.8618	10.64	.	Q	.	.	V	.
16.600	6.8761	10.45	.	Q	.	.	V	.
16.617	6.8903	10.25	.	Q	.	.	V	.
16.633	6.9041	10.06	.	Q	.	.	.V	.
16.650	6.9178	9.91	.	Q	.	.	.V	.
16.667	6.9312	9.76	.	Q	.	.	.V	.
16.683	6.9445	9.62	.	Q	.	.	.V	.
16.700	6.9575	9.48	.	Q	.	.	.V	.
16.717	6.9704	9.34	.	Q	.	.	.V	.
16.733	6.9830	9.19	.	Q	.	.	.V	.
16.750	6.9955	9.07	.	Q	.	.	.V	.
16.767	7.0079	8.96	.	Q	.	.	.V	.
16.783	7.0201	8.84	.	Q	.	.	.V	.
16.800	7.0321	8.73	.	Q	.	.	.V	.
16.817	7.0440	8.62	.	Q	.	.	.V	.
16.833	7.0557	8.51	.	Q	.	.	.V	.
16.850	7.0673	8.41	.	Q	.	.	.V	.
16.867	7.0787	8.31	.	Q	.	.	.V	.
16.883	7.0900	8.23	.	Q	.	.	.V	.
16.900	7.1012	8.14	.	Q	.	.	.V	.
16.917	7.1123	8.05	.	Q	.	.	.V	.
16.933	7.1233	7.96	.	Q	.	.	.V	.
16.950	7.1341	7.87	.	Q	.	.	.V	.
16.967	7.1449	7.79	.	Q	.	.	.V	.
16.983	7.1555	7.72	.	Q	.	.	.V	.
17.000	7.1660	7.64	.	Q	.	.	.V	.
17.017	7.1764	7.57	.	Q	.	.	.V	.
17.033	7.1868	7.49	.	Q	.	.	.V	.
17.050	7.1970	7.42	.	Q	.	.	.V	.
17.067	7.2071	7.35	.	Q	.	.	.V	.
17.083	7.2171	7.28	.	Q	.	.	.V	.

17.100	7.2271	7.21	. Q	.	.	. V	.
17.117	7.2369	7.14	. Q	.	.	. V	.
17.133	7.2466	7.07	. Q	.	.	. V	.
17.150	7.2563	7.00	. Q	.	.	. V	.
17.167	7.2658	6.94	. Q	.	.	. V	.
17.183	7.2753	6.89	. Q	.	.	. V	.
17.200	7.2847	6.83	. Q	.	.	. V	.
17.217	7.2941	6.78	. Q	.	.	. V	.
17.233	7.3033	6.72	. Q	.	.	. V	.
17.250	7.3125	6.67	. Q	.	.	. V	.
17.267	7.3216	6.62	. Q	.	.	. V	.
17.283	7.3307	6.57	. Q	.	.	. V	.
17.300	7.3397	6.52	. Q	.	.	. V	.
17.317	7.3486	6.48	. Q	.	.	. V	.
17.333	7.3575	6.43	. Q	.	.	. V	.
17.350	7.3662	6.38	. Q	.	.	. V	.
17.367	7.3750	6.34	. Q	.	.	. V	.
17.383	7.3836	6.29	. Q	.	.	. V	.
17.400	7.3923	6.25	. Q	.	.	. V	.
17.417	7.4008	6.21	. Q	.	.	. V	.
17.433	7.4093	6.17	. Q	.	.	. V	.
17.450	7.4177	6.13	. Q	.	.	. V	.
17.467	7.4261	6.09	. Q	.	.	. V	.
17.483	7.4345	6.05	. Q	.	.	. V	.
17.500	7.4427	6.01	. Q	.	.	. V	.
17.517	7.4510	5.97	. Q	.	.	. V	.
17.533	7.4591	5.94	. Q	.	.	. V	.
17.550	7.4673	5.90	. Q	.	.	. V	.
17.567	7.4753	5.86	. Q	.	.	. V	.
17.583	7.4834	5.83	. Q	.	.	. V	.
17.600	7.4913	5.79	. Q	.	.	. V	.
17.617	7.4993	5.76	. Q	.	.	. V	.
17.633	7.5072	5.73	. Q	.	.	. V	.
17.650	7.5150	5.69	. Q	.	.	. V	.
17.667	7.5228	5.66	. Q	.	.	. V	.
17.683	7.5306	5.63	. Q	.	.	. V	.
17.700	7.5383	5.60	. Q	.	.	. V	.
17.717	7.5459	5.57	. Q	.	.	. V	.
17.733	7.5536	5.54	. Q	.	.	. V	.
17.750	7.5611	5.51	. Q	.	.	. V	.
17.767	7.5687	5.48	. Q	.	.	. V	.
17.783	7.5762	5.45	. Q	.	.	. V	.
17.800	7.5837	5.42	. Q	.	.	. V	.
17.817	7.5911	5.39	. Q	.	.	. V	.
17.833	7.5985	5.37	. Q	.	.	. V	.
17.850	7.6058	5.34	. Q	.	.	. V	.
17.867	7.6131	5.31	. Q	.	.	. V	.
17.883	7.6204	5.28	. Q	.	.	. V	.
17.900	7.6277	5.26	. Q	.	.	. V	.
17.917	7.6349	5.23	. Q	.	.	. V	.

17.933	7.6420	5.21	.Q	.	.	. V	.
17.950	7.6492	5.18	.Q	.	.	. V	.
17.967	7.6563	5.16	.Q	.	.	. V	.
17.983	7.6634	5.13	.Q	.	.	. V	.
18.000	7.6704	5.08	.Q	.	.	. V	.
18.017	7.6772	4.96	.Q	.	.	. V	.
18.033	7.6838	4.83	.Q	.	.	. V	.
18.050	7.6903	4.69	.Q	.	.	. V	.
18.067	7.6966	4.56	.Q	.	.	. V	.
18.083	7.7027	4.43	.Q	.	.	. V	.
18.100	7.7086	4.30	.Q	.	.	. V	.
18.117	7.7144	4.22	.Q	.	.	. V	.
18.133	7.7201	4.15	.Q	.	.	. V	.
18.150	7.7257	4.08	.Q	.	.	. V	.
18.167	7.7313	4.00	.Q	.	.	. V	.
18.183	7.7367	3.93	.Q	.	.	. V	.
18.200	7.7420	3.86	.Q	.	.	. V	.
18.217	7.7473	3.82	.Q	.	.	. V	.
18.233	7.7525	3.80	.Q	.	.	. V	.
18.250	7.7577	3.78	.Q	.	.	. V	.
18.267	7.7629	3.77	.Q	.	.	. V	.
18.283	7.7680	3.75	.Q	.	.	. V	.
18.300	7.7732	3.73	.Q	.	.	. V	.
18.317	7.7783	3.71	.Q	.	.	. V	.
18.333	7.7834	3.69	.Q	.	.	. V	.
18.350	7.7884	3.68	.Q	.	.	. V	.
18.367	7.7935	3.66	.Q	.	.	. V	.
18.383	7.7985	3.64	.Q	.	.	. V	.
18.400	7.8035	3.63	.Q	.	.	. V	.
18.417	7.8085	3.61	.Q	.	.	. V	.
18.433	7.8134	3.59	.Q	.	.	. V	.
18.450	7.8184	3.58	.Q	.	.	. V	.
18.467	7.8233	3.56	.Q	.	.	. V	.
18.483	7.8281	3.55	.Q	.	.	. V	.
18.500	7.8330	3.53	.Q	.	.	. V	.
18.517	7.8379	3.52	.Q	.	.	. V	.
18.533	7.8427	3.50	.Q	.	.	. V	.
18.550	7.8475	3.49	.Q	.	.	. V	.
18.567	7.8523	3.47	.Q	.	.	. V	.
18.583	7.8570	3.46	.Q	.	.	. V	.
18.600	7.8618	3.44	.Q	.	.	. V	.
18.617	7.8665	3.43	.Q	.	.	. V	.
18.633	7.8712	3.41	.Q	.	.	. V	.
18.650	7.8759	3.40	.Q	.	.	. V	.
18.667	7.8805	3.39	.Q	.	.	. V	.
18.683	7.8852	3.37	.Q	.	.	. V	.
18.700	7.8898	3.36	.Q	.	.	. V	.
18.717	7.8944	3.34	.Q	.	.	. V	.
18.733	7.8990	3.33	.Q	.	.	. V	.
18.750	7.9036	3.32	.Q	.	.	. V	.

18.767	7.9081	3.31	.Q	.	.	.	V	.
18.783	7.9127	3.29	.Q	.	.	.	V	.
18.800	7.9172	3.28	.Q	.	.	.	V	.
18.817	7.9217	3.27	.Q	.	.	.	V	.
18.833	7.9262	3.25	.Q	.	.	.	V	.
18.850	7.9306	3.24	.Q	.	.	.	V	.
18.867	7.9351	3.23	.Q	.	.	.	V	.
18.883	7.9395	3.22	.Q	.	.	.	V	.
18.900	7.9439	3.21	.Q	.	.	.	V	.
18.917	7.9483	3.19	.Q	.	.	.	V	.
18.933	7.9527	3.18	.Q	.	.	.	V	.
18.950	7.9571	3.17	.Q	.	.	.	V	.
18.967	7.9614	3.16	.Q	.	.	.	V	.
18.983	7.9658	3.15	.Q	.	.	.	V	.
19.000	7.9701	3.14	.Q	.	.	.	V	.
19.017	7.9744	3.12	.Q	.	.	.	V	.
19.033	7.9787	3.11	.Q	.	.	.	V	.
19.050	7.9829	3.10	.Q	.	.	.	V	.
19.067	7.9872	3.09	.Q	.	.	.	V	.
19.083	7.9915	3.08	.Q	.	.	.	V	.
19.100	7.9957	3.07	.Q	.	.	.	V	.
19.117	7.9999	3.06	.Q	.	.	.	V	.
19.133	8.0041	3.05	.Q	.	.	.	V	.
19.150	8.0083	3.04	.Q	.	.	.	V	.
19.167	8.0124	3.03	.Q	.	.	.	V	.
19.183	8.0166	3.02	.Q	.	.	.	V	.
19.200	8.0207	3.01	.Q	.	.	.	V	.
19.217	8.0249	3.00	.Q	.	.	.	V	.
19.233	8.0290	2.99	.Q	.	.	.	V	.
19.250	8.0331	2.98	.Q	.	.	.	V	.
19.267	8.0372	2.97	.Q	.	.	.	V	.
19.283	8.0413	2.96	.Q	.	.	.	V	.
19.300	8.0453	2.95	.Q	.	.	.	V	.
19.317	8.0494	2.94	.Q	.	.	.	V	.
19.333	8.0534	2.93	.Q	.	.	.	V	.
19.350	8.0574	2.92	.Q	.	.	.	V	.
19.367	8.0614	2.91	.Q	.	.	.	V	.
19.383	8.0654	2.90	.Q	.	.	.	V	.
19.400	8.0694	2.89	.Q	.	.	.	V	.
19.417	8.0734	2.88	.Q	.	.	.	V	.
19.433	8.0773	2.87	.Q	.	.	.	V	.
19.450	8.0813	2.87	.Q	.	.	.	V	.
19.467	8.0852	2.86	.Q	.	.	.	V	.
19.483	8.0891	2.85	.Q	.	.	.	V	.
19.500	8.0931	2.84	.Q	.	.	.	V	.
19.517	8.0970	2.83	.Q	.	.	.	V	.
19.533	8.1008	2.82	.Q	.	.	.	V	.
19.550	8.1047	2.81	.Q	.	.	.	V	.
19.567	8.1086	2.80	.Q	.	.	.	V	.
19.583	8.1124	2.80	.Q	.	.	.	V	.

19.600	8.1163	2.79	.Q	.	.	.	V	.
19.617	8.1201	2.78	.Q	.	.	.	V	.
19.633	8.1239	2.77	.Q	.	.	.	V	.
19.650	8.1277	2.76	.Q	.	.	.	V	.
19.667	8.1315	2.75	.Q	.	.	.	V	.
19.683	8.1353	2.75	.Q	.	.	.	V	.
19.700	8.1391	2.74	.Q	.	.	.	V	.
19.717	8.1428	2.73	.Q	.	.	.	V	.
19.733	8.1466	2.72	.Q	.	.	.	V	.
19.750	8.1503	2.72	.Q	.	.	.	V	.
19.767	8.1540	2.71	.Q	.	.	.	V	.
19.783	8.1578	2.70	.Q	.	.	.	V	.
19.800	8.1615	2.69	.Q	.	.	.	V	.
19.817	8.1652	2.68	.Q	.	.	.	V	.
19.833	8.1689	2.68	Q	.	.	.	V	.
19.850	8.1725	2.67	Q	.	.	.	V	.
19.867	8.1762	2.66	Q	.	.	.	V	.
19.883	8.1799	2.65	Q	.	.	.	V	.
19.900	8.1835	2.65	Q	.	.	.	V	.
19.917	8.1871	2.64	Q	.	.	.	V	.
19.933	8.1908	2.63	Q	.	.	.	V	.
19.950	8.1944	2.63	Q	.	.	.	V	.
19.967	8.1980	2.62	Q	.	.	.	V	.
19.983	8.2016	2.61	Q	.	.	.	V	.
20.000	8.2052	2.60	Q	.	.	.	V	.
20.017	8.2088	2.60	Q	.	.	.	V	.
20.033	8.2123	2.59	Q	.	.	.	V	.
20.050	8.2159	2.58	Q	.	.	.	V	.
20.067	8.2194	2.58	Q	.	.	.	V	.
20.083	8.2230	2.57	Q	.	.	.	V	.
20.100	8.2265	2.56	Q	.	.	.	V	.
20.117	8.2300	2.56	Q	.	.	.	V	.
20.133	8.2335	2.55	Q	.	.	.	V	.
20.150	8.2370	2.54	Q	.	.	.	V	.
20.167	8.2405	2.54	Q	.	.	.	V	.
20.183	8.2440	2.53	Q	.	.	.	V	.
20.200	8.2475	2.52	Q	.	.	.	V	.
20.217	8.2510	2.52	Q	.	.	.	V	.
20.233	8.2544	2.51	Q	.	.	.	V	.
20.250	8.2579	2.51	Q	.	.	.	V	.
20.267	8.2613	2.50	Q	.	.	.	V	.
20.283	8.2648	2.49	Q	.	.	.	V	.
20.300	8.2682	2.49	Q	.	.	.	V	.
20.317	8.2716	2.48	Q	.	.	.	V	.
20.333	8.2750	2.47	Q	.	.	.	V	.
20.350	8.2784	2.47	Q	.	.	.	V	.
20.367	8.2818	2.46	Q	.	.	.	V	.
20.383	8.2852	2.46	Q	.	.	.	V	.
20.400	8.2885	2.45	Q	.	.	.	V	.
20.417	8.2919	2.44	Q	.	.	.	V	.

20.433	8.2953	2.44	Q	.	.	.	V	.
20.450	8.2986	2.43	Q	.	.	.	V	.
20.467	8.3020	2.43	Q	.	.	.	V	.
20.483	8.3053	2.42	Q	.	.	.	V	.
20.500	8.3086	2.41	Q	.	.	.	V	.
20.517	8.3119	2.41	Q	.	.	.	V	.
20.533	8.3153	2.40	Q	.	.	.	V	.
20.550	8.3186	2.40	Q	.	.	.	V	.
20.567	8.3218	2.39	Q	.	.	.	V	.
20.583	8.3251	2.39	Q	.	.	.	V	.
20.600	8.3284	2.38	Q	.	.	.	V	.
20.617	8.3317	2.38	Q	.	.	.	V	.
20.633	8.3350	2.37	Q	.	.	.	V	.
20.650	8.3382	2.36	Q	.	.	.	V	.
20.667	8.3415	2.36	Q	.	.	.	V	.
20.683	8.3447	2.35	Q	.	.	.	V	.
20.700	8.3479	2.35	Q	.	.	.	V	.
20.717	8.3512	2.34	Q	.	.	.	V	.
20.733	8.3544	2.34	Q	.	.	.	V	.
20.750	8.3576	2.33	Q	.	.	.	V	.
20.767	8.3608	2.33	Q	.	.	.	V	.
20.783	8.3640	2.32	Q	.	.	.	V	.
20.800	8.3672	2.32	Q	.	.	.	V	.
20.817	8.3704	2.31	Q	.	.	.	V	.
20.833	8.3736	2.31	Q	.	.	.	V	.
20.850	8.3767	2.30	Q	.	.	.	V	.
20.867	8.3799	2.30	Q	.	.	.	V	.
20.883	8.3830	2.29	Q	.	.	.	V	.
20.900	8.3862	2.29	Q	.	.	.	V	.
20.917	8.3893	2.28	Q	.	.	.	V	.
20.933	8.3925	2.28	Q	.	.	.	V	.
20.950	8.3956	2.27	Q	.	.	.	V	.
20.967	8.3987	2.27	Q	.	.	.	V	.
20.983	8.4018	2.26	Q	.	.	.	V	.
21.000	8.4049	2.26	Q	.	.	.	V	.
21.017	8.4080	2.25	Q	.	.	.	V	.
21.033	8.4111	2.25	Q	.	.	.	V	.
21.050	8.4142	2.24	Q	.	.	.	V	.
21.067	8.4173	2.24	Q	.	.	.	V	.
21.083	8.4204	2.23	Q	.	.	.	V	.
21.100	8.4235	2.23	Q	.	.	.	V	.
21.117	8.4265	2.22	Q	.	.	.	V	.
21.133	8.4296	2.22	Q	.	.	.	V	.
21.150	8.4326	2.21	Q	.	.	.	V	.
21.167	8.4357	2.21	Q	.	.	.	V	.
21.183	8.4387	2.21	Q	.	.	.	V	.
21.200	8.4417	2.20	Q	.	.	.	V	.
21.217	8.4448	2.20	Q	.	.	.	V	.
21.233	8.4478	2.19	Q	.	.	.	V	.
21.250	8.4508	2.19	Q	.	.	.	V	.

21.267	8.4538	2.18	Q	.	.	.	V	.
21.283	8.4568	2.18	Q	.	.	.	V	.
21.300	8.4598	2.17	Q	.	.	.	V	.
21.317	8.4628	2.17	Q	.	.	.	V	.
21.333	8.4658	2.17	Q	.	.	.	V	.
21.350	8.4688	2.16	Q	.	.	.	V	.
21.367	8.4717	2.16	Q	.	.	.	V	.
21.383	8.4747	2.15	Q	.	.	.	V	.
21.400	8.4777	2.15	Q	.	.	.	V	.
21.417	8.4806	2.14	Q	.	.	.	V	.
21.433	8.4836	2.14	Q	.	.	.	V	.
21.450	8.4865	2.14	Q	.	.	.	V	.
21.467	8.4894	2.13	Q	.	.	.	V	.
21.483	8.4924	2.13	Q	.	.	.	V	.
21.500	8.4953	2.12	Q	.	.	.	V	.
21.517	8.4982	2.12	Q	.	.	.	V	.
21.533	8.5011	2.12	Q	.	.	.	V	.
21.550	8.5040	2.11	Q	.	.	.	V	.
21.567	8.5069	2.11	Q	.	.	.	V	.
21.583	8.5098	2.10	Q	.	.	.	V	.
21.600	8.5127	2.10	Q	.	.	.	V	.
21.617	8.5156	2.10	Q	.	.	.	V	.
21.633	8.5185	2.09	Q	.	.	.	V	.
21.650	8.5214	2.09	Q	.	.	.	V	.
21.667	8.5242	2.08	Q	.	.	.	V	.
21.683	8.5271	2.08	Q	.	.	.	V	.
21.700	8.5300	2.08	Q	.	.	.	V	.
21.717	8.5328	2.07	Q	.	.	.	V	.
21.733	8.5357	2.07	Q	.	.	.	V	.
21.750	8.5385	2.06	Q	.	.	.	V	.
21.767	8.5414	2.06	Q	.	.	.	V	.
21.783	8.5442	2.06	Q	.	.	.	V	.
21.800	8.5470	2.05	Q	.	.	.	V	.
21.817	8.5498	2.05	Q	.	.	.	V	.
21.833	8.5527	2.05	Q	.	.	.	V	.
21.850	8.5555	2.04	Q	.	.	.	V	.
21.867	8.5583	2.04	Q	.	.	.	V	.
21.883	8.5611	2.03	Q	.	.	.	V	.
21.900	8.5639	2.03	Q	.	.	.	V	.
21.917	8.5667	2.03	Q	.	.	.	V	.
21.933	8.5694	2.02	Q	.	.	.	V	.
21.950	8.5722	2.02	Q	.	.	.	V	.
21.967	8.5750	2.02	Q	.	.	.	V	.
21.983	8.5778	2.01	Q	.	.	.	V	.
22.000	8.5805	2.01	Q	.	.	.	V	.
22.017	8.5833	2.01	Q	.	.	.	V	.
22.033	8.5861	2.00	Q	.	.	.	V	.
22.050	8.5888	2.00	Q	.	.	.	V	.
22.067	8.5916	1.99	Q	.	.	.	V	.
22.083	8.5943	1.99	Q	.	.	.	V	.

22.100	8.5970	1.99	Q	.	.	.	V .
22.117	8.5998	1.98	Q	.	.	.	V .
22.133	8.6025	1.98	Q	.	.	.	V .
22.150	8.6052	1.98	Q	.	.	.	V .
22.167	8.6080	1.97	Q	.	.	.	V .
22.183	8.6107	1.97	Q	.	.	.	V .
22.200	8.6134	1.97	Q	.	.	.	V .
22.217	8.6161	1.96	Q	.	.	.	V .
22.233	8.6188	1.96	Q	.	.	.	V .
22.250	8.6215	1.96	Q	.	.	.	V .
22.267	8.6242	1.95	Q	.	.	.	V .
22.283	8.6269	1.95	Q	.	.	.	V .
22.300	8.6295	1.95	Q	.	.	.	V .
22.317	8.6322	1.94	Q	.	.	.	V .
22.333	8.6349	1.94	Q	.	.	.	V .
22.350	8.6376	1.94	Q	.	.	.	V .
22.367	8.6402	1.93	Q	.	.	.	V .
22.383	8.6429	1.93	Q	.	.	.	V .
22.400	8.6455	1.93	Q	.	.	.	V .
22.417	8.6482	1.92	Q	.	.	.	V .
22.433	8.6508	1.92	Q	.	.	.	V .
22.450	8.6535	1.92	Q	.	.	.	V .
22.467	8.6561	1.92	Q	.	.	.	V .
22.483	8.6588	1.91	Q	.	.	.	V .
22.500	8.6614	1.91	Q	.	.	.	V .
22.517	8.6640	1.91	Q	.	.	.	V .
22.533	8.6666	1.90	Q	.	.	.	V .
22.550	8.6692	1.90	Q	.	.	.	V .
22.567	8.6719	1.90	Q	.	.	.	V .
22.583	8.6745	1.89	Q	.	.	.	V .
22.600	8.6771	1.89	Q	.	.	.	V .
22.617	8.6797	1.89	Q	.	.	.	V .
22.633	8.6823	1.88	Q	.	.	.	V .
22.650	8.6849	1.88	Q	.	.	.	V .
22.667	8.6874	1.88	Q	.	.	.	V .
22.683	8.6900	1.88	Q	.	.	.	V .
22.700	8.6926	1.87	Q	.	.	.	V .
22.717	8.6952	1.87	Q	.	.	.	V .
22.733	8.6978	1.87	Q	.	.	.	V .
22.750	8.7003	1.86	Q	.	.	.	V .
22.767	8.7029	1.86	Q	.	.	.	V .
22.783	8.7054	1.86	Q	.	.	.	V .
22.800	8.7080	1.85	Q	.	.	.	V .
22.817	8.7105	1.85	Q	.	.	.	V .
22.833	8.7131	1.85	Q	.	.	.	V .
22.850	8.7156	1.85	Q	.	.	.	V .
22.867	8.7182	1.84	Q	.	.	.	V .
22.883	8.7207	1.84	Q	.	.	.	V .
22.900	8.7232	1.84	Q	.	.	.	V .
22.917	8.7258	1.83	Q	.	.	.	V .

22.933	8.7283	1.83	Q	.	.	.	V .
22.950	8.7308	1.83	Q	.	.	.	V .
22.967	8.7333	1.83	Q	.	.	.	V .
22.983	8.7358	1.82	Q	.	.	.	V .
23.000	8.7384	1.82	Q	.	.	.	V .
23.017	8.7409	1.82	Q	.	.	.	V .
23.033	8.7434	1.82	Q	.	.	.	V .
23.050	8.7459	1.81	Q	.	.	.	V .
23.067	8.7483	1.81	Q	.	.	.	V .
23.083	8.7508	1.81	Q	.	.	.	V .
23.100	8.7533	1.80	Q	.	.	.	V .
23.117	8.7558	1.80	Q	.	.	.	V .
23.133	8.7583	1.80	Q	.	.	.	V .
23.150	8.7608	1.80	Q	.	.	.	V .
23.167	8.7632	1.79	Q	.	.	.	V .
23.183	8.7657	1.79	Q	.	.	.	V .
23.200	8.7682	1.79	Q	.	.	.	V .
23.217	8.7706	1.79	Q	.	.	.	V .
23.233	8.7731	1.78	Q	.	.	.	V .
23.250	8.7755	1.78	Q	.	.	.	V .
23.267	8.7780	1.78	Q	.	.	.	V .
23.283	8.7804	1.78	Q	.	.	.	V .
23.300	8.7829	1.77	Q	.	.	.	V .
23.317	8.7853	1.77	Q	.	.	.	V .
23.333	8.7877	1.77	Q	.	.	.	V .
23.350	8.7902	1.77	Q	.	.	.	V .
23.367	8.7926	1.76	Q	.	.	.	V .
23.383	8.7950	1.76	Q	.	.	.	V .
23.400	8.7974	1.76	Q	.	.	.	V .
23.417	8.7999	1.76	Q	.	.	.	V .
23.433	8.8023	1.75	Q	.	.	.	V .
23.450	8.8047	1.75	Q	.	.	.	V .
23.467	8.8071	1.75	Q	.	.	.	V .
23.483	8.8095	1.75	Q	.	.	.	V .
23.500	8.8119	1.74	Q	.	.	.	V .
23.517	8.8143	1.74	Q	.	.	.	V .
23.533	8.8167	1.74	Q	.	.	.	V .
23.550	8.8191	1.74	Q	.	.	.	V .
23.567	8.8215	1.73	Q	.	.	.	V .
23.583	8.8239	1.73	Q	.	.	.	V .
23.600	8.8262	1.73	Q	.	.	.	V .
23.617	8.8286	1.73	Q	.	.	.	V .
23.633	8.8310	1.72	Q	.	.	.	V .
23.650	8.8334	1.72	Q	.	.	.	V .
23.667	8.8357	1.72	Q	.	.	.	V .
23.683	8.8381	1.72	Q	.	.	.	V .
23.700	8.8405	1.71	Q	.	.	.	V .
23.717	8.8428	1.71	Q	.	.	.	V .
23.733	8.8452	1.71	Q	.	.	.	V .
23.750	8.8475	1.71	Q	.	.	.	V .

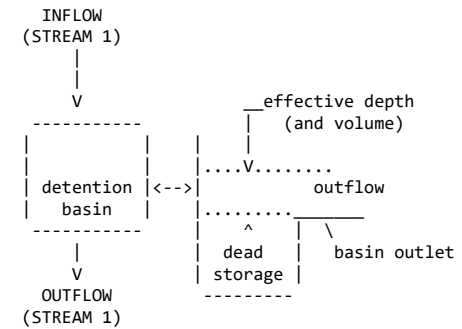
23.767	8.8499	1.70	Q	.	.	.	V.
23.783	8.8522	1.70	Q	.	.	.	V.
23.800	8.8545	1.70	Q	.	.	.	V.
23.817	8.8569	1.70	Q	.	.	.	V.
23.833	8.8592	1.70	Q	.	.	.	V.
23.850	8.8616	1.69	Q	.	.	.	V.
23.867	8.8639	1.69	Q	.	.	.	V.
23.883	8.8662	1.69	Q	.	.	.	V.
23.900	8.8685	1.69	Q	.	.	.	V.
23.917	8.8709	1.68	Q	.	.	.	V.
23.933	8.8732	1.68	Q	.	.	.	V.
23.950	8.8755	1.68	Q	.	.	.	V.
23.967	8.8778	1.68	Q	.	.	.	V.
23.983	8.8801	1.68	Q	.	.	.	V.
24.000	8.8824	1.67	Q	.	.	.	V.
24.017	8.8847	1.67	Q	.	.	.	V.
24.033	8.8870	1.67	Q	.	.	.	V.
24.050	8.8893	1.67	Q	.	.	.	V.
24.067	8.8916	1.64	Q	.	.	.	V.
24.083	8.8935	1.41	Q	.	.	.	V.
24.100	8.8951	1.15	Q	.	.	.	V.
24.117	8.8963	0.88	Q	.	.	.	V.
24.133	8.8972	0.62	Q	.	.	.	V.
24.150	8.8976	0.36	Q	.	.	.	V.

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1449.0
10%	425.0
20%	115.0
30%	70.0
40%	50.0
50%	40.0
60%	30.0
70%	30.0
80%	20.0
90%	10.0

FLOW PROCESS FROM NODE 580.00 TO NODE 580.00 IS CODE = 3.2

>>>>FLOW-THROUGH DETENTION BASIN ROUTING MODEL APPLIED TO STREAM #1<<<<



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

BASIN DEPTH VERSUS OUTFLOW AND STORAGE INFORMATION:

INTERVAL NUMBER	DEPTH (FT)	OUTFLOW (CFS)	STORAGE (AF)
1	0.00	0.00	0.000
2	0.25	0.01	0.080
3	0.50	0.02	0.159
4	0.75	0.03	0.267
5	1.00	4.25	0.397
6	1.25	6.02	0.538
7	1.50	7.37	0.687
8	1.75	8.51	0.840
9	2.00	9.51	0.996
10	2.25	10.42	1.150
11	2.50	11.26	1.310
12	2.75	12.03	1.450
13	3.00	12.76	1.590
14	3.25	17.70	1.720
15	3.50	26.12	1.830
16	3.75	36.79	1.910
17	4.00	49.30	1.992
18	4.25	63.37	2.070
19	4.50	78.86	2.150

=====

MODIFIED-PULS BASIN ROUTING MODEL RESULTS(1-MINUTE COMPUTATION INTERVALS):

(Note: Computed EFFECTIVE DEPTH and VOLUME are estimated at the clock time;
MEAN OUTFLOW is the average value during the unit interval.)

CLOCK TIME (HRS)	DEAD-STORAGE FILLED(AF)	INFLOW (CFS)	LOSS (CFS)	EFFECTIVE DEPTH(FT)	MEAN OUTFLOW (CFS)	EFFECTIVE VOLUME(AF)
10.000	0.000	3.04	0.00	0.92	2.9	0.356
10.017	0.000	3.05	0.00	0.92	2.9	0.357
10.033	0.000	3.06	0.00	0.92	2.9	0.357
10.050	0.000	3.06	0.00	0.92	3.0	0.357
10.067	0.000	3.07	0.00	0.92	3.0	0.357
10.083	0.000	3.07	0.00	0.92	3.0	0.357
10.100	0.000	3.07	0.00	0.92	3.0	0.357
10.117	0.000	3.08	0.00	0.92	3.0	0.358
10.133	0.000	3.08	0.00	0.92	3.0	0.358
10.150	0.000	3.09	0.00	0.92	3.0	0.358
10.167	0.000	3.09	0.00	0.92	3.0	0.358
10.183	0.000	3.10	0.00	0.93	3.0	0.358
10.200	0.000	3.11	0.00	0.93	3.0	0.358
10.217	0.000	3.11	0.00	0.93	3.0	0.358
10.233	0.000	3.12	0.00	0.93	3.0	0.359
10.250	0.000	3.13	0.00	0.93	3.0	0.359
10.267	0.000	3.13	0.00	0.93	3.0	0.359
10.283	0.000	3.14	0.00	0.93	3.0	0.359
10.300	0.000	3.14	0.00	0.93	3.0	0.359
10.317	0.000	3.14	0.00	0.93	3.0	0.359
10.333	0.000	3.15	0.00	0.93	3.0	0.360
10.350	0.000	3.15	0.00	0.93	3.0	0.360
10.367	0.000	3.16	0.00	0.93	3.0	0.360
10.383	0.000	3.17	0.00	0.93	3.1	0.360
10.400	0.000	3.17	0.00	0.93	3.1	0.360
10.417	0.000	3.18	0.00	0.93	3.1	0.360
10.433	0.000	3.19	0.00	0.93	3.1	0.361
10.450	0.000	3.20	0.00	0.93	3.1	0.361
10.467	0.000	3.20	0.00	0.93	3.1	0.361
10.483	0.000	3.21	0.00	0.93	3.1	0.361
10.500	0.000	3.21	0.00	0.93	3.1	0.361
10.517	0.000	3.22	0.00	0.93	3.1	0.361
10.533	0.000	3.22	0.00	0.93	3.1	0.362
10.550	0.000	3.22	0.00	0.93	3.1	0.362
10.567	0.000	3.23	0.00	0.93	3.1	0.362
10.583	0.000	3.24	0.00	0.93	3.1	0.362
10.600	0.000	3.24	0.00	0.93	3.1	0.362
10.617	0.000	3.25	0.00	0.93	3.1	0.362
10.633	0.000	3.26	0.00	0.93	3.1	0.363

10.650	0.000	3.27	0.00	0.93	3.1	0.363
10.667	0.000	3.28	0.00	0.93	3.1	0.363
10.683	0.000	3.28	0.00	0.93	3.2	0.363
10.700	0.000	3.29	0.00	0.94	3.2	0.363
10.717	0.000	3.29	0.00	0.94	3.2	0.363
10.733	0.000	3.30	0.00	0.94	3.2	0.364
10.750	0.000	3.30	0.00	0.94	3.2	0.364
10.767	0.000	3.30	0.00	0.94	3.2	0.364
10.783	0.000	3.31	0.00	0.94	3.2	0.364
10.800	0.000	3.32	0.00	0.94	3.2	0.364
10.817	0.000	3.33	0.00	0.94	3.2	0.365
10.833	0.000	3.34	0.00	0.94	3.2	0.365
10.850	0.000	3.35	0.00	0.94	3.2	0.365
10.867	0.000	3.36	0.00	0.94	3.2	0.365
10.883	0.000	3.36	0.00	0.94	3.2	0.365
10.900	0.000	3.37	0.00	0.94	3.2	0.365
10.917	0.000	3.37	0.00	0.94	3.2	0.366
10.933	0.000	3.38	0.00	0.94	3.2	0.366
10.950	0.000	3.38	0.00	0.94	3.2	0.366
10.967	0.000	3.39	0.00	0.94	3.3	0.366
10.983	0.000	3.39	0.00	0.94	3.3	0.366
11.000	0.000	3.40	0.00	0.94	3.3	0.367
11.017	0.000	3.41	0.00	0.94	3.3	0.367
11.033	0.000	3.42	0.00	0.94	3.3	0.367
11.050	0.000	3.43	0.00	0.94	3.3	0.367
11.067	0.000	3.44	0.00	0.94	3.3	0.367
11.083	0.000	3.45	0.00	0.94	3.3	0.368
11.100	0.000	3.45	0.00	0.94	3.3	0.368
11.117	0.000	3.46	0.00	0.94	3.3	0.368
11.133	0.000	3.46	0.00	0.94	3.3	0.368
11.150	0.000	3.47	0.00	0.95	3.3	0.368
11.167	0.000	3.47	0.00	0.95	3.3	0.369
11.183	0.000	3.48	0.00	0.95	3.3	0.369
11.200	0.000	3.48	0.00	0.95	3.3	0.369
11.217	0.000	3.49	0.00	0.95	3.3	0.369
11.233	0.000	3.50	0.00	0.95	3.4	0.369
11.250	0.000	3.51	0.00	0.95	3.4	0.370
11.267	0.000	3.52	0.00	0.95	3.4	0.370
11.283	0.000	3.54	0.00	0.95	3.4	0.370
11.300	0.000	3.54	0.00	0.95	3.4	0.370
11.317	0.000	3.55	0.00	0.95	3.4	0.371
11.333	0.000	3.56	0.00	0.95	3.4	0.371
11.350	0.000	3.56	0.00	0.95	3.4	0.371
11.367	0.000	3.57	0.00	0.95	3.4	0.371
11.383	0.000	3.57	0.00	0.95	3.4	0.371
11.400	0.000	3.58	0.00	0.95	3.4	0.372
11.417	0.000	3.59	0.00	0.95	3.4	0.372
11.433	0.000	3.60	0.00	0.95	3.4	0.372
11.450	0.000	3.61	0.00	0.95	3.4	0.372
11.467	0.000	3.62	0.00	0.95	3.5	0.372

11.483	0.000	3.63	0.00	0.95	3.5	0.373
11.500	0.000	3.64	0.00	0.95	3.5	0.373
11.517	0.000	3.65	0.00	0.95	3.5	0.373
11.533	0.000	3.65	0.00	0.95	3.5	0.373
11.550	0.000	3.66	0.00	0.96	3.5	0.374
11.567	0.000	3.67	0.00	0.96	3.5	0.374
11.583	0.000	3.67	0.00	0.96	3.5	0.374
11.600	0.000	3.68	0.00	0.96	3.5	0.374
11.617	0.000	3.68	0.00	0.96	3.5	0.375
11.633	0.000	3.70	0.00	0.96	3.5	0.375
11.650	0.000	3.71	0.00	0.96	3.5	0.375
11.667	0.000	3.72	0.00	0.96	3.5	0.375
11.683	0.000	3.73	0.00	0.96	3.6	0.375
11.700	0.000	3.74	0.00	0.96	3.6	0.376
11.717	0.000	3.75	0.00	0.96	3.6	0.376
11.733	0.000	3.76	0.00	0.96	3.6	0.376
11.750	0.000	3.77	0.00	0.96	3.6	0.376
11.767	0.000	3.77	0.00	0.96	3.6	0.377
11.783	0.000	3.78	0.00	0.96	3.6	0.377
11.800	0.000	3.78	0.00	0.96	3.6	0.377
11.817	0.000	3.79	0.00	0.96	3.6	0.377
11.833	0.000	3.80	0.00	0.96	3.6	0.378
11.850	0.000	3.81	0.00	0.96	3.6	0.378
11.867	0.000	3.83	0.00	0.96	3.6	0.378
11.883	0.000	3.84	0.00	0.96	3.6	0.378
11.900	0.000	3.85	0.00	0.96	3.7	0.379
11.917	0.000	3.86	0.00	0.97	3.7	0.379
11.933	0.000	3.87	0.00	0.97	3.7	0.379
11.950	0.000	3.88	0.00	0.97	3.7	0.380
11.967	0.000	3.89	0.00	0.97	3.7	0.380
11.983	0.000	3.89	0.00	0.97	3.7	0.380
12.000	0.000	3.90	0.00	0.97	3.7	0.380
12.017	0.000	3.91	0.00	0.97	3.7	0.381
12.033	0.000	3.95	0.00	0.97	3.7	0.381
12.050	0.000	4.11	0.00	0.97	3.7	0.381
12.067	0.000	4.29	0.00	0.97	3.8	0.382
12.083	0.000	4.46	0.00	0.97	3.8	0.383
12.100	0.000	4.64	0.00	0.98	3.8	0.384
12.117	0.000	4.81	0.00	0.98	3.9	0.386
12.133	0.000	4.98	0.00	0.98	3.9	0.387
12.150	0.000	5.02	0.00	0.98	4.0	0.388
12.167	0.000	5.03	0.00	0.99	4.0	0.390
12.183	0.000	5.04	0.00	0.99	4.0	0.391
12.200	0.000	5.04	0.00	0.99	4.1	0.393
12.217	0.000	5.05	0.00	0.99	4.1	0.394
12.233	0.000	5.06	0.00	1.00	4.2	0.395
12.250	0.000	5.07	0.00	1.00	4.2	0.396
12.267	0.000	5.09	0.00	1.00	4.2	0.397
12.283	0.000	5.10	0.00	1.00	4.3	0.399
12.300	0.000	5.12	0.00	1.00	4.3	0.400

12.317	0.000	5.14	0.00	1.01	4.3	0.401
12.333	0.000	5.15	0.00	1.01	4.3	0.402
12.350	0.000	5.17	0.00	1.01	4.3	0.403
12.367	0.000	5.17	0.00	1.01	4.3	0.404
12.383	0.000	5.18	0.00	1.02	4.4	0.406
12.400	0.000	5.19	0.00	1.02	4.4	0.407
12.417	0.000	5.20	0.00	1.02	4.4	0.408
12.433	0.000	5.21	0.00	1.02	4.4	0.409
12.450	0.000	5.22	0.00	1.02	4.4	0.410
12.467	0.000	5.23	0.00	1.03	4.4	0.411
12.483	0.000	5.25	0.00	1.03	4.4	0.412
12.500	0.000	5.27	0.00	1.03	4.5	0.413
12.517	0.000	5.28	0.00	1.03	4.5	0.414
12.533	0.000	5.30	0.00	1.03	4.5	0.416
12.550	0.000	5.32	0.00	1.04	4.5	0.417
12.567	0.000	5.33	0.00	1.04	4.5	0.418
12.583	0.000	5.34	0.00	1.04	4.5	0.419
12.600	0.000	5.35	0.00	1.04	4.5	0.420
12.617	0.000	5.36	0.00	1.04	4.6	0.421
12.633	0.000	5.37	0.00	1.04	4.6	0.422
12.650	0.000	5.38	0.00	1.05	4.6	0.423
12.667	0.000	5.39	0.00	1.05	4.6	0.425
12.683	0.000	5.41	0.00	1.05	4.6	0.426
12.700	0.000	5.43	0.00	1.05	4.6	0.427
12.717	0.000	5.45	0.00	1.05	4.6	0.428
12.733	0.000	5.47	0.00	1.06	4.6	0.429
12.750	0.000	5.48	0.00	1.06	4.7	0.430
12.767	0.000	5.50	0.00	1.06	4.7	0.431
12.783	0.000	5.51	0.00	1.06	4.7	0.432
12.800	0.000	5.52	0.00	1.06	4.7	0.434
12.817	0.000	5.53	0.00	1.07	4.7	0.435
12.833	0.000	5.54	0.00	1.07	4.7	0.436
12.850	0.000	5.55	0.00	1.07	4.7	0.437
12.867	0.000	5.56	0.00	1.07	4.8	0.438
12.883	0.000	5.58	0.00	1.07	4.8	0.439
12.900	0.000	5.60	0.00	1.08	4.8	0.440
12.917	0.000	5.62	0.00	1.08	4.8	0.441
12.933	0.000	5.64	0.00	1.08	4.8	0.443
12.950	0.000	5.67	0.00	1.08	4.8	0.444
12.967	0.000	5.69	0.00	1.08	4.8	0.445
12.983	0.000	5.70	0.00	1.09	4.9	0.446
13.000	0.000	5.71	0.00	1.09	4.9	0.447
13.017	0.000	5.72	0.00	1.09	4.9	0.448
13.033	0.000	5.73	0.00	1.09	4.9	0.449
13.050	0.000	5.75	0.00	1.09	4.9	0.451
13.067	0.000	5.76	0.00	1.10	4.9	0.452
13.083	0.000	5.77	0.00	1.10	4.9	0.453
13.100	0.000	5.80	0.00	1.10	5.0	0.454
13.117	0.000	5.82	0.00	1.10	5.0	0.455
13.133	0.000	5.84	0.00	1.11	5.0	0.456

13.150	0.000	5.87	0.00	1.11	5.0	0.458
13.167	0.000	5.89	0.00	1.11	5.0	0.459
13.183	0.000	5.91	0.00	1.11	5.0	0.460
13.200	0.000	5.92	0.00	1.11	5.0	0.461
13.217	0.000	5.94	0.00	1.12	5.1	0.462
13.233	0.000	5.95	0.00	1.12	5.1	0.464
13.250	0.000	5.96	0.00	1.12	5.1	0.465
13.267	0.000	5.97	0.00	1.12	5.1	0.466
13.283	0.000	5.99	0.00	1.12	5.1	0.467
13.300	0.000	6.01	0.00	1.13	5.1	0.468
13.317	0.000	6.03	0.00	1.13	5.2	0.470
13.333	0.000	6.06	0.00	1.13	5.2	0.471
13.350	0.000	6.09	0.00	1.13	5.2	0.472
13.367	0.000	6.11	0.00	1.14	5.2	0.473
13.383	0.000	6.14	0.00	1.14	5.2	0.475
13.400	0.000	6.16	0.00	1.14	5.2	0.476
13.417	0.000	6.17	0.00	1.14	5.2	0.477
13.433	0.000	6.19	0.00	1.14	5.3	0.478
13.450	0.000	6.20	0.00	1.15	5.3	0.480
13.467	0.000	6.21	0.00	1.15	5.3	0.481
13.483	0.000	6.23	0.00	1.15	5.3	0.482
13.500	0.000	6.25	0.00	1.15	5.3	0.483
13.517	0.000	6.27	0.00	1.16	5.3	0.485
13.533	0.000	6.30	0.00	1.16	5.4	0.486
13.550	0.000	6.33	0.00	1.16	5.4	0.487
13.567	0.000	6.36	0.00	1.16	5.4	0.489
13.583	0.000	6.39	0.00	1.16	5.4	0.490
13.600	0.000	6.42	0.00	1.17	5.4	0.491
13.617	0.000	6.44	0.00	1.17	5.4	0.493
13.633	0.000	6.45	0.00	1.17	5.5	0.494
13.650	0.000	6.47	0.00	1.17	5.5	0.495
13.667	0.000	6.48	0.00	1.18	5.5	0.497
13.683	0.000	6.50	0.00	1.18	5.5	0.498
13.700	0.000	6.52	0.00	1.18	5.5	0.500
13.717	0.000	6.54	0.00	1.18	5.5	0.501
13.733	0.000	6.58	0.00	1.19	5.6	0.502
13.750	0.000	6.61	0.00	1.19	5.6	0.504
13.767	0.000	6.64	0.00	1.19	5.6	0.505
13.783	0.000	6.68	0.00	1.19	5.6	0.507
13.800	0.000	6.71	0.00	1.20	5.6	0.508
13.817	0.000	6.74	0.00	1.20	5.7	0.510
13.833	0.000	6.76	0.00	1.20	5.7	0.511
13.850	0.000	6.78	0.00	1.21	5.7	0.513
13.867	0.000	6.79	0.00	1.21	5.7	0.514
13.883	0.000	6.81	0.00	1.21	5.7	0.516
13.900	0.000	6.83	0.00	1.21	5.7	0.517
13.917	0.000	6.85	0.00	1.22	5.8	0.519
13.933	0.000	6.89	0.00	1.22	5.8	0.520
13.950	0.000	6.93	0.00	1.22	5.8	0.522
13.967	0.000	6.97	0.00	1.22	5.8	0.523

13.983	0.000	7.00	0.00	1.23	5.8	0.525
14.000	0.000	7.04	0.00	1.23	5.9	0.526
14.017	0.000	7.08	0.00	1.23	5.9	0.528
14.033	0.000	7.11	0.00	1.24	5.9	0.530
14.050	0.000	7.13	0.00	1.24	5.9	0.531
14.067	0.000	7.16	0.00	1.24	5.9	0.533
14.083	0.000	7.18	0.00	1.24	6.0	0.535
14.100	0.000	7.21	0.00	1.25	6.0	0.536
14.117	0.000	7.23	0.00	1.25	6.0	0.538
14.133	0.000	7.27	0.00	1.25	6.0	0.540
14.150	0.000	7.32	0.00	1.26	6.0	0.542
14.167	0.000	7.37	0.00	1.26	6.1	0.543
14.183	0.000	7.41	0.00	1.26	6.1	0.545
14.200	0.000	7.46	0.00	1.27	6.1	0.547
14.217	0.000	7.51	0.00	1.27	6.1	0.549
14.233	0.000	7.55	0.00	1.27	6.1	0.551
14.250	0.000	7.57	0.00	1.28	6.1	0.553
14.267	0.000	7.60	0.00	1.28	6.2	0.555
14.283	0.000	7.62	0.00	1.28	6.2	0.557
14.300	0.000	7.65	0.00	1.29	6.2	0.559
14.317	0.000	7.67	0.00	1.29	6.2	0.561
14.333	0.000	7.70	0.00	1.29	6.2	0.563
14.350	0.000	7.75	0.00	1.30	6.3	0.565
14.367	0.000	7.81	0.00	1.30	6.3	0.567
14.383	0.000	7.86	0.00	1.30	6.3	0.569
14.400	0.000	7.91	0.00	1.31	6.3	0.572
14.417	0.000	7.97	0.00	1.31	6.3	0.574
14.433	0.000	8.02	0.00	1.31	6.4	0.576
14.450	0.000	8.06	0.00	1.32	6.4	0.578
14.467	0.000	8.09	0.00	1.32	6.4	0.581
14.483	0.000	8.12	0.00	1.33	6.4	0.583
14.500	0.000	8.15	0.00	1.33	6.4	0.585
14.517	0.000	8.18	0.00	1.33	6.5	0.588
14.533	0.000	8.21	0.00	1.34	6.5	0.590
14.550	0.000	8.26	0.00	1.34	6.5	0.593
14.567	0.000	8.32	0.00	1.35	6.5	0.595
14.583	0.000	8.39	0.00	1.35	6.5	0.598
14.600	0.000	8.45	0.00	1.35	6.6	0.600
14.617	0.000	8.52	0.00	1.36	6.6	0.603
14.633	0.000	8.59	0.00	1.36	6.6	0.606
14.650	0.000	8.65	0.00	1.37	6.6	0.608
14.667	0.000	8.69	0.00	1.37	6.7	0.611
14.683	0.000	8.72	0.00	1.38	6.7	0.614
14.700	0.000	8.76	0.00	1.38	6.7	0.617
14.717	0.000	8.80	0.00	1.39	6.7	0.620
14.733	0.000	8.83	0.00	1.39	6.8	0.622
14.750	0.000	8.87	0.00	1.40	6.8	0.625
14.767	0.000	8.95	0.00	1.40	6.8	0.628
14.783	0.000	9.03	0.00	1.41	6.8	0.631
14.800	0.000	9.11	0.00	1.41	6.9	0.634

14.817	0.000	9.20	0.00	1.42	6.9	0.637
14.833	0.000	9.28	0.00	1.42	6.9	0.641
14.850	0.000	9.36	0.00	1.43	7.0	0.644
14.867	0.000	9.43	0.00	1.43	7.0	0.647
14.883	0.000	9.47	0.00	1.44	7.0	0.651
14.900	0.000	9.52	0.00	1.44	7.1	0.654
14.917	0.000	9.57	0.00	1.45	7.1	0.658
14.933	0.000	9.62	0.00	1.46	7.1	0.661
14.950	0.000	9.66	0.00	1.46	7.1	0.664
14.967	0.000	9.73	0.00	1.47	7.2	0.668
14.983	0.000	9.84	0.00	1.47	7.2	0.672
15.000	0.000	9.95	0.00	1.48	7.2	0.675
15.017	0.000	10.06	0.00	1.49	7.3	0.679
15.033	0.000	10.17	0.00	1.49	7.3	0.683
15.050	0.000	10.28	0.00	1.50	7.4	0.687
15.067	0.000	10.38	0.00	1.51	7.4	0.691
15.083	0.000	10.45	0.00	1.51	7.4	0.695
15.100	0.000	10.51	0.00	1.52	7.4	0.700
15.117	0.000	10.58	0.00	1.53	7.5	0.704
15.133	0.000	10.64	0.00	1.53	7.5	0.708
15.150	0.000	10.71	0.00	1.54	7.5	0.713
15.167	0.000	10.77	0.00	1.55	7.6	0.717
15.183	0.000	10.90	0.00	1.56	7.6	0.722
15.200	0.000	11.05	0.00	1.56	7.6	0.726
15.217	0.000	11.20	0.00	1.57	7.7	0.731
15.233	0.000	11.36	0.00	1.58	7.7	0.736
15.250	0.000	11.51	0.00	1.59	7.8	0.741
15.267	0.000	11.66	0.00	1.60	7.8	0.747
15.283	0.000	11.79	0.00	1.61	7.8	0.752
15.300	0.000	11.88	0.00	1.62	7.9	0.758
15.317	0.000	11.97	0.00	1.62	7.9	0.763
15.333	0.000	12.06	0.00	1.63	8.0	0.769
15.350	0.000	12.16	0.00	1.64	8.0	0.775
15.367	0.000	12.25	0.00	1.65	8.0	0.780
15.383	0.000	12.31	0.00	1.66	8.1	0.786
15.400	0.000	12.29	0.00	1.67	8.1	0.792
15.417	0.000	12.27	0.00	1.68	8.2	0.798
15.433	0.000	12.24	0.00	1.69	8.2	0.803
15.450	0.000	12.22	0.00	1.70	8.3	0.809
15.467	0.000	12.19	0.00	1.71	8.3	0.814
15.483	0.000	12.18	0.00	1.72	8.3	0.819
15.500	0.000	12.30	0.00	1.72	8.4	0.825
15.517	0.000	12.44	0.00	1.73	8.4	0.830
15.533	0.000	12.59	0.00	1.74	8.5	0.836
15.550	0.000	12.74	0.00	1.75	8.5	0.842
15.567	0.000	12.89	0.00	1.76	8.5	0.848
15.583	0.000	13.04	0.00	1.77	8.6	0.854
15.600	0.000	13.35	0.00	1.78	8.6	0.860
15.617	0.000	13.77	0.00	1.79	8.7	0.867
15.633	0.000	14.19	0.00	1.81	8.7	0.875

15.650	0.000	14.61	0.00	1.82	8.8	0.883
15.667	0.000	15.03	0.00	1.83	8.8	0.892
15.683	0.000	15.45	0.00	1.85	8.9	0.901
15.700	0.000	15.83	0.00	1.86	8.9	0.910
15.717	0.000	16.16	0.00	1.88	9.0	0.920
15.733	0.000	16.48	0.00	1.89	9.1	0.930
15.750	0.000	16.80	0.00	1.91	9.1	0.941
15.767	0.000	17.12	0.00	1.93	9.2	0.952
15.783	0.000	17.45	0.00	1.95	9.3	0.963
15.800	0.000	17.91	0.00	1.97	9.3	0.975
15.817	0.000	19.05	0.00	1.99	9.4	0.988
15.833	0.000	20.27	0.00	2.01	9.5	1.003
15.850	0.000	21.50	0.00	2.04	9.6	1.019
15.867	0.000	22.73	0.00	2.07	9.7	1.037
15.883	0.000	23.95	0.00	2.10	9.8	1.057
15.900	0.000	25.19	0.00	2.13	9.9	1.078
15.917	0.000	26.64	0.00	2.17	10.1	1.101
15.933	0.000	28.16	0.00	2.21	10.2	1.125
15.950	0.000	29.69	0.00	2.25	10.4	1.152
15.967	0.000	31.22	0.00	2.30	10.5	1.180
15.983	0.000	32.75	0.00	2.35	10.7	1.211
16.000	0.000	34.27	0.00	2.40	10.8	1.243
16.017	0.000	40.79	0.00	2.46	11.0	1.284
16.033	0.000	52.29	0.00	2.55	11.3	1.341
16.050	0.000	63.80	0.00	2.68	11.6	1.413
16.067	0.000	75.30	0.00	2.84	12.1	1.500
16.083	0.000	86.81	0.00	3.02	12.7	1.602
16.100	0.000	98.31	0.00	3.24	15.4	1.716
16.117	0.000	107.29	0.00	3.51	22.1	1.833
16.133	0.000	90.46	0.00	3.76	32.0	1.914
16.150	0.000	76.67	0.00	3.91	41.1	1.963
16.167	0.000	62.88	0.00	3.98	46.6	1.985
16.183	0.000	49.09	0.00	3.98	48.4	1.986
16.200	0.000	35.30	0.00	3.93	47.2	1.970
16.217	0.000	22.74	0.00	3.84	43.7	1.941
16.233	0.000	19.71	0.00	3.76	39.5	1.914
16.250	0.000	18.69	0.00	3.69	35.8	1.890
16.267	0.000	17.67	0.00	3.62	32.8	1.870
16.283	0.000	16.64	0.00	3.57	30.1	1.851
16.300	0.000	15.62	0.00	3.51	27.8	1.834
16.317	0.000	14.60	0.00	3.47	26.0	1.819
16.333	0.000	14.02	0.00	3.44	24.7	1.804
16.350	0.000	13.68	0.00	3.41	23.6	1.790
16.367	0.000	13.34	0.00	3.38	22.6	1.777
16.383	0.000	13.00	0.00	3.35	21.6	1.766
16.400	0.000	12.66	0.00	3.33	20.8	1.754
16.417	0.000	12.32	0.00	3.30	19.9	1.744
16.433	0.000	12.05	0.00	3.28	19.2	1.734
16.450	0.000	11.91	0.00	3.26	18.4	1.725
16.467	0.000	11.78	0.00	3.24	17.8	1.717

16.483	0.000	11.64	0.00	3.23	17.4	1.709
16.500	0.000	11.50	0.00	3.21	17.1	1.701
16.517	0.000	11.36	0.00	3.20	16.8	1.694
16.533	0.000	11.21	0.00	3.18	16.6	1.686
16.550	0.000	11.02	0.00	3.17	16.3	1.679
16.567	0.000	10.83	0.00	3.16	16.0	1.672
16.583	0.000	10.64	0.00	3.14	15.7	1.665
16.600	0.000	10.45	0.00	3.13	15.5	1.658
16.617	0.000	10.25	0.00	3.12	15.2	1.651
16.633	0.000	10.06	0.00	3.10	15.0	1.644
16.650	0.000	9.91	0.00	3.09	14.7	1.638
16.667	0.000	9.76	0.00	3.08	14.5	1.631
16.683	0.000	9.62	0.00	3.07	14.2	1.625
16.700	0.000	9.48	0.00	3.06	14.0	1.619
16.717	0.000	9.34	0.00	3.04	13.7	1.613
16.733	0.000	9.19	0.00	3.03	13.5	1.607
16.750	0.000	9.07	0.00	3.02	13.3	1.601
16.767	0.000	8.96	0.00	3.01	13.1	1.595
16.783	0.000	8.84	0.00	3.00	12.9	1.590
16.800	0.000	8.73	0.00	2.99	12.7	1.584
16.817	0.000	8.62	0.00	2.98	12.7	1.579
16.833	0.000	8.51	0.00	2.97	12.7	1.573
16.850	0.000	8.41	0.00	2.96	12.7	1.567
16.867	0.000	8.31	0.00	2.95	12.6	1.561
16.883	0.000	8.23	0.00	2.94	12.6	1.555
16.900	0.000	8.14	0.00	2.93	12.6	1.549
16.917	0.000	8.05	0.00	2.92	12.5	1.543
16.933	0.000	7.96	0.00	2.90	12.5	1.536
16.950	0.000	7.87	0.00	2.89	12.5	1.530
16.967	0.000	7.79	0.00	2.88	12.4	1.524
16.983	0.000	7.72	0.00	2.87	12.4	1.517
17.000	0.000	7.64	0.00	2.86	12.4	1.511
17.017	0.000	7.57	0.00	2.85	12.3	1.504
17.033	0.000	7.49	0.00	2.83	12.3	1.498
17.050	0.000	7.42	0.00	2.82	12.3	1.491
17.067	0.000	7.35	0.00	2.81	12.2	1.484
17.083	0.000	7.28	0.00	2.80	12.2	1.477
17.100	0.000	7.21	0.00	2.79	12.2	1.471
17.117	0.000	7.14	0.00	2.77	12.1	1.464
17.133	0.000	7.07	0.00	2.76	12.1	1.457
17.150	0.000	7.00	0.00	2.75	12.1	1.450
17.167	0.000	6.94	0.00	2.74	12.0	1.443
17.183	0.000	6.89	0.00	2.72	12.0	1.436
17.200	0.000	6.83	0.00	2.71	11.9	1.429
17.217	0.000	6.78	0.00	2.70	11.9	1.422
17.233	0.000	6.72	0.00	2.69	11.9	1.415
17.250	0.000	6.67	0.00	2.67	11.8	1.408
17.267	0.000	6.62	0.00	2.66	11.8	1.401
17.283	0.000	6.57	0.00	2.65	11.7	1.393
17.300	0.000	6.52	0.00	2.64	11.7	1.386

17.317	0.000	6.48	0.00	2.62	11.7	1.379
17.333	0.000	6.43	0.00	2.61	11.6	1.372
17.350	0.000	6.38	0.00	2.60	11.6	1.365
17.367	0.000	6.34	0.00	2.59	11.5	1.358
17.383	0.000	6.29	0.00	2.57	11.5	1.350
17.400	0.000	6.25	0.00	2.56	11.5	1.343
17.417	0.000	6.21	0.00	2.55	11.4	1.336
17.433	0.000	6.17	0.00	2.53	11.4	1.329
17.450	0.000	6.13	0.00	2.52	11.3	1.322
17.467	0.000	6.09	0.00	2.51	11.3	1.315
17.483	0.000	6.05	0.00	2.50	11.3	1.307
17.500	0.000	6.01	0.00	2.48	11.2	1.300
17.517	0.000	5.97	0.00	2.47	11.2	1.293
17.533	0.000	5.94	0.00	2.46	11.1	1.286
17.550	0.000	5.90	0.00	2.45	11.1	1.279
17.567	0.000	5.86	0.00	2.44	11.1	1.271
17.583	0.000	5.83	0.00	2.43	11.0	1.264
17.600	0.000	5.79	0.00	2.42	11.0	1.257
17.617	0.000	5.76	0.00	2.41	11.0	1.250
17.633	0.000	5.73	0.00	2.40	10.9	1.243
17.650	0.000	5.69	0.00	2.38	10.9	1.236
17.667	0.000	5.66	0.00	2.37	10.8	1.229
17.683	0.000	5.63	0.00	2.36	10.8	1.221
17.700	0.000	5.60	0.00	2.35	10.8	1.214
17.717	0.000	5.57	0.00	2.34	10.7	1.207
17.733	0.000	5.54	0.00	2.33	10.7	1.200
17.750	0.000	5.51	0.00	2.32	10.7	1.193
17.767	0.000	5.48	0.00	2.31	10.6	1.186
17.783	0.000	5.45	0.00	2.29	10.6	1.179
17.800	0.000	5.42	0.00	2.28	10.6	1.172
17.817	0.000	5.39	0.00	2.27	10.5	1.165
17.833	0.000	5.37	0.00	2.26	10.5	1.158
17.850	0.000	5.34	0.00	2.25	10.4	1.151
17.867	0.000	5.31	0.00	2.24	10.4	1.144
17.883	0.000	5.28	0.00	2.23	10.4	1.137
17.900	0.000	5.26	0.00	2.22	10.3	1.130
17.917	0.000	5.23	0.00	2.21	10.3	1.123
17.933	0.000	5.21	0.00	2.19	10.2	1.116
17.950	0.000	5.18	0.00	2.18	10.2	1.109
17.967	0.000	5.16	0.00	2.17	10.2	1.102
17.983	0.000	5.13	0.00	2.16	10.1	1.095
18.000	0.000	5.08	0.00	2.15	10.1	1.088
18.017	0.000	4.96	0.00	2.14	10.0	1.081
18.033	0.000	4.83	0.00	2.13	10.0	1.074
18.050	0.000	4.69	0.00	2.11	10.0	1.067
18.067	0.000	4.56	0.00	2.10	9.9	1.059
18.083	0.000	4.43	0.00	2.09	9.9	1.052
18.100	0.000	4.30	0.00	2.08	9.8	1.044
18.117	0.000	4.22	0.00	2.07	9.8	1.037
18.133	0.000	4.15	0.00	2.05	9.7	1.029

18.150	0.000	4.08	0.00	2.04	9.7	1.021
18.167	0.000	4.00	0.00	2.03	9.6	1.013
18.183	0.000	3.93	0.00	2.02	9.6	1.006
18.200	0.000	3.86	0.00	2.00	9.5	0.998
18.217	0.000	3.82	0.00	1.99	9.5	0.990
18.233	0.000	3.80	0.00	1.98	9.4	0.982
18.250	0.000	3.78	0.00	1.97	9.4	0.975
18.267	0.000	3.77	0.00	1.95	9.4	0.967
18.283	0.000	3.75	0.00	1.94	9.3	0.959
18.300	0.000	3.73	0.00	1.93	9.3	0.952
18.317	0.000	3.71	0.00	1.92	9.2	0.944
18.333	0.000	3.69	0.00	1.90	9.2	0.936
18.350	0.000	3.68	0.00	1.89	9.1	0.929
18.367	0.000	3.66	0.00	1.88	9.1	0.922
18.383	0.000	3.64	0.00	1.87	9.0	0.914
18.400	0.000	3.63	0.00	1.86	9.0	0.907
18.417	0.000	3.61	0.00	1.85	8.9	0.900
18.433	0.000	3.59	0.00	1.83	8.9	0.892
18.450	0.000	3.58	0.00	1.82	8.8	0.885
18.467	0.000	3.56	0.00	1.81	8.8	0.878
18.483	0.000	3.55	0.00	1.80	8.7	0.871
18.500	0.000	3.53	0.00	1.79	8.7	0.864
18.517	0.000	3.52	0.00	1.78	8.6	0.857
18.533	0.000	3.50	0.00	1.77	8.6	0.850
18.550	0.000	3.49	0.00	1.75	8.5	0.843
18.567	0.000	3.47	0.00	1.74	8.5	0.836
18.583	0.000	3.46	0.00	1.73	8.5	0.829
18.600	0.000	3.44	0.00	1.72	8.4	0.822
18.617	0.000	3.43	0.00	1.71	8.3	0.815
18.633	0.000	3.41	0.00	1.70	8.3	0.808
18.650	0.000	3.40	0.00	1.69	8.2	0.802
18.667	0.000	3.39	0.00	1.68	8.2	0.795
18.683	0.000	3.37	0.00	1.67	8.2	0.789
18.700	0.000	3.36	0.00	1.66	8.1	0.782
18.717	0.000	3.34	0.00	1.64	8.1	0.776
18.733	0.000	3.33	0.00	1.63	8.0	0.769
18.750	0.000	3.32	0.00	1.62	8.0	0.763
18.767	0.000	3.31	0.00	1.61	7.9	0.756
18.783	0.000	3.29	0.00	1.60	7.9	0.750
18.800	0.000	3.28	0.00	1.59	7.8	0.744
18.817	0.000	3.27	0.00	1.58	7.8	0.738
18.833	0.000	3.25	0.00	1.57	7.7	0.731
18.850	0.000	3.24	0.00	1.56	7.7	0.725
18.867	0.000	3.23	0.00	1.55	7.6	0.719
18.883	0.000	3.22	0.00	1.54	7.6	0.713
18.900	0.000	3.21	0.00	1.53	7.5	0.707
18.917	0.000	3.19	0.00	1.52	7.5	0.701
18.933	0.000	3.18	0.00	1.51	7.5	0.695
18.950	0.000	3.17	0.00	1.50	7.4	0.690
18.967	0.000	3.16	0.00	1.49	7.4	0.684

18.983	0.000	3.15	0.00	1.49	7.3	0.678
19.000	0.000	3.14	0.00	1.48	7.3	0.672
19.017	0.000	3.12	0.00	1.47	7.2	0.667
19.033	0.000	3.11	0.00	1.46	7.2	0.661
19.050	0.000	3.10	0.00	1.45	7.1	0.656
19.067	0.000	3.09	0.00	1.44	7.1	0.650
19.083	0.000	3.08	0.00	1.43	7.0	0.645
19.100	0.000	3.07	0.00	1.42	7.0	0.639
19.117	0.000	3.06	0.00	1.41	6.9	0.634
19.133	0.000	3.05	0.00	1.40	6.9	0.629
19.150	0.000	3.04	0.00	1.39	6.8	0.624
19.167	0.000	3.03	0.00	1.39	6.8	0.619
19.183	0.000	3.02	0.00	1.38	6.7	0.613
19.200	0.000	3.01	0.00	1.37	6.7	0.608
19.217	0.000	3.00	0.00	1.36	6.6	0.603
19.233	0.000	2.99	0.00	1.35	6.6	0.598
19.250	0.000	2.98	0.00	1.34	6.5	0.593
19.267	0.000	2.97	0.00	1.33	6.5	0.589
19.283	0.000	2.96	0.00	1.33	6.5	0.584
19.300	0.000	2.95	0.00	1.32	6.4	0.579
19.317	0.000	2.94	0.00	1.31	6.4	0.574
19.333	0.000	2.93	0.00	1.30	6.3	0.570
19.350	0.000	2.92	0.00	1.30	6.3	0.565
19.367	0.000	2.91	0.00	1.29	6.2	0.560
19.383	0.000	2.90	0.00	1.28	6.2	0.556
19.400	0.000	2.89	0.00	1.27	6.2	0.551
19.417	0.000	2.88	0.00	1.26	6.1	0.547
19.433	0.000	2.87	0.00	1.26	6.1	0.543
19.450	0.000	2.87	0.00	1.25	6.0	0.538
19.467	0.000	2.86	0.00	1.24	6.0	0.534
19.483	0.000	2.85	0.00	1.24	5.9	0.530
19.500	0.000	2.84	0.00	1.23	5.9	0.525
19.517	0.000	2.83	0.00	1.22	5.8	0.521
19.533	0.000	2.82	0.00	1.21	5.8	0.517
19.550	0.000	2.81	0.00	1.21	5.7	0.513
19.567	0.000	2.80	0.00	1.20	5.7	0.509
19.583	0.000	2.80	0.00	1.19	5.6	0.505
19.600	0.000	2.79	0.00	1.19	5.6	0.501
19.617	0.000	2.78	0.00	1.18	5.5	0.498
19.633	0.000	2.77	0.00	1.17	5.5	0.494
19.650	0.000	2.76	0.00	1.17	5.4	0.490
19.667	0.000	2.75	0.00	1.16	5.4	0.487
19.683	0.000	2.75	0.00	1.15	5.4	0.483
19.700	0.000	2.74	0.00	1.15	5.3	0.479
19.717	0.000	2.73	0.00	1.14	5.3	0.476
19.733	0.000	2.72	0.00	1.13	5.2	0.472
19.750	0.000	2.72	0.00	1.13	5.2	0.469
19.767	0.000	2.71	0.00	1.12	5.1	0.466
19.783	0.000	2.70	0.00	1.12	5.1	0.462
19.800	0.000	2.69	0.00	1.11	5.1	0.459

19.817	0.000	2.68	0.00	1.10	5.0	0.456
19.833	0.000	2.68	0.00	1.10	5.0	0.453
19.850	0.000	2.67	0.00	1.09	4.9	0.450
19.867	0.000	2.66	0.00	1.09	4.9	0.447
19.883	0.000	2.65	0.00	1.08	4.9	0.444
19.900	0.000	2.65	0.00	1.08	4.8	0.441
19.917	0.000	2.64	0.00	1.07	4.8	0.438
19.933	0.000	2.63	0.00	1.07	4.7	0.435
19.950	0.000	2.63	0.00	1.06	4.7	0.432
19.967	0.000	2.62	0.00	1.06	4.7	0.429
19.983	0.000	2.61	0.00	1.05	4.6	0.426
20.000	0.000	2.60	0.00	1.05	4.6	0.424

PROCESS SUMMARY OF STORAGE:

INFLOW VOLUME = 8.898 AF
 BASIN STORAGE = 0.054 AF (WITH 0.000 AF INITIALLY FILLED)
 OUTFLOW VOLUME = 8.843 AF
 LOSS VOLUME = 0.000 AF

FLOW PROCESS FROM NODE 330.00 TO NODE 700.00 IS CODE = 1.2

>>>>SUBAREA RUNOFF (SMALL AREA UNIT-HYDROGRAPH ANALYSIS) <<<<<

(SMALL AREA UNIT-HYDROGRAPH ADDED TO STREAM #2)

RATIONAL METHOD CALIBRATION COEFFICIENT = 0.90
 TOTAL CATCHMENT AREA(ACRES) = 21.50
 SOIL-LOSS RATE, Fm,(INCH/HR) = 0.030
 LOW LOSS FRACTION = 0.040
 TIME OF CONCENTRATION(MIN.) = 6.92
 SMALL AREA PEAK Q COMPUTED USING PEAK FLOW RATE FORMULA
 ORANGE COUNTY "VALLEY" RAINFALL VALUES ARE USED:
 RETURN FREQUENCY(YEARS) = 100
 5-MINUTE POINT RAINFALL VALUE(INCHES) = 0.52
 30-MINUTE POINT RAINFALL VALUE(INCHES) = 1.09
 1-HOUR POINT RAINFALL VALUE(INCHES) = 1.45
 3-HOUR POINT RAINFALL VALUE(INCHES) = 2.43
 6-HOUR POINT RAINFALL VALUE(INCHES) = 3.36
 24-HOUR POINT RAINFALL VALUE(INCHES) = 5.63

TOTAL CATCHMENT RUNOFF VOLUME(ACRE-FEET) = 8.69
 TOTAL CATCHMENT SOIL-LOSS VOLUME(ACRE-FEET) = 1.39

▲

24 - HOUR STORM
 RUNOFF HYDROGRAPH

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

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	24.8	49.6	74.4	99.2
10.000	1.7331	2.97	.Q	V	.	.	.
10.017	1.7372	2.97	.Q	V	.	.	.
10.033	1.7413	2.98	.Q	V	.	.	.
10.050	1.7454	2.98	.Q	V	.	.	.
10.067	1.7495	2.99	.Q	V	.	.	.
10.083	1.7536	3.00	.Q	V	.	.	.
10.100	1.7578	3.00	.Q	V	.	.	.
10.117	1.7619	3.01	.Q	V	.	.	.
10.133	1.7661	3.02	.Q	V	.	.	.
10.150	1.7702	3.02	.Q	V	.	.	.
10.167	1.7744	3.02	.Q	V	.	.	.
10.183	1.7786	3.03	.Q	V	.	.	.
10.200	1.7828	3.03	.Q	V	.	.	.
10.217	1.7869	3.04	.Q	V	.	.	.
10.233	1.7911	3.04	.Q	V	.	.	.
10.250	1.7953	3.04	.Q	V	.	.	.
10.267	1.7995	3.05	.Q	V	.	.	.
10.283	1.8037	3.06	.Q	V	.	.	.
10.300	1.8080	3.07	.Q	V	.	.	.
10.317	1.8122	3.07	.Q	V	.	.	.
10.333	1.8164	3.08	.Q	V	.	.	.
10.350	1.8207	3.09	.Q	V	.	.	.
10.367	1.8249	3.09	.Q	V	.	.	.
10.383	1.8292	3.10	.Q	V	.	.	.
10.400	1.8335	3.10	.Q	V	.	.	.
10.417	1.8378	3.11	.Q	V	.	.	.
10.433	1.8420	3.11	.Q	V	.	.	.
10.450	1.8463	3.11	.Q	V	.	.	.
10.467	1.8506	3.12	.Q	V	.	.	.
10.483	1.8549	3.12	.Q	V	.	.	.
10.500	1.8592	3.13	.Q	V	.	.	.
10.517	1.8636	3.14	.Q	V	.	.	.
10.533	1.8679	3.15	.Q	V	.	.	.
10.550	1.8722	3.15	.Q	V	.	.	.
10.567	1.8766	3.16	.Q	V	.	.	.
10.583	1.8810	3.17	.Q	V	.	.	.
10.600	1.8853	3.18	.Q	V	.	.	.
10.617	1.8897	3.18	.Q	V	.	.	.

10.633	1.8941	3.18	.Q	V .	.	.	.
10.650	1.8985	3.19	.Q	V .	.	.	.
10.667	1.9029	3.19	.Q	V .	.	.	.
10.683	1.9073	3.20	.Q	V .	.	.	.
10.700	1.9117	3.20	.Q	V .	.	.	.
10.717	1.9161	3.21	.Q	V .	.	.	.
10.733	1.9206	3.22	.Q	V .	.	.	.
10.750	1.9250	3.22	.Q	V .	.	.	.
10.767	1.9294	3.23	.Q	V .	.	.	.
10.783	1.9339	3.24	.Q	V .	.	.	.
10.800	1.9384	3.25	.Q	V .	.	.	.
10.817	1.9429	3.26	.Q	V .	.	.	.
10.833	1.9474	3.26	.Q	V .	.	.	.
10.850	1.9519	3.27	.Q	V .	.	.	.
10.867	1.9564	3.27	.Q	V .	.	.	.
10.883	1.9609	3.28	.Q	V .	.	.	.
10.900	1.9654	3.28	.Q	V .	.	.	.
10.917	1.9699	3.28	.Q	V .	.	.	.
10.933	1.9745	3.29	.Q	V .	.	.	.
10.950	1.9790	3.30	.Q	V .	.	.	.
10.967	1.9836	3.31	.Q	V .	.	.	.
10.983	1.9881	3.32	.Q	V .	.	.	.
11.000	1.9927	3.33	.Q	V .	.	.	.
11.017	1.9973	3.33	.Q	V .	.	.	.
11.033	2.0019	3.34	.Q	V .	.	.	.
11.050	2.0065	3.35	.Q	V .	.	.	.
11.067	2.0111	3.36	.Q	V .	.	.	.
11.083	2.0158	3.36	.Q	V .	.	.	.
11.100	2.0204	3.37	.Q	V .	.	.	.
11.117	2.0251	3.37	.Q	V .	.	.	.
11.133	2.0297	3.38	.Q	V .	.	.	.
11.150	2.0344	3.38	.Q	V .	.	.	.
11.167	2.0390	3.39	.Q	V .	.	.	.
11.183	2.0437	3.40	.Q	V .	.	.	.
11.200	2.0484	3.41	.Q	V .	.	.	.
11.217	2.0531	3.42	.Q	V .	.	.	.
11.233	2.0578	3.42	.Q	V .	.	.	.
11.250	2.0625	3.43	.Q	V .	.	.	.
11.267	2.0673	3.44	.Q	V .	.	.	.
11.283	2.0720	3.45	.Q	V .	.	.	.
11.300	2.0768	3.46	.Q	V .	.	.	.
11.317	2.0816	3.46	.Q	V .	.	.	.
11.333	2.0864	3.47	.Q	V .	.	.	.
11.350	2.0911	3.47	.Q	V .	.	.	.
11.367	2.0959	3.48	.Q	V .	.	.	.
11.383	2.1007	3.48	.Q	V .	.	.	.
11.400	2.1055	3.49	.Q	V .	.	.	.
11.417	2.1104	3.50	.Q	V .	.	.	.
11.433	2.1152	3.51	.Q	V .	.	.	.
11.450	2.1200	3.52	.Q	V .	.	.	.

11.467	2.1249	3.53	.Q	V .	.	.	.
11.483	2.1298	3.54	.Q	V .	.	.	.
11.500	2.1347	3.55	.Q	V .	.	.	.
11.517	2.1396	3.56	.Q	V .	.	.	.
11.533	2.1445	3.57	.Q	V .	.	.	.
11.550	2.1494	3.57	.Q	V .	.	.	.
11.567	2.1544	3.58	.Q	V .	.	.	.
11.583	2.1593	3.58	.Q	V .	.	.	.
11.600	2.1642	3.59	.Q	V .	.	.	.
11.617	2.1692	3.60	.Q	V .	.	.	.
11.633	2.1742	3.60	.Q	V	.	.	.
11.650	2.1791	3.62	.Q	V	.	.	.
11.667	2.1841	3.63	.Q	V	.	.	.
11.683	2.1891	3.64	.Q	V	.	.	.
11.700	2.1942	3.65	.Q	V	.	.	.
11.717	2.1992	3.66	.Q	V	.	.	.
11.733	2.2043	3.67	.Q	V	.	.	.
11.750	2.2093	3.68	.Q	V	.	.	.
11.767	2.2144	3.69	.Q	V	.	.	.
11.783	2.2195	3.69	.Q	V	.	.	.
11.800	2.2246	3.70	.Q	V	.	.	.
11.817	2.2297	3.70	.Q	V	.	.	.
11.833	2.2348	3.71	.Q	V	.	.	.
11.850	2.2399	3.72	.Q	V	.	.	.
11.867	2.2451	3.73	.Q	V	.	.	.
11.883	2.2502	3.74	.Q	V	.	.	.
11.900	2.2554	3.75	.Q	V	.	.	.
11.917	2.2606	3.76	.Q	V	.	.	.
11.933	2.2658	3.78	.Q	V	.	.	.
11.950	2.2710	3.79	.Q	V	.	.	.
11.967	2.2762	3.80	.Q	V	.	.	.
11.983	2.2815	3.81	.Q	V	.	.	.
12.000	2.2868	3.82	.Q	V	.	.	.
12.017	2.2920	3.83	.Q	V	.	.	.
12.033	2.2973	3.84	.Q	V	.	.	.
12.050	2.3026	3.85	.Q	V	.	.	.
12.067	2.3079	3.86	.Q	V	.	.	.
12.083	2.3133	3.88	.Q	V	.	.	.
12.100	2.3188	3.99	.Q	V	.	.	.
12.117	2.3245	4.15	.Q	V	.	.	.
12.133	2.3304	4.30	.Q	V	.	.	.
12.150	2.3366	4.46	.Q	V	.	.	.
12.167	2.3429	4.61	.Q	V	.	.	.
12.183	2.3495	4.77	.Q	V	.	.	.
12.200	2.3562	4.91	.Q	V	.	.	.
12.217	2.3631	4.95	.Q	V	.	.	.
12.233	2.3699	4.96	.Q	V	.	.	.
12.250	2.3767	4.96	. Q	V	.	.	.
12.267	2.3836	4.97	. Q	V	.	.	.
12.283	2.3904	4.98	. Q	V	.	.	.

12.300	2.3973	4.99	. Q	.V	.	.	.
12.317	2.4042	4.99	. Q	.V	.	.	.
12.333	2.4111	5.01	. Q	.V	.	.	.
12.350	2.4180	5.02	. Q	.V	.	.	.
12.367	2.4249	5.04	. Q	.V	.	.	.
12.383	2.4319	5.06	. Q	.V	.	.	.
12.400	2.4389	5.07	. Q	.V	.	.	.
12.417	2.4459	5.09	. Q	.V	.	.	.
12.433	2.4529	5.10	. Q	.V	.	.	.
12.450	2.4600	5.11	. Q	.V	.	.	.
12.467	2.4670	5.12	. Q	.V	.	.	.
12.483	2.4741	5.13	. Q	.V	.	.	.
12.500	2.4812	5.14	. Q	.V	.	.	.
12.517	2.4883	5.15	. Q	.V	.	.	.
12.533	2.4954	5.16	. Q	.V	.	.	.
12.550	2.5025	5.17	. Q	.V	.	.	.
12.567	2.5096	5.18	. Q	.V	.	.	.
12.583	2.5168	5.20	. Q	.V	.	.	.
12.600	2.5240	5.22	. Q	.V	.	.	.
12.617	2.5312	5.24	. Q	.V	.	.	.
12.633	2.5384	5.25	. Q	.V	.	.	.
12.650	2.5457	5.27	. Q	.V	.	.	.
12.667	2.5530	5.29	. Q	.V	.	.	.
12.683	2.5602	5.30	. Q	.V	.	.	.
12.700	2.5676	5.31	. Q	.V	.	.	.
12.717	2.5749	5.31	. Q	.V	.	.	.
12.733	2.5822	5.32	. Q	.V	.	.	.
12.750	2.5896	5.33	. Q	.V	.	.	.
12.767	2.5969	5.34	. Q	.V	.	.	.
12.783	2.6043	5.35	. Q	.V	.	.	.
12.800	2.6117	5.37	. Q	.V	.	.	.
12.817	2.6191	5.39	. Q	.V	.	.	.
12.833	2.6266	5.41	. Q	.V	.	.	.
12.850	2.6341	5.43	. Q	.V	.	.	.
12.867	2.6416	5.45	. Q	.V	.	.	.
12.883	2.6491	5.47	. Q	.V	.	.	.
12.900	2.6567	5.49	. Q	.V	.	.	.
12.917	2.6642	5.50	. Q	.V	.	.	.
12.933	2.6718	5.51	. Q	.V	.	.	.
12.950	2.6794	5.52	. Q	.V	.	.	.
12.967	2.6871	5.53	. Q	.V	.	.	.
12.983	2.6947	5.54	. Q	.V	.	.	.
13.000	2.7023	5.55	. Q	.V	.	.	.
13.017	2.7100	5.57	. Q	.V	.	.	.
13.033	2.7177	5.59	. Q	.V	.	.	.
13.050	2.7254	5.61	. Q	.V	.	.	.
13.067	2.7332	5.63	. Q	.V	.	.	.
13.083	2.7410	5.65	. Q	.V	.	.	.
13.100	2.7488	5.68	. Q	.V	.	.	.
13.117	2.7566	5.70	. Q	.V	.	.	.

13.133	2.7645	5.71	. Q	. V	.	.	.
13.150	2.7724	5.73	. Q	. V	.	.	.
13.167	2.7803	5.74	. Q	. V	.	.	.
13.183	2.7882	5.75	. Q	. V	.	.	.
13.200	2.7962	5.76	. Q	. V	.	.	.
13.217	2.8041	5.77	. Q	. V	.	.	.
13.233	2.8121	5.78	. Q	. V	.	.	.
13.250	2.8201	5.80	. Q	. V	.	.	.
13.267	2.8281	5.83	. Q	. V	.	.	.
13.283	2.8362	5.85	. Q	. V	.	.	.
13.300	2.8443	5.88	. Q	. V	.	.	.
13.317	2.8524	5.90	. Q	. V	.	.	.
13.333	2.8606	5.93	. Q	. V	.	.	.
13.350	2.8688	5.95	. Q	. V	.	.	.
13.367	2.8770	5.97	. Q	. V	.	.	.
13.383	2.8852	5.98	. Q	. V	.	.	.
13.400	2.8935	6.00	. Q	. V	.	.	.
13.417	2.9018	6.01	. Q	. V	.	.	.
13.433	2.9100	6.02	. Q	. V	.	.	.
13.450	2.9184	6.04	. Q	. V	.	.	.
13.467	2.9267	6.05	. Q	. V	.	.	.
13.483	2.9351	6.07	. Q	. V	.	.	.
13.500	2.9435	6.10	. Q	. V	.	.	.
13.517	2.9519	6.13	. Q	. V	.	.	.
13.533	2.9604	6.16	. Q	. V	.	.	.
13.550	2.9689	6.19	. Q	. V	.	.	.
13.567	2.9775	6.21	. Q	. V	.	.	.
13.583	2.9861	6.24	. Q	. V	.	.	.
13.600	2.9947	6.26	. Q	. V	.	.	.
13.617	3.0033	6.28	. Q	. V	.	.	.
13.633	3.0120	6.29	. Q	. V	.	.	.
13.650	3.0207	6.31	. Q	. V	.	.	.
13.667	3.0294	6.32	. Q	. V	.	.	.
13.683	3.0381	6.34	. Q	. V	.	.	.
13.700	3.0469	6.35	. Q	. V	.	.	.
13.717	3.0557	6.38	. Q	. V	.	.	.
13.733	3.0645	6.41	. Q	. V	.	.	.
13.750	3.0734	6.45	. Q	. V	.	.	.
13.767	3.0823	6.48	. Q	. V	.	.	.
13.783	3.0913	6.51	. Q	. V	.	.	.
13.800	3.1003	6.55	. Q	. V	.	.	.
13.817	3.1093	6.58	. Q	. V	.	.	.
13.833	3.1184	6.60	. Q	. V	.	.	.
13.850	3.1275	6.61	. Q	. V	.	.	.
13.867	3.1367	6.63	. Q	. V	.	.	.
13.883	3.1458	6.65	. Q	. V	.	.	.
13.900	3.1550	6.67	. Q	. V	.	.	.
13.917	3.1642	6.68	. Q	. V	.	.	.
13.933	3.1735	6.70	. Q	. V	.	.	.
13.950	3.1827	6.74	. Q	. V	.	.	.

13.967	3.1921	6.78	. Q	.	V	.	.	.
13.983	3.2015	6.82	. Q	.	V	.	.	.
14.000	3.2109	6.86	. Q	.	V	.	.	.
14.017	3.2204	6.89	. Q	.	V	.	.	.
14.033	3.2300	6.93	. Q	.	V	.	.	.
14.050	3.2396	6.97	. Q	.	V	.	.	.
14.067	3.2492	7.00	. Q	.	V	.	.	.
14.083	3.2589	7.02	. Q	.	V	.	.	.
14.100	3.2686	7.05	. Q	.	V	.	.	.
14.117	3.2783	7.07	. Q	.	V	.	.	.
14.133	3.2881	7.10	. Q	.	V	.	.	.
14.150	3.2979	7.13	. Q	.	V	.	.	.
14.167	3.3078	7.16	. Q	.	V	.	.	.
14.183	3.3177	7.20	. Q	.	V	.	.	.
14.200	3.3277	7.25	. Q	.	V	.	.	.
14.217	3.3377	7.29	. Q	.	V	.	.	.
14.233	3.3478	7.34	. Q	.	V	.	.	.
14.250	3.3580	7.39	. Q	.	V	.	.	.
14.267	3.3682	7.43	. Q	.	V	.	.	.
14.283	3.3785	7.47	. Q	.	V	.	.	.
14.300	3.3889	7.50	. Q	.	V	.	.	.
14.317	3.3992	7.52	. Q	.	V	.	.	.
14.333	3.4096	7.55	. Q	.	V	.	.	.
14.350	3.4200	7.57	. Q	.	V	.	.	.
14.367	3.4305	7.60	. Q	.	V	.	.	.
14.383	3.4410	7.62	. Q	.	V	.	.	.
14.400	3.4516	7.66	. Q	.	V	.	.	.
14.417	3.4622	7.71	. Q	.	V	.	.	.
14.433	3.4729	7.77	. Q	.	V	.	.	.
14.450	3.4837	7.83	. Q	.	V	.	.	.
14.467	3.4945	7.88	. Q	.	V	.	.	.
14.483	3.5054	7.94	. Q	.	V	.	.	.
14.500	3.5165	7.99	. Q	.	V	.	.	.
14.517	3.5275	8.04	. Q	.	V	.	.	.
14.533	3.5386	8.07	. Q	.	V	.	.	.
14.550	3.5498	8.10	. Q	.	V	.	.	.
14.567	3.5610	8.13	. Q	.	V	.	.	.
14.583	3.5722	8.16	. Q	.	V	.	.	.
14.600	3.5835	8.19	. Q	.	V	.	.	.
14.617	3.5949	8.22	. Q	.	V	.	.	.
14.633	3.6063	8.28	. Q	.	V	.	.	.
14.650	3.6178	8.35	. Q	.	V	.	.	.
14.667	3.6294	8.42	. Q	.	V	.	.	.
14.683	3.6410	8.49	. Q	.	V	.	.	.
14.700	3.6528	8.56	. Q	.	V	.	.	.
14.717	3.6647	8.63	. Q	.	V	.	.	.
14.733	3.6767	8.70	. Q	.	V	.	.	.
14.750	3.6888	8.75	. Q	.	V	.	.	.
14.767	3.7009	8.79	. Q	.	V	.	.	.
14.783	3.7130	8.83	. Q	.	V	.	.	.

14.800	3.7252	8.87	. Q	.	V	.	.	.
14.817	3.7375	8.91	. Q	.	V	.	.	.
14.833	3.7498	8.95	. Q	.	V	.	.	.
14.850	3.7622	8.99	. Q	.	V	.	.	.
14.867	3.7747	9.07	. Q	.	V	.	.	.
14.883	3.7873	9.16	. Q	.	V	.	.	.
14.900	3.8001	9.25	. Q	.	V	.	.	.
14.917	3.8129	9.34	. Q	.	V	.	.	.
14.933	3.8259	9.44	. Q	.	V	.	.	.
14.950	3.8391	9.53	. Q	.	V	.	.	.
14.967	3.8523	9.62	. Q	.	V	.	.	.
14.983	3.8657	9.68	. Q	.	V	.	.	.
15.000	3.8791	9.74	. Q	.	V	.	.	.
15.017	3.8925	9.79	. Q	.	V	.	.	.
15.033	3.9061	9.84	. Q	.	V	.	.	.
15.050	3.9197	9.90	. Q	.	V	.	.	.
15.067	3.9334	9.95	. Q	.	V	.	.	.
15.083	3.9472	10.01	. Q	.	V	.	.	.
15.100	3.9612	10.12	. Q	.	V	.	.	.
15.117	3.9753	10.25	. Q	.	V	.	.	.
15.133	3.9896	10.38	. Q	.	V	.	.	.
15.150	4.0041	10.51	. Q	.	V	.	.	.
15.167	4.0187	10.64	. Q	.	V	.	.	.
15.183	4.0336	10.77	. Q	.	V	.	.	.
15.200	4.0486	10.89	. Q	.	V	.	.	.
15.217	4.0637	10.98	. Q	.	V	.	.	.
15.233	4.0789	11.05	. Q	.	V	.	.	.
15.250	4.0942	11.13	. Q	.	V	.	.	.
15.267	4.1097	11.21	. Q	.	V	.	.	.
15.283	4.1252	11.29	. Q	.	V	.	.	.
15.300	4.1409	11.36	. Q	.	V	.	.	.
15.317	4.1566	11.44	. Q	.	V	.	.	.
15.333	4.1724	11.49	. Q	.	V	.	.	.
15.350	4.1883	11.53	. Q	.	V	.	.	.
15.367	4.2043	11.57	. Q	.	V	.	.	.
15.383	4.2203	11.62	. Q	.	V	.	.	.
15.400	4.2363	11.66	. Q	.	V	.	.	.
15.417	4.2524	11.70	. Q	.	V	.	.	.
15.433	4.2686	11.75	. Q	.	V	.	.	.
15.450	4.2849	11.80	. Q	.	V	.	.	.
15.467	4.3012	11.85	. Q	.	V	.	.	.
15.483	4.3176	11.90	. Q	.	V	.	.	.
15.500	4.3340	11.95	. Q	.	V	.	.	.
15.517	4.3506	12.00	. Q	.	V	.	.	.
15.533	4.3671	12.05	. Q	.	V	.	.	.
15.550	4.3839	12.17	. Q	.	V	.	.	.
15.567	4.4011	12.50	. Q	.	V	.	.	.
15.583	4.4188	12.86	. Q	.	V	.	.	.
15.600	4.4370	13.21	. Q	.	V	.	.	.
15.617	4.4557	13.57	. Q	.	V	.	.	.

15.633	4.4749	13.92	.	Q	.	V	.	.
15.650	4.4946	14.28	.	Q	.	V	.	.
15.667	4.5147	14.61	.	Q	.	V	.	.
15.683	4.5352	14.89	.	Q	.	V	.	.
15.700	4.5561	15.17	.	Q	.	V	.	.
15.717	4.5774	15.44	.	Q	.	.V	.	.
15.733	4.5990	15.72	.	Q	.	.V	.	.
15.750	4.6210	16.00	.	Q	.	.V	.	.
15.767	4.6435	16.28	.	Q	.	.V	.	.
15.783	4.6666	16.82	.	Q	.	.V	.	.
15.800	4.6912	17.85	.	Q	.	.V	.	.
15.817	4.7173	18.89	.	Q	.	.V	.	.
15.833	4.7447	19.93	.	Q	.	.V	.	.
15.850	4.7736	20.96	.	Q	.	.V	.	.
15.867	4.8039	22.00	.	Q	.	.V	.	.
15.883	4.8356	23.04	.	Q	.	.V	.	.
15.900	4.8689	24.18	.	Q	.	.V	.	.
15.917	4.9040	25.46	.	Q	.	.V	.	.
15.933	4.9408	26.74	.	Q	.	.V	.	.
15.950	4.9794	28.02	.	.Q	.	.V	.	.
15.967	5.0198	29.30	.	.Q	.	.V	.	.
15.983	5.0619	30.58	.	.Q	.	.V	.	.
16.000	5.1058	31.86	.	.Q	.	.V	.	.
16.017	5.1572	37.32	.	.	Q	.V	.	.
16.033	5.2218	46.95	.	.	Q	.V	.	.
16.050	5.2998	56.59	.	.	Q	V	.	.
16.067	5.3910	66.23	.	.	.	V	Q	.
16.083	5.4955	75.87	.	.	.	V	Q	.
16.100	5.6133	85.51	.	.	.	V	.	Q
16.117	5.7499	99.20	.	.	.	V	.	Q
16.133	5.8773	92.49	.	.	.	V	.	Q
16.150	5.9888	80.94	.	.	.	V	.	Q
16.167	6.0844	69.39	.	.	.	Q	.	.
16.183	6.1641	57.83	.	.	Q	V	.	.
16.200	6.2278	46.28	.	.	Q	V	.	.
16.217	6.2756	34.72	.	.	Q	V	.	.
16.233	6.3077	23.30	.	.	Q	V	.	.
16.250	6.3334	18.66	.	.	Q	V	.	.
16.267	6.3579	17.78	.	.	Q	V	.	.
16.283	6.3812	16.90	.	.	Q	V	.	.
16.300	6.4033	16.02	.	.	Q	V	.	.
16.317	6.4241	15.14	.	.	Q	V	.	.
16.333	6.4437	14.26	.	.	Q	V	.	.
16.350	6.4622	13.40	.	.	Q	V	.	.
16.367	6.4802	13.03	.	.	Q	V	.	.
16.383	6.4979	12.88	.	.	Q	V	.	.
16.400	6.5154	12.72	.	.	Q	V	.	.
16.417	6.5327	12.56	.	.	Q	V	.	.
16.433	6.5498	12.41	.	.	Q	V	.	.
16.450	6.5667	12.25	.	Q	.	.	V	.

16.467	6.5833	12.09	.	Q	.	.	.	V	.
16.483	6.5997	11.87	.	Q	.	.	.	V	.
16.500	6.6157	11.64	.	Q	.	.	.	V	.
16.517	6.6314	11.40	.	Q	.	.	.	V	.
16.533	6.6468	11.16	.	Q	.	.	.	V	.
16.550	6.6618	10.93	.	Q	.	.	.	V	.
16.567	6.6766	10.69	.	Q	.	.	.	V	.
16.583	6.6910	10.46	.	Q	.	.	.	V	.
16.600	6.7051	10.28	.	Q	.	.	.	V	.
16.617	6.7191	10.12	.	Q	.	.	.	V	.
16.633	6.7328	9.96	.	Q	.	.	.	V	.
16.650	6.7463	9.80	.	Q	.	.	.	.V	.
16.667	6.7596	9.63	.	Q	.	.	.	.V	.
16.683	6.7726	9.47	.	Q	.	.	.	.V	.
16.700	6.7854	9.31	.	Q	.	.	.	.V	.
16.717	6.7981	9.19	.	Q	.	.	.	.V	.
16.733	6.8106	9.07	.	Q	.	.	.	.V	.
16.750	6.8229	8.95	.	Q	.	.	.	.V	.
16.767	6.8351	8.83	.	Q	.	.	.	.V	.
16.783	6.8471	8.71	.	Q	.	.	.	.V	.
16.800	6.8589	8.59	.	Q	.	.	.	.V	.
16.817	6.8705	8.47	.	Q	.	.	.	.V	.
16.833	6.8821	8.37	.	Q	.	.	.	.V	.
16.850	6.8935	8.28	.	Q	.	.	.	.V	.
16.867	6.9048	8.19	.	Q	.	.	.	.V	.
16.883	6.9159	8.09	.	Q	.	.	.	.V	.
16.900	6.9269	8.00	.	Q	.	.	.	.V	.
16.917	6.9378	7.90	.	Q	.	.	.	.V	.
16.933	6.9486	7.81	.	Q	.	.	.	.V	.
16.950	6.9592	7.74	.	Q	.	.	.	.V	.
16.967	6.9698	7.66	.	Q	.	.	.	.V	.
16.983	6.9802	7.59	.	Q	.	.	.	.V	.
17.000	6.9906	7.51	.	Q	.	.	.	.V	.
17.017	7.0008	7.43	.	Q	.	.	.	.V	.
17.033	7.0110	7.36	.	Q	.	.	.	.V	.
17.050	7.0210	7.29	.	Q	.	.	.	.V	.
17.067	7.0309	7.22	.	Q	.	.	.	.V	.
17.083	7.0408	7.15	.	Q	.	.	.	.V	.
17.100	7.0505	7.08	.	Q	.	.	.	.V	.
17.117	7.0602	7.01	.	Q	.	.	.	.V	.
17.133	7.0698	6.94	.	Q	.	.	.	.V	.
17.150	7.0792	6.88	.	Q	.	.	.	.V	.
17.167	7.0886	6.81	.	Q	.	.	.	.V	.
17.183	7.0979	6.76	.	Q	.	.	.	.V	.
17.200	7.1072	6.71	.	Q	.	.	.	.V	.
17.217	7.1163	6.65	.	Q	.	.	.	.V	.
17.233	7.1254	6.60	.	Q	.	.	.	.V	.
17.250	7.1344	6.55	.	Q	.	.	.	.V	.
17.267	7.1434	6.50	.	Q	.	.	.	.V	.
17.283	7.1523	6.45	.	Q	.	.	.	.V	.

17.300	7.1611	6.40	. Q	.	.	. V	.
17.317	7.1698	6.35	. Q	.	.	. V	.
17.333	7.1785	6.31	. Q	.	.	. V	.
17.350	7.1872	6.26	. Q	.	.	. V	.
17.367	7.1957	6.22	. Q	.	.	. V	.
17.383	7.2042	6.17	. Q	.	.	. V	.
17.400	7.2127	6.13	. Q	.	.	. V	.
17.417	7.2211	6.09	. Q	.	.	. V	.
17.433	7.2294	6.05	. Q	.	.	. V	.
17.450	7.2377	6.01	. Q	.	.	. V	.
17.467	7.2459	5.97	. Q	.	.	. V	.
17.483	7.2541	5.93	. Q	.	.	. V	.
17.500	7.2622	5.89	. Q	.	.	. V	.
17.517	7.2702	5.85	. Q	.	.	. V	.
17.533	7.2783	5.82	. Q	.	.	. V	.
17.550	7.2862	5.78	. Q	.	.	. V	.
17.567	7.2941	5.75	. Q	.	.	. V	.
17.583	7.3020	5.71	. Q	.	.	. V	.
17.600	7.3098	5.68	. Q	.	.	. V	.
17.617	7.3176	5.64	. Q	.	.	. V	.
17.633	7.3253	5.61	. Q	.	.	. V	.
17.650	7.3330	5.58	. Q	.	.	. V	.
17.667	7.3407	5.55	. Q	.	.	. V	.
17.683	7.3483	5.52	. Q	.	.	. V	.
17.700	7.3558	5.49	. Q	.	.	. V	.
17.717	7.3634	5.46	. Q	.	.	. V	.
17.733	7.3708	5.43	. Q	.	.	. V	.
17.750	7.3783	5.40	. Q	.	.	. V	.
17.767	7.3857	5.37	. Q	.	.	. V	.
17.783	7.3930	5.34	. Q	.	.	. V	.
17.800	7.4003	5.31	. Q	.	.	. V	.
17.817	7.4076	5.28	. Q	.	.	. V	.
17.833	7.4149	5.26	. Q	.	.	. V	.
17.850	7.4221	5.23	. Q	.	.	. V	.
17.867	7.4292	5.20	. Q	.	.	. V	.
17.883	7.4364	5.18	. Q	.	.	. V	.
17.900	7.4434	5.15	. Q	.	.	. V	.
17.917	7.4505	5.13	. Q	.	.	. V	.
17.933	7.4575	5.10	. Q	.	.	. V	.
17.950	7.4645	5.08	. Q	.	.	. V	.
17.967	7.4715	5.05	. Q	.	.	. V	.
17.983	7.4784	5.03	. Q	.	.	. V	.
18.000	7.4853	5.01	. Q	.	.	. V	.
18.017	7.4922	4.98	. Q	.	.	. V	.
18.033	7.4990	4.96	. Q	.	.	. V	.
18.050	7.5058	4.94	. Q	.	.	. V	.
18.067	7.5126	4.91	. Q	.	.	. V	.
18.083	7.5193	4.88	. Q	.	.	. V	.
18.100	7.5258	4.74	. Q	.	.	. V	.
18.117	7.5321	4.57	. Q	.	.	. V	.

18.133	7.5382	4.41	. Q	.	.	. V	.
18.150	7.5440	4.25	. Q	.	.	. V	.
18.167	7.5497	4.08	. Q	.	.	. V	.
18.183	7.5551	3.92	. Q	.	.	. V	.
18.200	7.5603	3.78	. Q	.	.	. V	.
18.217	7.5654	3.74	. Q	.	.	. V	.
18.233	7.5706	3.73	. Q	.	.	. V	.
18.250	7.5757	3.71	. Q	.	.	. V	.
18.267	7.5808	3.69	. Q	.	.	. V	.
18.283	7.5858	3.67	. Q	.	.	. V	.
18.300	7.5908	3.65	. Q	.	.	. V	.
18.317	7.5959	3.64	. Q	.	.	. V	.
18.333	7.6008	3.62	. Q	.	.	. V	.
18.350	7.6058	3.60	. Q	.	.	. V	.
18.367	7.6107	3.59	. Q	.	.	. V	.
18.383	7.6157	3.57	. Q	.	.	. V	.
18.400	7.6205	3.55	. Q	.	.	. V	.
18.417	7.6254	3.54	. Q	.	.	. V	.
18.433	7.6303	3.52	. Q	.	.	. V	.
18.450	7.6351	3.51	. Q	.	.	. V	.
18.467	7.6399	3.49	. Q	.	.	. V	.
18.483	7.6447	3.47	. Q	.	.	. V	.
18.500	7.6495	3.46	. Q	.	.	. V	.
18.517	7.6542	3.44	. Q	.	.	. V	.
18.533	7.6589	3.43	. Q	.	.	. V	.
18.550	7.6636	3.41	. Q	.	.	. V	.
18.567	7.6683	3.40	. Q	.	.	. V	.
18.583	7.6730	3.39	. Q	.	.	. V	.
18.600	7.6776	3.37	. Q	.	.	. V	.
18.617	7.6822	3.36	. Q	.	.	. V	.
18.633	7.6868	3.34	. Q	.	.	. V	.
18.650	7.6914	3.33	. Q	.	.	. V	.
18.667	7.6960	3.32	. Q	.	.	. V	.
18.683	7.7005	3.30	. Q	.	.	. V	.
18.700	7.7051	3.29	. Q	.	.	. V	.
18.717	7.7096	3.28	. Q	.	.	. V	.
18.733	7.7141	3.26	. Q	.	.	. V	.
18.750	7.7186	3.25	. Q	.	.	. V	.
18.767	7.7230	3.24	. Q	.	.	. V	.
18.783	7.7275	3.22	. Q	.	.	. V	.
18.800	7.7319	3.21	. Q	.	.	. V	.
18.817	7.7363	3.20	. Q	.	.	. V	.
18.833	7.7407	3.19	. Q	.	.	. V	.
18.850	7.7451	3.18	. Q	.	.	. V	.
18.867	7.7494	3.16	. Q	.	.	. V	.
18.883	7.7538	3.15	. Q	.	.	. V	.
18.900	7.7581	3.14	. Q	.	.	. V	.
18.917	7.7624	3.13	. Q	.	.	. V	.
18.933	7.7667	3.12	. Q	.	.	. V	.
18.950	7.7710	3.10	. Q	.	.	. V	.

18.967	7.7752	3.09	.Q	.	.	.	V	.
18.983	7.7795	3.08	.Q	.	.	.	V	.
19.000	7.7837	3.07	.Q	.	.	.	V	.
19.017	7.7879	3.06	.Q	.	.	.	V	.
19.033	7.7921	3.05	.Q	.	.	.	V	.
19.050	7.7963	3.04	.Q	.	.	.	V	.
19.067	7.8005	3.03	.Q	.	.	.	V	.
19.083	7.8046	3.02	.Q	.	.	.	V	.
19.100	7.8088	3.01	.Q	.	.	.	V	.
19.117	7.8129	3.00	.Q	.	.	.	V	.
19.133	7.8170	2.99	.Q	.	.	.	V	.
19.150	7.8211	2.98	.Q	.	.	.	V	.
19.167	7.8252	2.97	.Q	.	.	.	V	.
19.183	7.8293	2.95	.Q	.	.	.	V	.
19.200	7.8333	2.94	.Q	.	.	.	V	.
19.217	7.8374	2.93	.Q	.	.	.	V	.
19.233	7.8414	2.92	.Q	.	.	.	V	.
19.250	7.8454	2.92	.Q	.	.	.	V	.
19.267	7.8494	2.91	.Q	.	.	.	V	.
19.283	7.8534	2.90	.Q	.	.	.	V	.
19.300	7.8574	2.89	.Q	.	.	.	V	.
19.317	7.8613	2.88	.Q	.	.	.	V	.
19.333	7.8653	2.87	.Q	.	.	.	V	.
19.350	7.8692	2.86	.Q	.	.	.	V	.
19.367	7.8731	2.85	.Q	.	.	.	V	.
19.383	7.8771	2.84	.Q	.	.	.	V	.
19.400	7.8810	2.83	.Q	.	.	.	V	.
19.417	7.8848	2.82	.Q	.	.	.	V	.
19.433	7.8887	2.81	.Q	.	.	.	V	.
19.450	7.8926	2.80	.Q	.	.	.	V	.
19.467	7.8964	2.80	.Q	.	.	.	V	.
19.483	7.9003	2.79	.Q	.	.	.	V	.
19.500	7.9041	2.78	.Q	.	.	.	V	.
19.517	7.9079	2.77	.Q	.	.	.	V	.
19.533	7.9117	2.76	.Q	.	.	.	V	.
19.550	7.9155	2.75	.Q	.	.	.	V	.
19.567	7.9193	2.74	.Q	.	.	.	V	.
19.583	7.9231	2.74	.Q	.	.	.	V	.
19.600	7.9268	2.73	.Q	.	.	.	V	.
19.617	7.9306	2.72	.Q	.	.	.	V	.
19.633	7.9343	2.71	.Q	.	.	.	V	.
19.650	7.9380	2.70	.Q	.	.	.	V	.
19.667	7.9417	2.70	.Q	.	.	.	V	.
19.683	7.9454	2.69	.Q	.	.	.	V	.
19.700	7.9491	2.68	.Q	.	.	.	V	.
19.717	7.9528	2.67	.Q	.	.	.	V	.
19.733	7.9565	2.67	.Q	.	.	.	V	.
19.750	7.9601	2.66	.Q	.	.	.	V	.
19.767	7.9638	2.65	.Q	.	.	.	V	.
19.783	7.9674	2.64	.Q	.	.	.	V	.

19.800	7.9711	2.63	.Q	.	.	.	V	.
19.817	7.9747	2.63	.Q	.	.	.	V	.
19.833	7.9783	2.62	.Q	.	.	.	V	.
19.850	7.9819	2.61	.Q	.	.	.	V	.
19.867	7.9855	2.61	.Q	.	.	.	V	.
19.883	7.9891	2.60	.Q	.	.	.	V	.
19.900	7.9926	2.59	.Q	.	.	.	V	.
19.917	7.9962	2.58	.Q	.	.	.	V	.
19.933	7.9997	2.58	.Q	.	.	.	V	.
19.950	8.0033	2.57	.Q	.	.	.	V	.
19.967	8.0068	2.56	.Q	.	.	.	V	.
19.983	8.0103	2.56	.Q	.	.	.	V	.
20.000	8.0138	2.55	.Q	.	.	.	V	.

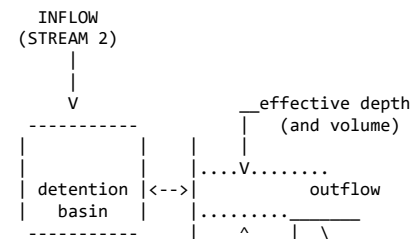
TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
=====	=====
0%	1201.0
10%	475.0
20%	125.0
30%	75.0
40%	55.0
50%	45.0
60%	35.0
70%	25.0
80%	20.0
90%	10.0

FLOW PROCESS FROM NODE 700.00 TO NODE 700.00 IS CODE = 3.2

>>>>FLOW-THROUGH DETENTION BASIN ROUTING MODEL APPLIED TO STREAM #2<<<<

=====



	dead		basin outlet
V	storage		
OUTFLOW	-----		
(STREAM 2)			

ROUTE RUNOFF HYDROGRAPH FROM STREAM NUMBER 2
THROUGH A FLOW-THROUGH DETENTION BASIN

SPECIFIED BASIN CONDITIONS ARE AS FOLLOWS:

DEAD STORAGE(AF) = 0.000
 SPECIFIED DEAD STORAGE(AF) FILLED = 0.000
 SPECIFIED EFFECTIVE VOLUME(AF) FILLED ABOVE OUTLET = 0.000
 DETENTION BASIN CONSTANT LOSS RATE(CFS) = 0.00

BASIN DEPTH VERSUS OUTFLOW AND STORAGE INFORMATION:

INTERVAL NUMBER	DEPTH (FT)	OUTFLOW (CFS)	STORAGE (AF)
1	0.00	0.00	0.000
2	0.25	0.01	0.074
3	0.50	0.02	0.149
4	0.75	0.03	0.250
5	1.00	4.25	0.372
6	1.25	6.02	0.504
7	1.50	7.37	0.644
8	1.75	8.51	0.787
9	2.00	9.51	0.933
10	2.25	10.42	1.078
11	2.50	11.26	1.222
12	2.75	12.03	1.361
13	3.00	12.76	1.586
14	3.25	17.70	1.615
15	3.50	26.12	1.716
16	3.75	36.79	1.791
17	4.00	49.30	1.865
18	4.25	63.37	1.940
19	4.50	78.86	2.014

=====

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

CLOCK TIME (HRS)	DEAD-STORAGE FILLED(AF)	INFLOW (CFS)	LOSS (CFS)	EFFECTIVE DEPTH(FT)	MEAN OUTFLOW (CFS)	EFFECTIVE VOLUME(AF)
------------------------	----------------------------	-----------------	---------------	------------------------	--------------------------	-------------------------

10.000	0.000	2.97	0.00	0.92	2.9	0.332
10.017	0.000	2.97	0.00	0.92	2.9	0.332
10.033	0.000	2.98	0.00	0.92	2.9	0.332
10.050	0.000	2.98	0.00	0.92	2.9	0.333
10.067	0.000	2.99	0.00	0.92	2.9	0.333
10.083	0.000	3.00	0.00	0.92	2.9	0.333
10.100	0.000	3.00	0.00	0.92	2.9	0.333
10.117	0.000	3.01	0.00	0.92	2.9	0.333
10.133	0.000	3.02	0.00	0.92	2.9	0.333
10.150	0.000	3.02	0.00	0.92	2.9	0.333
10.167	0.000	3.02	0.00	0.92	2.9	0.334
10.183	0.000	3.03	0.00	0.92	2.9	0.334
10.200	0.000	3.03	0.00	0.92	2.9	0.334
10.217	0.000	3.04	0.00	0.92	2.9	0.334
10.233	0.000	3.04	0.00	0.92	2.9	0.334
10.250	0.000	3.04	0.00	0.92	2.9	0.334
10.267	0.000	3.05	0.00	0.92	2.9	0.334
10.283	0.000	3.06	0.00	0.92	3.0	0.335
10.300	0.000	3.07	0.00	0.92	3.0	0.335
10.317	0.000	3.07	0.00	0.92	3.0	0.335
10.333	0.000	3.08	0.00	0.92	3.0	0.335
10.350	0.000	3.09	0.00	0.92	3.0	0.335
10.367	0.000	3.09	0.00	0.92	3.0	0.335
10.383	0.000	3.10	0.00	0.93	3.0	0.336
10.400	0.000	3.10	0.00	0.93	3.0	0.336
10.417	0.000	3.11	0.00	0.93	3.0	0.336
10.433	0.000	3.11	0.00	0.93	3.0	0.336
10.450	0.000	3.11	0.00	0.93	3.0	0.336
10.467	0.000	3.12	0.00	0.93	3.0	0.336
10.483	0.000	3.12	0.00	0.93	3.0	0.336
10.500	0.000	3.13	0.00	0.93	3.0	0.337
10.517	0.000	3.14	0.00	0.93	3.0	0.337
10.533	0.000	3.15	0.00	0.93	3.0	0.337
10.550	0.000	3.15	0.00	0.93	3.0	0.337
10.567	0.000	3.16	0.00	0.93	3.0	0.337
10.583	0.000	3.17	0.00	0.93	3.0	0.337
10.600	0.000	3.18	0.00	0.93	3.1	0.338
10.617	0.000	3.18	0.00	0.93	3.1	0.338
10.633	0.000	3.18	0.00	0.93	3.1	0.338
10.650	0.000	3.19	0.00	0.93	3.1	0.338
10.667	0.000	3.19	0.00	0.93	3.1	0.338
10.683	0.000	3.20	0.00	0.93	3.1	0.338
10.700	0.000	3.20	0.00	0.93	3.1	0.338
10.717	0.000	3.21	0.00	0.93	3.1	0.339
10.733	0.000	3.22	0.00	0.93	3.1	0.339
10.750	0.000	3.22	0.00	0.93	3.1	0.339
10.767	0.000	3.23	0.00	0.93	3.1	0.339
10.783	0.000	3.24	0.00	0.93	3.1	0.339
10.800	0.000	3.25	0.00	0.93	3.1	0.339
10.817	0.000	3.26	0.00	0.93	3.1	0.340

10.833	0.000	3.26	0.00	0.93	3.1	0.340
10.850	0.000	3.27	0.00	0.93	3.1	0.340
10.867	0.000	3.27	0.00	0.93	3.1	0.340
10.883	0.000	3.28	0.00	0.94	3.2	0.340
10.900	0.000	3.28	0.00	0.94	3.2	0.341
10.917	0.000	3.28	0.00	0.94	3.2	0.341
10.933	0.000	3.29	0.00	0.94	3.2	0.341
10.950	0.000	3.30	0.00	0.94	3.2	0.341
10.967	0.000	3.31	0.00	0.94	3.2	0.341
10.983	0.000	3.32	0.00	0.94	3.2	0.341
11.000	0.000	3.33	0.00	0.94	3.2	0.342
11.017	0.000	3.33	0.00	0.94	3.2	0.342
11.033	0.000	3.34	0.00	0.94	3.2	0.342
11.050	0.000	3.35	0.00	0.94	3.2	0.342
11.067	0.000	3.36	0.00	0.94	3.2	0.342
11.083	0.000	3.36	0.00	0.94	3.2	0.342
11.100	0.000	3.37	0.00	0.94	3.2	0.343
11.117	0.000	3.37	0.00	0.94	3.2	0.343
11.133	0.000	3.38	0.00	0.94	3.2	0.343
11.150	0.000	3.38	0.00	0.94	3.3	0.343
11.167	0.000	3.39	0.00	0.94	3.3	0.343
11.183	0.000	3.40	0.00	0.94	3.3	0.344
11.200	0.000	3.41	0.00	0.94	3.3	0.344
11.217	0.000	3.42	0.00	0.94	3.3	0.344
11.233	0.000	3.42	0.00	0.94	3.3	0.344
11.250	0.000	3.43	0.00	0.94	3.3	0.344
11.267	0.000	3.44	0.00	0.94	3.3	0.345
11.283	0.000	3.45	0.00	0.94	3.3	0.345
11.300	0.000	3.46	0.00	0.94	3.3	0.345
11.317	0.000	3.46	0.00	0.94	3.3	0.345
11.333	0.000	3.47	0.00	0.95	3.3	0.345
11.350	0.000	3.47	0.00	0.95	3.3	0.346
11.367	0.000	3.48	0.00	0.95	3.3	0.346
11.383	0.000	3.48	0.00	0.95	3.3	0.346
11.400	0.000	3.49	0.00	0.95	3.4	0.346
11.417	0.000	3.50	0.00	0.95	3.4	0.346
11.433	0.000	3.51	0.00	0.95	3.4	0.347
11.450	0.000	3.52	0.00	0.95	3.4	0.347
11.467	0.000	3.53	0.00	0.95	3.4	0.347
11.483	0.000	3.54	0.00	0.95	3.4	0.347
11.500	0.000	3.55	0.00	0.95	3.4	0.347
11.517	0.000	3.56	0.00	0.95	3.4	0.348
11.533	0.000	3.57	0.00	0.95	3.4	0.348
11.550	0.000	3.57	0.00	0.95	3.4	0.348
11.567	0.000	3.58	0.00	0.95	3.4	0.348
11.583	0.000	3.58	0.00	0.95	3.4	0.348
11.600	0.000	3.59	0.00	0.95	3.4	0.349
11.617	0.000	3.60	0.00	0.95	3.4	0.349
11.633	0.000	3.60	0.00	0.95	3.5	0.349
11.650	0.000	3.62	0.00	0.95	3.5	0.349

11.667	0.000	3.63	0.00	0.95	3.5	0.349
11.683	0.000	3.64	0.00	0.95	3.5	0.350
11.700	0.000	3.65	0.00	0.95	3.5	0.350
11.717	0.000	3.66	0.00	0.96	3.5	0.350
11.733	0.000	3.67	0.00	0.96	3.5	0.350
11.750	0.000	3.68	0.00	0.96	3.5	0.351
11.767	0.000	3.69	0.00	0.96	3.5	0.351
11.783	0.000	3.69	0.00	0.96	3.5	0.351
11.800	0.000	3.70	0.00	0.96	3.5	0.351
11.817	0.000	3.70	0.00	0.96	3.5	0.352
11.833	0.000	3.71	0.00	0.96	3.5	0.352
11.850	0.000	3.72	0.00	0.96	3.6	0.352
11.867	0.000	3.73	0.00	0.96	3.6	0.352
11.883	0.000	3.74	0.00	0.96	3.6	0.352
11.900	0.000	3.75	0.00	0.96	3.6	0.353
11.917	0.000	3.76	0.00	0.96	3.6	0.353
11.933	0.000	3.78	0.00	0.96	3.6	0.353
11.950	0.000	3.79	0.00	0.96	3.6	0.353
11.967	0.000	3.80	0.00	0.96	3.6	0.354
11.983	0.000	3.81	0.00	0.96	3.6	0.354
12.000	0.000	3.82	0.00	0.96	3.6	0.354
12.017	0.000	3.83	0.00	0.96	3.6	0.355
12.033	0.000	3.84	0.00	0.96	3.7	0.355
12.050	0.000	3.85	0.00	0.97	3.7	0.355
12.067	0.000	3.86	0.00	0.97	3.7	0.355
12.083	0.000	3.88	0.00	0.97	3.7	0.356
12.100	0.000	3.99	0.00	0.97	3.7	0.356
12.117	0.000	4.15	0.00	0.97	3.7	0.357
12.133	0.000	4.30	0.00	0.97	3.7	0.357
12.150	0.000	4.46	0.00	0.97	3.8	0.358
12.167	0.000	4.61	0.00	0.97	3.8	0.359
12.183	0.000	4.77	0.00	0.98	3.8	0.361
12.200	0.000	4.91	0.00	0.98	3.9	0.362
12.217	0.000	4.95	0.00	0.98	3.9	0.364
12.233	0.000	4.96	0.00	0.99	4.0	0.365
12.250	0.000	4.96	0.00	0.99	4.0	0.366
12.267	0.000	4.97	0.00	0.99	4.1	0.367
12.283	0.000	4.98	0.00	0.99	4.1	0.369
12.300	0.000	4.99	0.00	1.00	4.2	0.370
12.317	0.000	4.99	0.00	1.00	4.2	0.371
12.333	0.000	5.01	0.00	1.00	4.2	0.372
12.350	0.000	5.02	0.00	1.00	4.3	0.373
12.367	0.000	5.04	0.00	1.00	4.3	0.374
12.383	0.000	5.06	0.00	1.01	4.3	0.375
12.400	0.000	5.07	0.00	1.01	4.3	0.376
12.417	0.000	5.09	0.00	1.01	4.3	0.377
12.433	0.000	5.10	0.00	1.01	4.3	0.378
12.450	0.000	5.11	0.00	1.01	4.3	0.379
12.467	0.000	5.12	0.00	1.02	4.4	0.380
12.483	0.000	5.13	0.00	1.02	4.4	0.381

12.500	0.000	5.14	0.00	1.02	4.4	0.383
12.517	0.000	5.15	0.00	1.02	4.4	0.384
12.533	0.000	5.16	0.00	1.02	4.4	0.385
12.550	0.000	5.17	0.00	1.03	4.4	0.386
12.567	0.000	5.18	0.00	1.03	4.4	0.387
12.583	0.000	5.20	0.00	1.03	4.5	0.388
12.600	0.000	5.22	0.00	1.03	4.5	0.389
12.617	0.000	5.24	0.00	1.03	4.5	0.390
12.633	0.000	5.25	0.00	1.04	4.5	0.391
12.650	0.000	5.27	0.00	1.04	4.5	0.392
12.667	0.000	5.29	0.00	1.04	4.5	0.393
12.683	0.000	5.30	0.00	1.04	4.5	0.394
12.700	0.000	5.31	0.00	1.04	4.6	0.395
12.717	0.000	5.31	0.00	1.05	4.6	0.396
12.733	0.000	5.32	0.00	1.05	4.6	0.397
12.750	0.000	5.33	0.00	1.05	4.6	0.398
12.767	0.000	5.34	0.00	1.05	4.6	0.399
12.783	0.000	5.35	0.00	1.05	4.6	0.400
12.800	0.000	5.37	0.00	1.06	4.6	0.401
12.817	0.000	5.39	0.00	1.06	4.6	0.402
12.833	0.000	5.41	0.00	1.06	4.7	0.403
12.850	0.000	5.43	0.00	1.06	4.7	0.404
12.867	0.000	5.45	0.00	1.06	4.7	0.405
12.883	0.000	5.47	0.00	1.07	4.7	0.406
12.900	0.000	5.49	0.00	1.07	4.7	0.407
12.917	0.000	5.50	0.00	1.07	4.7	0.408
12.933	0.000	5.51	0.00	1.07	4.7	0.410
12.950	0.000	5.52	0.00	1.07	4.8	0.411
12.967	0.000	5.53	0.00	1.07	4.8	0.412
12.983	0.000	5.54	0.00	1.08	4.8	0.413
13.000	0.000	5.55	0.00	1.08	4.8	0.414
13.017	0.000	5.57	0.00	1.08	4.8	0.415
13.033	0.000	5.59	0.00	1.08	4.8	0.416
13.050	0.000	5.61	0.00	1.08	4.8	0.417
13.067	0.000	5.63	0.00	1.09	4.9	0.418
13.083	0.000	5.65	0.00	1.09	4.9	0.419
13.100	0.000	5.68	0.00	1.09	4.9	0.420
13.117	0.000	5.70	0.00	1.09	4.9	0.421
13.133	0.000	5.71	0.00	1.10	4.9	0.422
13.150	0.000	5.73	0.00	1.10	4.9	0.423
13.167	0.000	5.74	0.00	1.10	4.9	0.424
13.183	0.000	5.75	0.00	1.10	5.0	0.426
13.200	0.000	5.76	0.00	1.10	5.0	0.427
13.217	0.000	5.77	0.00	1.11	5.0	0.428
13.233	0.000	5.78	0.00	1.11	5.0	0.429
13.250	0.000	5.80	0.00	1.11	5.0	0.430
13.267	0.000	5.83	0.00	1.11	5.0	0.431
13.283	0.000	5.85	0.00	1.11	5.0	0.432
13.300	0.000	5.88	0.00	1.12	5.1	0.433
13.317	0.000	5.90	0.00	1.12	5.1	0.434

13.333	0.000	5.93	0.00	1.12	5.1	0.435
13.350	0.000	5.95	0.00	1.12	5.1	0.437
13.367	0.000	5.97	0.00	1.12	5.1	0.438
13.383	0.000	5.98	0.00	1.13	5.1	0.439
13.400	0.000	6.00	0.00	1.13	5.2	0.440
13.417	0.000	6.01	0.00	1.13	5.2	0.441
13.433	0.000	6.02	0.00	1.13	5.2	0.442
13.450	0.000	6.04	0.00	1.14	5.2	0.444
13.467	0.000	6.05	0.00	1.14	5.2	0.445
13.483	0.000	6.07	0.00	1.14	5.2	0.446
13.500	0.000	6.10	0.00	1.14	5.2	0.447
13.517	0.000	6.13	0.00	1.14	5.3	0.448
13.533	0.000	6.16	0.00	1.15	5.3	0.449
13.550	0.000	6.19	0.00	1.15	5.3	0.451
13.567	0.000	6.21	0.00	1.15	5.3	0.452
13.583	0.000	6.24	0.00	1.15	5.3	0.453
13.600	0.000	6.26	0.00	1.16	5.3	0.454
13.617	0.000	6.28	0.00	1.16	5.4	0.456
13.633	0.000	6.29	0.00	1.16	5.4	0.457
13.650	0.000	6.31	0.00	1.16	5.4	0.458
13.667	0.000	6.32	0.00	1.17	5.4	0.459
13.683	0.000	6.34	0.00	1.17	5.4	0.461
13.700	0.000	6.35	0.00	1.17	5.4	0.462
13.717	0.000	6.38	0.00	1.17	5.5	0.463
13.733	0.000	6.41	0.00	1.18	5.5	0.465
13.750	0.000	6.45	0.00	1.18	5.5	0.466
13.767	0.000	6.48	0.00	1.18	5.5	0.467
13.783	0.000	6.51	0.00	1.18	5.5	0.469
13.800	0.000	6.55	0.00	1.19	5.6	0.470
13.817	0.000	6.58	0.00	1.19	5.6	0.471
13.833	0.000	6.60	0.00	1.19	5.6	0.473
13.850	0.000	6.61	0.00	1.19	5.6	0.474
13.867	0.000	6.63	0.00	1.20	5.6	0.475
13.883	0.000	6.65	0.00	1.20	5.6	0.477
13.900	0.000	6.67	0.00	1.20	5.7	0.478
13.917	0.000	6.68	0.00	1.20	5.7	0.480
13.933	0.000	6.70	0.00	1.21	5.7	0.481
13.950	0.000	6.74	0.00	1.21	5.7	0.482
13.967	0.000	6.78	0.00	1.21	5.7	0.484
13.983	0.000	6.82	0.00	1.21	5.8	0.485
14.000	0.000	6.86	0.00	1.22	5.8	0.487
14.017	0.000	6.89	0.00	1.22	5.8	0.488
14.033	0.000	6.93	0.00	1.22	5.8	0.490
14.050	0.000	6.97	0.00	1.23	5.8	0.491
14.067	0.000	7.00	0.00	1.23	5.9	0.493
14.083	0.000	7.02	0.00	1.23	5.9	0.495
14.100	0.000	7.05	0.00	1.24	5.9	0.496
14.117	0.000	7.07	0.00	1.24	5.9	0.498
14.133	0.000	7.10	0.00	1.24	5.9	0.499
14.150	0.000	7.13	0.00	1.24	6.0	0.501

14.167	0.000	7.16	0.00	1.25	6.0	0.502
14.183	0.000	7.20	0.00	1.25	6.0	0.504
14.200	0.000	7.25	0.00	1.25	6.0	0.506
14.217	0.000	7.29	0.00	1.26	6.0	0.508
14.233	0.000	7.34	0.00	1.26	6.1	0.509
14.250	0.000	7.39	0.00	1.26	6.1	0.511
14.267	0.000	7.43	0.00	1.27	6.1	0.513
14.283	0.000	7.47	0.00	1.27	6.1	0.515
14.300	0.000	7.50	0.00	1.27	6.1	0.517
14.317	0.000	7.52	0.00	1.28	6.1	0.519
14.333	0.000	7.55	0.00	1.28	6.2	0.520
14.350	0.000	7.57	0.00	1.28	6.2	0.522
14.367	0.000	7.60	0.00	1.29	6.2	0.524
14.383	0.000	7.62	0.00	1.29	6.2	0.526
14.400	0.000	7.66	0.00	1.29	6.2	0.528
14.417	0.000	7.71	0.00	1.30	6.3	0.530
14.433	0.000	7.77	0.00	1.30	6.3	0.532
14.450	0.000	7.83	0.00	1.30	6.3	0.534
14.467	0.000	7.88	0.00	1.31	6.3	0.536
14.483	0.000	7.94	0.00	1.31	6.3	0.539
14.500	0.000	7.99	0.00	1.32	6.4	0.541
14.517	0.000	8.04	0.00	1.32	6.4	0.543
14.533	0.000	8.07	0.00	1.32	6.4	0.546
14.550	0.000	8.10	0.00	1.33	6.4	0.548
14.567	0.000	8.13	0.00	1.33	6.5	0.550
14.583	0.000	8.16	0.00	1.34	6.5	0.552
14.600	0.000	8.19	0.00	1.34	6.5	0.555
14.617	0.000	8.22	0.00	1.34	6.5	0.557
14.633	0.000	8.28	0.00	1.35	6.5	0.560
14.650	0.000	8.35	0.00	1.35	6.6	0.562
14.667	0.000	8.42	0.00	1.36	6.6	0.565
14.683	0.000	8.49	0.00	1.36	6.6	0.567
14.700	0.000	8.56	0.00	1.37	6.6	0.570
14.717	0.000	8.63	0.00	1.37	6.7	0.572
14.733	0.000	8.70	0.00	1.38	6.7	0.575
14.750	0.000	8.75	0.00	1.38	6.7	0.578
14.767	0.000	8.79	0.00	1.39	6.7	0.581
14.783	0.000	8.83	0.00	1.39	6.8	0.584
14.800	0.000	8.87	0.00	1.40	6.8	0.586
14.817	0.000	8.91	0.00	1.40	6.8	0.589
14.833	0.000	8.95	0.00	1.41	6.9	0.592
14.850	0.000	8.99	0.00	1.41	6.9	0.595
14.867	0.000	9.07	0.00	1.42	6.9	0.598
14.883	0.000	9.16	0.00	1.42	6.9	0.601
14.900	0.000	9.25	0.00	1.43	7.0	0.604
14.917	0.000	9.34	0.00	1.43	7.0	0.608
14.933	0.000	9.44	0.00	1.44	7.0	0.611
14.950	0.000	9.53	0.00	1.45	7.1	0.614
14.967	0.000	9.62	0.00	1.45	7.1	0.618
14.983	0.000	9.68	0.00	1.46	7.1	0.621

15.000	0.000	9.74	0.00	1.47	7.2	0.625
15.017	0.000	9.79	0.00	1.47	7.2	0.628
15.033	0.000	9.84	0.00	1.48	7.2	0.632
15.050	0.000	9.90	0.00	1.48	7.3	0.636
15.067	0.000	9.95	0.00	1.49	7.3	0.639
15.083	0.000	10.01	0.00	1.50	7.3	0.643
15.100	0.000	10.12	0.00	1.50	7.4	0.647
15.117	0.000	10.25	0.00	1.51	7.4	0.651
15.133	0.000	10.38	0.00	1.52	7.4	0.655
15.150	0.000	10.51	0.00	1.53	7.5	0.659
15.167	0.000	10.64	0.00	1.53	7.5	0.663
15.183	0.000	10.77	0.00	1.54	7.5	0.668
15.200	0.000	10.89	0.00	1.55	7.6	0.672
15.217	0.000	10.98	0.00	1.56	7.6	0.677
15.233	0.000	11.05	0.00	1.57	7.6	0.681
15.250	0.000	11.13	0.00	1.57	7.7	0.686
15.267	0.000	11.21	0.00	1.58	7.7	0.691
15.283	0.000	11.29	0.00	1.59	7.8	0.696
15.300	0.000	11.36	0.00	1.60	7.8	0.701
15.317	0.000	11.44	0.00	1.61	7.8	0.706
15.333	0.000	11.49	0.00	1.62	7.9	0.711
15.350	0.000	11.53	0.00	1.63	7.9	0.716
15.367	0.000	11.57	0.00	1.63	8.0	0.721
15.383	0.000	11.62	0.00	1.64	8.0	0.726
15.400	0.000	11.66	0.00	1.65	8.0	0.731
15.417	0.000	11.70	0.00	1.66	8.1	0.736
15.433	0.000	11.75	0.00	1.67	8.1	0.741
15.450	0.000	11.80	0.00	1.68	8.2	0.746
15.467	0.000	11.85	0.00	1.69	8.2	0.751
15.483	0.000	11.90	0.00	1.70	8.2	0.756
15.500	0.000	11.95	0.00	1.70	8.3	0.761
15.517	0.000	12.00	0.00	1.71	8.3	0.766
15.533	0.000	12.05	0.00	1.72	8.4	0.771
15.550	0.000	12.17	0.00	1.73	8.4	0.776
15.567	0.000	12.50	0.00	1.74	8.4	0.782
15.583	0.000	12.86	0.00	1.75	8.5	0.788
15.600	0.000	13.21	0.00	1.76	8.5	0.794
15.617	0.000	13.57	0.00	1.77	8.6	0.801
15.633	0.000	13.92	0.00	1.79	8.6	0.808
15.650	0.000	14.28	0.00	1.80	8.7	0.816
15.667	0.000	14.61	0.00	1.81	8.7	0.824
15.683	0.000	14.89	0.00	1.83	8.8	0.832
15.700	0.000	15.17	0.00	1.84	8.9	0.841
15.717	0.000	15.44	0.00	1.86	8.9	0.850
15.733	0.000	15.72	0.00	1.87	9.0	0.859
15.750	0.000	16.00	0.00	1.89	9.0	0.869
15.767	0.000	16.28	0.00	1.91	9.1	0.879
15.783	0.000	16.82	0.00	1.93	9.2	0.889
15.800	0.000	17.85	0.00	1.95	9.3	0.901
15.817	0.000	18.89	0.00	1.97	9.3	0.914

15.833	0.000	19.93	0.00	1.99	9.4	0.929
15.850	0.000	20.96	0.00	2.02	9.5	0.945
15.867	0.000	22.00	0.00	2.05	9.6	0.962
15.883	0.000	23.04	0.00	2.08	9.7	0.980
15.900	0.000	24.18	0.00	2.11	9.9	1.000
15.917	0.000	25.46	0.00	2.15	10.0	1.021
15.933	0.000	26.74	0.00	2.19	10.1	1.044
15.950	0.000	28.02	0.00	2.23	10.3	1.068
15.967	0.000	29.30	0.00	2.28	10.4	1.094
15.983	0.000	30.58	0.00	2.33	10.6	1.122
16.000	0.000	31.86	0.00	2.38	10.8	1.151
16.017	0.000	37.32	0.00	2.44	10.9	1.187
16.033	0.000	46.95	0.00	2.53	11.2	1.236
16.050	0.000	56.59	0.00	2.64	11.5	1.298
16.067	0.000	66.23	0.00	2.76	11.9	1.373
16.083	0.000	75.87	0.00	2.86	12.2	1.461
16.100	0.000	85.51	0.00	2.97	12.5	1.562
16.117	0.000	99.20	0.00	3.40	17.6	1.674
16.133	0.000	92.49	0.00	3.66	27.7	1.763
16.150	0.000	80.94	0.00	3.86	37.5	1.823
16.167	0.000	69.39	0.00	3.97	45.0	1.857
16.183	0.000	57.83	0.00	4.01	48.9	1.869
16.200	0.000	46.28	0.00	4.00	49.6	1.864
16.217	0.000	34.72	0.00	3.94	47.7	1.846
16.233	0.000	23.30	0.00	3.84	43.8	1.818
16.250	0.000	18.66	0.00	3.75	39.0	1.790
16.267	0.000	17.78	0.00	3.67	35.0	1.766
16.283	0.000	16.90	0.00	3.60	31.8	1.746
16.300	0.000	16.02	0.00	3.54	29.1	1.728
16.317	0.000	15.14	0.00	3.49	26.8	1.712
16.333	0.000	14.26	0.00	3.45	25.1	1.697
16.350	0.000	13.40	0.00	3.42	23.9	1.682
16.367	0.000	13.03	0.00	3.38	22.8	1.669
16.383	0.000	12.88	0.00	3.35	21.7	1.657
16.400	0.000	12.72	0.00	3.33	20.7	1.646
16.417	0.000	12.56	0.00	3.30	19.8	1.636
16.433	0.000	12.41	0.00	3.28	19.0	1.627
16.450	0.000	12.25	0.00	3.26	18.3	1.618
16.467	0.000	12.09	0.00	3.21	17.5	1.611
16.483	0.000	11.87	0.00	3.16	16.5	1.605
16.500	0.000	11.64	0.00	3.11	15.5	1.599
16.517	0.000	11.40	0.00	3.08	14.6	1.595
16.533	0.000	11.16	0.00	3.04	13.9	1.591
16.550	0.000	10.93	0.00	3.01	13.3	1.588
16.567	0.000	10.69	0.00	3.00	12.9	1.585
16.583	0.000	10.46	0.00	2.99	12.8	1.581
16.600	0.000	10.28	0.00	2.99	12.7	1.578
16.617	0.000	10.12	0.00	2.99	12.7	1.574
16.633	0.000	9.96	0.00	2.98	12.7	1.571
16.650	0.000	9.80	0.00	2.98	12.7	1.567

16.667	0.000	9.63	0.00	2.97	12.7	1.562
16.683	0.000	9.47	0.00	2.97	12.7	1.558
16.700	0.000	9.31	0.00	2.96	12.7	1.553
16.717	0.000	9.19	0.00	2.96	12.6	1.549
16.733	0.000	9.07	0.00	2.95	12.6	1.544
16.750	0.000	8.95	0.00	2.95	12.6	1.539
16.767	0.000	8.83	0.00	2.94	12.6	1.533
16.783	0.000	8.71	0.00	2.94	12.6	1.528
16.800	0.000	8.59	0.00	2.93	12.6	1.523
16.817	0.000	8.47	0.00	2.92	12.5	1.517
16.833	0.000	8.37	0.00	2.92	12.5	1.511
16.850	0.000	8.28	0.00	2.91	12.5	1.505
16.867	0.000	8.19	0.00	2.90	12.5	1.500
16.883	0.000	8.09	0.00	2.90	12.5	1.494
16.900	0.000	8.00	0.00	2.89	12.5	1.487
16.917	0.000	7.90	0.00	2.88	12.4	1.481
16.933	0.000	7.81	0.00	2.88	12.4	1.475
16.950	0.000	7.74	0.00	2.87	12.4	1.468
16.967	0.000	7.66	0.00	2.86	12.4	1.462
16.983	0.000	7.59	0.00	2.85	12.3	1.455
17.000	0.000	7.51	0.00	2.85	12.3	1.449
17.017	0.000	7.43	0.00	2.84	12.3	1.442
17.033	0.000	7.36	0.00	2.83	12.3	1.435
17.050	0.000	7.29	0.00	2.82	12.3	1.428
17.067	0.000	7.22	0.00	2.82	12.2	1.421
17.083	0.000	7.15	0.00	2.81	12.2	1.414
17.100	0.000	7.08	0.00	2.80	12.2	1.407
17.117	0.000	7.01	0.00	2.79	12.2	1.400
17.133	0.000	6.94	0.00	2.79	12.1	1.393
17.150	0.000	6.88	0.00	2.78	12.1	1.386
17.167	0.000	6.81	0.00	2.77	12.1	1.379
17.183	0.000	6.76	0.00	2.76	12.1	1.371
17.200	0.000	6.71	0.00	2.75	12.1	1.364
17.217	0.000	6.65	0.00	2.74	12.0	1.357
17.233	0.000	6.60	0.00	2.73	12.0	1.349
17.250	0.000	6.55	0.00	2.72	11.9	1.342
17.267	0.000	6.50	0.00	2.70	11.9	1.334
17.283	0.000	6.45	0.00	2.69	11.9	1.327
17.300	0.000	6.40	0.00	2.68	11.8	1.319
17.317	0.000	6.35	0.00	2.66	11.8	1.312
17.333	0.000	6.31	0.00	2.65	11.7	1.304
17.350	0.000	6.26	0.00	2.63	11.7	1.297
17.367	0.000	6.22	0.00	2.62	11.7	1.289
17.383	0.000	6.17	0.00	2.61	11.6	1.282
17.400	0.000	6.13	0.00	2.59	11.6	1.274
17.417	0.000	6.09	0.00	2.58	11.5	1.267
17.433	0.000	6.05	0.00	2.57	11.5	1.260
17.450	0.000	6.01	0.00	2.55	11.4	1.252
17.467	0.000	5.97	0.00	2.54	11.4	1.245
17.483	0.000	5.93	0.00	2.53	11.4	1.237

17.500	0.000	5.89	0.00	2.51	11.3	1.230
17.517	0.000	5.85	0.00	2.50	11.3	1.222
17.533	0.000	5.82	0.00	2.49	11.2	1.215
17.550	0.000	5.78	0.00	2.47	11.2	1.207
17.567	0.000	5.75	0.00	2.46	11.1	1.200
17.583	0.000	5.71	0.00	2.45	11.1	1.192
17.600	0.000	5.68	0.00	2.44	11.1	1.185
17.617	0.000	5.64	0.00	2.42	11.0	1.178
17.633	0.000	5.61	0.00	2.41	11.0	1.170
17.650	0.000	5.58	0.00	2.40	10.9	1.163
17.667	0.000	5.55	0.00	2.38	10.9	1.155
17.683	0.000	5.52	0.00	2.37	10.8	1.148
17.700	0.000	5.49	0.00	2.36	10.8	1.141
17.717	0.000	5.46	0.00	2.35	10.8	1.133
17.733	0.000	5.43	0.00	2.33	10.7	1.126
17.750	0.000	5.40	0.00	2.32	10.7	1.119
17.767	0.000	5.37	0.00	2.31	10.6	1.112
17.783	0.000	5.34	0.00	2.30	10.6	1.104
17.800	0.000	5.31	0.00	2.28	10.6	1.097
17.817	0.000	5.28	0.00	2.27	10.5	1.090
17.833	0.000	5.26	0.00	2.26	10.5	1.083
17.850	0.000	5.23	0.00	2.25	10.4	1.076
17.867	0.000	5.20	0.00	2.23	10.4	1.069
17.883	0.000	5.18	0.00	2.22	10.3	1.061
17.900	0.000	5.15	0.00	2.21	10.3	1.054
17.917	0.000	5.13	0.00	2.20	10.2	1.047
17.933	0.000	5.10	0.00	2.18	10.2	1.040
17.950	0.000	5.08	0.00	2.17	10.2	1.033
17.967	0.000	5.05	0.00	2.16	10.1	1.026
17.983	0.000	5.03	0.00	2.15	10.1	1.019
18.000	0.000	5.01	0.00	2.14	10.0	1.012
18.017	0.000	4.98	0.00	2.12	10.0	1.005
18.033	0.000	4.96	0.00	2.11	9.9	0.999
18.050	0.000	4.94	0.00	2.10	9.9	0.992
18.067	0.000	4.91	0.00	2.09	9.9	0.985
18.083	0.000	4.88	0.00	2.08	9.8	0.978
18.100	0.000	4.74	0.00	2.07	9.8	0.971
18.117	0.000	4.57	0.00	2.05	9.7	0.964
18.133	0.000	4.41	0.00	2.04	9.7	0.957
18.150	0.000	4.25	0.00	2.03	9.6	0.949
18.167	0.000	4.08	0.00	2.02	9.6	0.942
18.183	0.000	3.92	0.00	2.00	9.5	0.934
18.200	0.000	3.78	0.00	1.99	9.5	0.926
18.217	0.000	3.74	0.00	1.97	9.4	0.918
18.233	0.000	3.73	0.00	1.96	9.4	0.911
18.250	0.000	3.71	0.00	1.95	9.3	0.903
18.267	0.000	3.69	0.00	1.94	9.3	0.895
18.283	0.000	3.67	0.00	1.92	9.2	0.887
18.300	0.000	3.65	0.00	1.91	9.2	0.880
18.317	0.000	3.64	0.00	1.90	9.1	0.872

18.333	0.000	3.62	0.00	1.88	9.1	0.865
18.350	0.000	3.60	0.00	1.87	9.0	0.857
18.367	0.000	3.59	0.00	1.86	9.0	0.850
18.383	0.000	3.57	0.00	1.85	8.9	0.843
18.400	0.000	3.55	0.00	1.83	8.9	0.835
18.417	0.000	3.54	0.00	1.82	8.8	0.828
18.433	0.000	3.52	0.00	1.81	8.8	0.821
18.450	0.000	3.51	0.00	1.80	8.7	0.814
18.467	0.000	3.49	0.00	1.78	8.7	0.806
18.483	0.000	3.47	0.00	1.77	8.6	0.799
18.500	0.000	3.46	0.00	1.76	8.6	0.792
18.517	0.000	3.44	0.00	1.75	8.5	0.785
18.533	0.000	3.43	0.00	1.73	8.5	0.778
18.550	0.000	3.41	0.00	1.72	8.4	0.772
18.567	0.000	3.40	0.00	1.71	8.4	0.765
18.583	0.000	3.39	0.00	1.70	8.3	0.758
18.600	0.000	3.37	0.00	1.69	8.3	0.751
18.617	0.000	3.36	0.00	1.68	8.2	0.745
18.633	0.000	3.34	0.00	1.66	8.1	0.738
18.650	0.000	3.33	0.00	1.65	8.1	0.731
18.667	0.000	3.32	0.00	1.64	8.0	0.725
18.683	0.000	3.30	0.00	1.63	8.0	0.718
18.700	0.000	3.29	0.00	1.62	7.9	0.712
18.717	0.000	3.28	0.00	1.61	7.9	0.706
18.733	0.000	3.26	0.00	1.60	7.8	0.699
18.750	0.000	3.25	0.00	1.59	7.8	0.693
18.767	0.000	3.24	0.00	1.58	7.7	0.687
18.783	0.000	3.22	0.00	1.56	7.7	0.681
18.800	0.000	3.21	0.00	1.55	7.6	0.675
18.817	0.000	3.20	0.00	1.54	7.6	0.669
18.833	0.000	3.19	0.00	1.53	7.5	0.663
18.850	0.000	3.18	0.00	1.52	7.5	0.657
18.867	0.000	3.16	0.00	1.51	7.4	0.651
18.883	0.000	3.15	0.00	1.50	7.4	0.645
18.900	0.000	3.14	0.00	1.49	7.3	0.639
18.917	0.000	3.13	0.00	1.48	7.3	0.633
18.933	0.000	3.12	0.00	1.47	7.2	0.628
18.950	0.000	3.10	0.00	1.46	7.2	0.622
18.967	0.000	3.09	0.00	1.45	7.1	0.617
18.983	0.000	3.08	0.00	1.44	7.1	0.611
19.000	0.000	3.07	0.00	1.43	7.0	0.606
19.017	0.000	3.06	0.00	1.42	7.0	0.600
19.033	0.000	3.05	0.00	1.41	6.9	0.595
19.050	0.000	3.04	0.00	1.40	6.9	0.590
19.067	0.000	3.03	0.00	1.39	6.8	0.584
19.083	0.000	3.02	0.00	1.38	6.8	0.579
19.100	0.000	3.01	0.00	1.38	6.7	0.574
19.117	0.000	3.00	0.00	1.37	6.7	0.569
19.133	0.000	2.99	0.00	1.36	6.6	0.564
19.150	0.000	2.98	0.00	1.35	6.6	0.559

19.167	0.000	2.97	0.00	1.34	6.5	0.554
19.183	0.000	2.95	0.00	1.33	6.5	0.549
19.200	0.000	2.94	0.00	1.32	6.4	0.544
19.217	0.000	2.93	0.00	1.31	6.4	0.540
19.233	0.000	2.92	0.00	1.31	6.3	0.535
19.250	0.000	2.92	0.00	1.30	6.3	0.530
19.267	0.000	2.91	0.00	1.29	6.2	0.526
19.283	0.000	2.90	0.00	1.28	6.2	0.521
19.300	0.000	2.89	0.00	1.27	6.2	0.517
19.317	0.000	2.88	0.00	1.26	6.1	0.512
19.333	0.000	2.87	0.00	1.26	6.1	0.508
19.350	0.000	2.86	0.00	1.25	6.0	0.503
19.367	0.000	2.85	0.00	1.24	6.0	0.499
19.383	0.000	2.84	0.00	1.23	5.9	0.495
19.400	0.000	2.83	0.00	1.22	5.9	0.491
19.417	0.000	2.82	0.00	1.22	5.8	0.487
19.433	0.000	2.81	0.00	1.21	5.8	0.483
19.450	0.000	2.80	0.00	1.20	5.7	0.479
19.467	0.000	2.80	0.00	1.19	5.6	0.475
19.483	0.000	2.79	0.00	1.19	5.6	0.471
19.500	0.000	2.78	0.00	1.18	5.5	0.467
19.517	0.000	2.77	0.00	1.17	5.5	0.463
19.533	0.000	2.76	0.00	1.17	5.4	0.459
19.550	0.000	2.75	0.00	1.16	5.4	0.456
19.567	0.000	2.74	0.00	1.15	5.3	0.452
19.583	0.000	2.74	0.00	1.15	5.3	0.449
19.600	0.000	2.73	0.00	1.14	5.3	0.445
19.617	0.000	2.72	0.00	1.13	5.2	0.442
19.633	0.000	2.71	0.00	1.13	5.2	0.438
19.650	0.000	2.70	0.00	1.12	5.1	0.435
19.667	0.000	2.70	0.00	1.11	5.1	0.432
19.683	0.000	2.69	0.00	1.11	5.0	0.429
19.700	0.000	2.68	0.00	1.10	5.0	0.425
19.717	0.000	2.67	0.00	1.10	4.9	0.422
19.733	0.000	2.67	0.00	1.09	4.9	0.419
19.750	0.000	2.66	0.00	1.08	4.9	0.416
19.767	0.000	2.65	0.00	1.08	4.8	0.413
19.783	0.000	2.64	0.00	1.07	4.8	0.410
19.800	0.000	2.63	0.00	1.07	4.7	0.407
19.817	0.000	2.63	0.00	1.06	4.7	0.404
19.833	0.000	2.62	0.00	1.06	4.7	0.402
19.850	0.000	2.61	0.00	1.05	4.6	0.399
19.867	0.000	2.61	0.00	1.05	4.6	0.396
19.883	0.000	2.60	0.00	1.04	4.6	0.393
19.900	0.000	2.59	0.00	1.04	4.5	0.391
19.917	0.000	2.58	0.00	1.03	4.5	0.388
19.933	0.000	2.58	0.00	1.03	4.4	0.386
19.950	0.000	2.57	0.00	1.02	4.4	0.383
19.967	0.000	2.56	0.00	1.02	4.4	0.381
19.983	0.000	2.56	0.00	1.01	4.3	0.378

20.000	0.000	2.55	0.00	1.01	4.3	0.376
--------	-------	------	------	------	-----	-------

PROCESS SUMMARY OF STORAGE:

INFLOW VOLUME = 8.694 AF

BASIN STORAGE = 0.045 AF (WITH 0.000 AF INITIALLY FILLED)

OUTFLOW VOLUME = 8.649 AF

LOSS VOLUME = 0.000 AF

FLOW PROCESS FROM NODE 290.00 TO NODE 540.00 IS CODE = 1.2

>>>>SUBAREA RUNOFF (SMALL AREA UNIT-HYDROGRAPH ANALYSIS) <<<<

=====

(SMALL AREA UNIT-HYDROGRAPH ADDED TO STREAM #3)

RATIONAL METHOD CALIBRATION COEFFICIENT = 0.90

TOTAL CATCHMENT AREA(ACRES) = 13.51

SOIL-LOSS RATE, Fm,(INCH/HR) = 0.030

LOW LOSS FRACTION = 0.040

TIME OF CONCENTRATION(MIN.) = 6.47

SMALL AREA PEAK Q COMPUTED USING PEAK FLOW RATE FORMULA

ORANGE COUNTY "VALLEY" RAINFALL VALUES ARE USED:

RETURN FREQUENCY(YEARS) = 100

5-MINUTE POINT RAINFALL VALUE(INCHES) = 0.52

30-MINUTE POINT RAINFALL VALUE(INCHES) = 1.09

1-HOUR POINT RAINFALL VALUE(INCHES) = 1.45

3-HOUR POINT RAINFALL VALUE(INCHES) = 2.43

6-HOUR POINT RAINFALL VALUE(INCHES) = 3.36

24-HOUR POINT RAINFALL VALUE(INCHES) = 5.63

TOTAL CATCHMENT RUNOFF VOLUME(ACRE-FEET) = 5.47

TOTAL CATCHMENT SOIL-LOSS VOLUME(ACRE-FEET) = 0.87

↑

=====

2 4 - H O U R S T O R M

R U N O F F H Y D R O G R A P H

=====

HYDROGRAPH IN ONE-MINUTE UNIT INTERVALS(CFS)

(Notes: Time indicated is at END of Each Unit Intervals.

Peak 5-minute rainfall intensity is modeled as

a constant value for entire 5-minute period.)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	16.2	32.4	48.6	64.9
-----------	------------	--------	----	------	------	------	------

10.000 1.0934 1.87 .Q V . . .
10.017 1.0960 1.87 .Q V . . .
10.033 1.0986 1.88 .Q V . . .
10.050 1.1012 1.88 .Q V . . .
10.067 1.1038 1.88 .Q V . . .
10.083 1.1064 1.89 .Q V . . .
10.100 1.1090 1.89 .Q V . . .
10.117 1.1116 1.89 .Q V . . .
10.133 1.1142 1.89 .Q V . . .
10.150 1.1168 1.90 .Q V . . .
10.167 1.1194 1.90 .Q V . . .
10.183 1.1220 1.90 .Q V . . .
10.200 1.1246 1.90 .Q V . . .
10.217 1.1273 1.91 .Q V . . .
10.233 1.1299 1.91 .Q V . . .
10.250 1.1325 1.92 .Q V . . .
10.267 1.1352 1.92 .Q V . . .
10.283 1.1378 1.93 .Q V . . .
10.300 1.1405 1.93 .Q V . . .
10.317 1.1432 1.93 .Q V . . .
10.333 1.1458 1.94 .Q V . . .
10.350 1.1485 1.94 .Q V . . .
10.367 1.1512 1.94 .Q V . . .
10.383 1.1539 1.94 .Q V . . .
10.400 1.1565 1.95 .Q V . . .
10.417 1.1592 1.95 .Q V . . .
10.433 1.1619 1.95 .Q V . . .
10.450 1.1646 1.96 .Q V . . .
10.467 1.1673 1.96 .Q V . . .
10.483 1.1700 1.97 .Q V . . .
10.500 1.1728 1.97 .Q V . . .
10.517 1.1755 1.98 .Q V . . .
10.533 1.1782 1.98 .Q V . . .
10.550 1.1809 1.98 .Q V . . .
10.567 1.1837 1.99 .Q V . . .
10.583 1.1864 1.99 .Q V . . .
10.600 1.1892 1.99 .Q V . . .
10.617 1.1919 1.99 .Q V . . .
10.633 1.1947 2.00 .Q V . . .
10.650 1.1974 2.00 .Q V . . .
10.667 1.2002 2.01 .Q V . . .
10.683 1.2030 2.01 .Q V . . .
10.700 1.2057 2.02 .Q V . . .
10.717 1.2085 2.02 .Q V . . .
10.733 1.2113 2.03 .Q V . . .
10.750 1.2141 2.03 .Q V . . .
10.767 1.2169 2.03 .Q V . . .
10.783 1.2197 2.04 .Q V . . .
10.800 1.2225 2.04 .Q V . . .

10.817 1.2253 2.04 .Q V . . .
10.833 1.2282 2.04 .Q V . . .
10.850 1.2310 2.05 .Q V . . .
10.867 1.2338 2.06 .Q V . . .
10.883 1.2366 2.06 .Q V . . .
10.900 1.2395 2.07 .Q V . . .
10.917 1.2423 2.07 .Q V . . .
10.933 1.2452 2.08 .Q V . . .
10.950 1.2481 2.08 .Q V . . .
10.967 1.2509 2.08 .Q V . . .
10.983 1.2538 2.09 .Q V . . .
11.000 1.2567 2.09 .Q V . . .
11.017 1.2596 2.09 .Q V . . .
11.033 1.2625 2.10 .Q V . . .
11.050 1.2654 2.10 .Q V . . .
11.067 1.2682 2.10 .Q V . . .
11.083 1.2712 2.11 .Q V . . .
11.100 1.2741 2.12 .Q V . . .
11.117 1.2770 2.12 .Q V . . .
11.133 1.2799 2.13 .Q V . . .
11.150 1.2829 2.13 .Q V . . .
11.167 1.2858 2.14 .Q V . . .
11.183 1.2888 2.14 .Q V . . .
11.200 1.2917 2.14 .Q V . . .
11.217 1.2947 2.15 .Q V . . .
11.233 1.2976 2.15 .Q V . . .
11.250 1.3006 2.15 .Q V . . .
11.267 1.3036 2.16 .Q V . . .
11.283 1.3066 2.16 .Q V . . .
11.300 1.3095 2.17 .Q V . . .
11.317 1.3125 2.18 .Q V . . .
11.333 1.3155 2.18 .Q V . . .
11.350 1.3186 2.19 .Q V . . .
11.367 1.3216 2.20 .Q V . . .
11.383 1.3246 2.20 .Q V . . .
11.400 1.3276 2.20 .Q V . . .
11.417 1.3307 2.21 .Q V . . .
11.433 1.3337 2.21 .Q V . . .
11.450 1.3368 2.21 .Q V . . .
11.467 1.3398 2.22 .Q V . . .
11.483 1.3429 2.22 .Q V . . .
11.500 1.3460 2.23 .Q V . . .
11.517 1.3490 2.23 .Q V . . .
11.533 1.3521 2.24 .Q V . . .
11.550 1.3552 2.25 .Q V . . .
11.567 1.3583 2.25 .Q V . . .
11.583 1.3614 2.26 .Q V . . .
11.600 1.3645 2.27 .Q V . . .
11.617 1.3677 2.27 .Q V . . .
11.633 1.3708 2.27 .Q V . . .

11.650	1.3739	2.28	.Q	V	.	.	.
11.667	1.3771	2.28	.Q	V	.	.	.
11.683	1.3802	2.28	.Q	V	.	.	.
11.700	1.3834	2.29	.Q	V	.	.	.
11.717	1.3865	2.30	.Q	V	.	.	.
11.733	1.3897	2.30	.Q	V	.	.	.
11.750	1.3929	2.31	.Q	V	.	.	.
11.767	1.3961	2.32	.Q	V	.	.	.
11.783	1.3993	2.32	.Q	V	.	.	.
11.800	1.4025	2.33	.Q	V	.	.	.
11.817	1.4057	2.34	.Q	V	.	.	.
11.833	1.4089	2.34	.Q	V	.	.	.
11.850	1.4122	2.34	.Q	V	.	.	.
11.867	1.4154	2.35	.Q	V	.	.	.
11.883	1.4186	2.35	.Q	V	.	.	.
11.900	1.4219	2.36	.Q	V	.	.	.
11.917	1.4251	2.36	.Q	V	.	.	.
11.933	1.4284	2.37	.Q	V	.	.	.
11.950	1.4317	2.38	.Q	V	.	.	.
11.967	1.4350	2.39	.Q	V	.	.	.
11.983	1.4383	2.39	.Q	V	.	.	.
12.000	1.4416	2.40	.Q	V	.	.	.
12.017	1.4449	2.41	.Q	V	.	.	.
12.033	1.4483	2.47	.Q	V	.	.	.
12.050	1.4518	2.54	.Q	V	.	.	.
12.067	1.4554	2.60	.Q	V	.	.	.
12.083	1.4590	2.67	.Q	V	.	.	.
12.100	1.4628	2.73	.Q	V	.	.	.
12.117	1.4667	2.80	.Q	V	.	.	.
12.133	1.4706	2.86	.Q	V	.	.	.
12.150	1.4746	2.90	.Q	V	.	.	.
12.167	1.4786	2.94	.Q	V	.	.	.
12.183	1.4828	2.99	.Q	V	.	.	.
12.200	1.4869	3.03	.Q	V	.	.	.
12.217	1.4912	3.07	.Q	V	.	.	.
12.233	1.4955	3.11	.Q	V	.	.	.
12.250	1.4998	3.13	.Q	V	.	.	.
12.267	1.5041	3.13	.Q	.V	.	.	.
12.283	1.5084	3.13	.Q	.V	.	.	.
12.300	1.5127	3.14	.Q	.V	.	.	.
12.317	1.5170	3.14	.Q	.V	.	.	.
12.333	1.5214	3.15	.Q	.V	.	.	.
12.350	1.5257	3.16	.Q	.V	.	.	.
12.367	1.5301	3.17	.Q	.V	.	.	.
12.383	1.5345	3.18	.Q	.V	.	.	.
12.400	1.5389	3.19	.Q	.V	.	.	.
12.417	1.5433	3.20	.Q	.V	.	.	.
12.433	1.5477	3.21	.Q	.V	.	.	.
12.450	1.5521	3.22	.Q	.V	.	.	.
12.467	1.5566	3.22	.Q	.V	.	.	.

12.483	1.5610	3.23	.Q	.V	.	.	.
12.500	1.5655	3.23	.Q	.V	.	.	.
12.517	1.5699	3.24	.Q	.V	.	.	.
12.533	1.5744	3.24	. Q	.V	.	.	.
12.550	1.5789	3.25	. Q	.V	.	.	.
12.567	1.5834	3.26	. Q	.V	.	.	.
12.583	1.5879	3.27	. Q	.V	.	.	.
12.600	1.5924	3.28	. Q	.V	.	.	.
12.617	1.5969	3.29	. Q	.V	.	.	.
12.633	1.6015	3.30	. Q	.V	.	.	.
12.650	1.6060	3.31	. Q	.V	.	.	.
12.667	1.6106	3.32	. Q	.V	.	.	.
12.683	1.6152	3.33	. Q	.V	.	.	.
12.700	1.6198	3.34	. Q	.V	.	.	.
12.717	1.6244	3.34	. Q	.V	.	.	.
12.733	1.6290	3.35	. Q	.V	.	.	.
12.750	1.6336	3.35	. Q	.V	.	.	.
12.767	1.6383	3.36	. Q	.V	.	.	.
12.783	1.6429	3.37	. Q	. V	.	.	.
12.800	1.6476	3.38	. Q	. V	.	.	.
12.817	1.6522	3.39	. Q	. V	.	.	.
12.833	1.6569	3.41	. Q	. V	.	.	.
12.850	1.6616	3.42	. Q	. V	.	.	.
12.867	1.6664	3.43	. Q	. V	.	.	.
12.883	1.6711	3.44	. Q	. V	.	.	.
12.900	1.6759	3.45	. Q	. V	.	.	.
12.917	1.6806	3.46	. Q	. V	.	.	.
12.933	1.6854	3.46	. Q	. V	.	.	.
12.950	1.6902	3.47	. Q	. V	.	.	.
12.967	1.6949	3.48	. Q	. V	.	.	.
12.983	1.6997	3.48	. Q	. V	.	.	.
13.000	1.7046	3.49	. Q	. V	.	.	.
13.017	1.7094	3.51	. Q	. V	.	.	.
13.033	1.7142	3.52	. Q	. V	.	.	.
13.050	1.7191	3.53	. Q	. V	.	.	.
13.067	1.7240	3.55	. Q	. V	.	.	.
13.083	1.7289	3.56	. Q	. V	.	.	.
13.100	1.7338	3.57	. Q	. V	.	.	.
13.117	1.7387	3.58	. Q	. V	.	.	.
13.133	1.7437	3.59	. Q	. V	.	.	.
13.150	1.7486	3.60	. Q	. V	.	.	.
13.167	1.7536	3.60	. Q	. V	.	.	.
13.183	1.7586	3.61	. Q	. V	.	.	.
13.200	1.7636	3.62	. Q	. V	.	.	.
13.217	1.7686	3.63	. Q	. V	.	.	.
13.233	1.7736	3.65	. Q	. V	.	.	.
13.250	1.7786	3.66	. Q	. V	.	.	.
13.267	1.7837	3.68	. Q	. V	.	.	.
13.283	1.7888	3.69	. Q	. V	.	.	.
13.300	1.7939	3.71	. Q	. V	.	.	.

13.317	1.7990	3.72	. Q	. V	.	.	.
13.333	1.8041	3.73	. Q	. V	.	.	.
13.350	1.8093	3.74	. Q	. V	.	.	.
13.367	1.8144	3.74	. Q	. V	.	.	.
13.383	1.8196	3.75	. Q	. V	.	.	.
13.400	1.8248	3.76	. Q	. V	.	.	.
13.417	1.8300	3.77	. Q	. V	.	.	.
13.433	1.8352	3.78	. Q	. V	.	.	.
13.450	1.8404	3.80	. Q	. V	.	.	.
13.467	1.8457	3.82	. Q	. V	.	.	.
13.483	1.8510	3.84	. Q	. V	.	.	.
13.500	1.8563	3.85	. Q	. V	.	.	.
13.517	1.8616	3.87	. Q	. V	.	.	.
13.533	1.8670	3.88	. Q	. V	.	.	.
13.550	1.8723	3.89	. Q	. V	.	.	.
13.567	1.8777	3.90	. Q	. V	.	.	.
13.583	1.8831	3.91	. Q	. V	.	.	.
13.600	1.8885	3.92	. Q	. V	.	.	.
13.617	1.8939	3.93	. Q	. V	.	.	.
13.633	1.8993	3.94	. Q	. V	.	.	.
13.650	1.9048	3.96	. Q	. V	.	.	.
13.667	1.9103	3.98	. Q	. V	.	.	.
13.683	1.9158	4.00	. Q	. V	.	.	.
13.700	1.9213	4.02	. Q	. V	.	.	.
13.717	1.9269	4.04	. Q	. V	.	.	.
13.733	1.9325	4.06	. Q	. V	.	.	.
13.750	1.9381	4.07	. Q	. V	.	.	.
13.767	1.9437	4.08	. Q	. V	.	.	.
13.783	1.9493	4.09	. Q	. V	.	.	.
13.800	1.9550	4.10	. Q	. V	.	.	.
13.817	1.9607	4.12	. Q	. V	.	.	.
13.833	1.9663	4.13	. Q	. V	.	.	.
13.850	1.9720	4.14	. Q	. V	.	.	.
13.867	1.9778	4.16	. Q	. V	.	.	.
13.883	1.9835	4.18	. Q	. V	.	.	.
13.900	1.9893	4.20	. Q	. V	.	.	.
13.917	1.9951	4.23	. Q	. V	.	.	.
13.933	2.0010	4.25	. Q	. V	.	.	.
13.950	2.0069	4.27	. Q	. V	.	.	.
13.967	2.0128	4.29	. Q	. V	.	.	.
13.983	2.0187	4.30	. Q	. V	.	.	.
14.000	2.0246	4.31	. Q	. V	.	.	.
14.017	2.0306	4.33	. Q	. V	.	.	.
14.033	2.0366	4.34	. Q	. V	.	.	.
14.050	2.0426	4.35	. Q	. V	.	.	.
14.067	2.0486	4.37	. Q	. V	.	.	.
14.083	2.0546	4.39	. Q	. V	.	.	.
14.100	2.0607	4.42	. Q	. V	.	.	.
14.117	2.0669	4.45	. Q	. V	.	.	.
14.133	2.0730	4.48	. Q	. V	.	.	.

14.150	2.0793	4.51	. Q	. V	.	.	.
14.167	2.0855	4.54	. Q	. V	.	.	.
14.183	2.0918	4.57	. Q	. V	.	.	.
14.200	2.0981	4.58	. Q	. V	.	.	.
14.217	2.1044	4.60	. Q	. V	.	.	.
14.233	2.1108	4.61	. Q	. V	.	.	.
14.250	2.1172	4.63	. Q	. V	.	.	.
14.267	2.1236	4.64	. Q	. V	.	.	.
14.283	2.1300	4.66	. Q	. V	.	.	.
14.300	2.1364	4.69	. Q	. V	.	.	.
14.317	2.1429	4.72	. Q	. V	.	.	.
14.333	2.1495	4.75	. Q	. V	.	.	.
14.350	2.1561	4.78	. Q	. V	.	.	.
14.367	2.1627	4.81	. Q	. V	.	.	.
14.383	2.1694	4.85	. Q	. V	.	.	.
14.400	2.1761	4.87	. Q	. V	.	.	.
14.417	2.1828	4.89	. Q	. V	.	.	.
14.433	2.1896	4.90	. Q	. V	.	.	.
14.450	2.1963	4.92	. Q	. V	.	.	.
14.467	2.2031	4.94	. Q	. V	.	.	.
14.483	2.2100	4.96	. Q	. V	.	.	.
14.500	2.2168	4.98	. Q	. V	.	.	.
14.517	2.2237	5.02	. Q	. V	.	.	.
14.533	2.2307	5.05	. Q	. V	.	.	.
14.550	2.2377	5.09	. Q	. V	.	.	.
14.567	2.2448	5.13	. Q	. V	.	.	.
14.583	2.2519	5.17	. Q	. V	.	.	.
14.600	2.2591	5.21	. Q	. V	.	.	.
14.617	2.2663	5.24	. Q	. V	.	.	.
14.633	2.2735	5.26	. Q	. V	.	.	.
14.650	2.2808	5.28	. Q	. V	.	.	.
14.667	2.2881	5.30	. Q	. V	.	.	.
14.683	2.2954	5.32	. Q	. V	.	.	.
14.700	2.3028	5.35	. Q	. V	.	.	.
14.717	2.3102	5.37	. Q	. V	.	.	.
14.733	2.3177	5.42	. Q	. V	.	.	.
14.750	2.3252	5.47	. Q	. V	.	.	.
14.767	2.3328	5.52	. Q	. V	.	.	.
14.783	2.3405	5.57	. Q	. V	.	.	.
14.800	2.3482	5.62	. Q	. V	.	.	.
14.817	2.3560	5.67	. Q	. V	.	.	.
14.833	2.3639	5.70	. Q	. V	.	.	.
14.850	2.3718	5.73	. Q	. V	.	.	.
14.867	2.3797	5.76	. Q	. V	.	.	.
14.883	2.3877	5.78	. Q	. V	.	.	.
14.900	2.3957	5.81	. Q	. V	.	.	.
14.917	2.4037	5.84	. Q	. V	.	.	.
14.933	2.4118	5.88	. Q	. V	.	.	.
14.950	2.4200	5.94	. Q	. V	.	.	.
14.967	2.4283	6.00	. Q	. V	.	.	.

14.983	2.4366	6.07	.	Q	.	V	.	.	.
15.000	2.4451	6.13	.	Q	.	V	.	.	.
15.017	2.4536	6.20	.	Q	.	V	.	.	.
15.033	2.4622	6.26	.	Q	.	V	.	.	.
15.050	2.4709	6.31	.	Q	.	V	.	.	.
15.067	2.4796	6.34	.	Q	.	V	.	.	.
15.083	2.4884	6.38	.	Q	.	V	.	.	.
15.100	2.4973	6.42	.	Q	.	V	.	.	.
15.117	2.5062	6.45	.	Q	.	V	.	.	.
15.133	2.5151	6.49	.	Q	.	V	.	.	.
15.150	2.5241	6.54	.	Q	.	V	.	.	.
15.167	2.5332	6.63	.	Q	.	V	.	.	.
15.183	2.5425	6.72	.	Q	.	V	.	.	.
15.200	2.5519	6.81	.	Q	.	V	.	.	.
15.217	2.5614	6.90	.	Q	.	V	.	.	.
15.233	2.5710	6.99	.	Q	.	V	.	.	.
15.250	2.5808	7.08	.	Q	.	V	.	.	.
15.267	2.5906	7.14	.	Q	.	V	.	.	.
15.283	2.6005	7.20	.	Q	.	V	.	.	.
15.300	2.6105	7.25	.	Q	.	V	.	.	.
15.317	2.6206	7.30	.	Q	.	V	.	.	.
15.333	2.6307	7.36	.	Q	.	V	.	.	.
15.350	2.6409	7.41	.	Q	.	V	.	.	.
15.367	2.6512	7.44	.	Q	.	V	.	.	.
15.383	2.6614	7.43	.	Q	.	V	.	.	.
15.400	2.6716	7.41	.	Q	.	V	.	.	.
15.417	2.6818	7.39	.	Q	.	V	.	.	.
15.433	2.6920	7.38	.	Q	.	V	.	.	.
15.450	2.7021	7.36	.	Q	.	V	.	.	.
15.467	2.7122	7.35	.	Q	.	V	.	.	.
15.483	2.7224	7.41	.	Q	.	V	.	.	.
15.500	2.7328	7.50	.	Q	.	V	.	.	.
15.517	2.7432	7.59	.	Q	.	V	.	.	.
15.533	2.7538	7.67	.	Q	.	V	.	.	.
15.550	2.7645	7.76	.	Q	.	V	.	.	.
15.567	2.7753	7.85	.	Q	.	V	.	.	.
15.583	2.7863	8.00	.	Q	.	V	.	.	.
15.600	2.7976	8.25	.	Q	.	V	.	.	.
15.617	2.8093	8.50	.	Q	.	V	.	.	.
15.633	2.8214	8.75	.	Q	.	V	.	.	.
15.650	2.8338	9.00	.	Q	.	V	.	.	.
15.667	2.8465	9.25	.	Q	.	V	.	.	.
15.683	2.8596	9.49	.	Q	.	V	.	.	.
15.700	2.8729	9.70	.	Q	.	.V	.	.	.
15.717	2.8866	9.89	.	Q	.	.V	.	.	.
15.733	2.9005	10.09	.	Q	.	.V	.	.	.
15.750	2.9146	10.29	.	Q	.	.V	.	.	.
15.767	2.9291	10.48	.	Q	.	.V	.	.	.
15.783	2.9438	10.68	.	Q	.	.V	.	.	.
15.800	2.9591	11.11	.	Q	.	.V	.	.	.

15.817	2.9754	11.83	.	Q	.	.V	.	.	.
15.833	2.9927	12.55	.	Q	.	.V	.	.	.
15.850	3.0109	13.28	.	Q	.	.V	.	.	.
15.867	3.0302	14.00	.	Q	.	.V	.	.	.
15.883	3.0505	14.72	.	Q	.	.V	.	.	.
15.900	3.0718	15.47	.	Q	.	.V	.	.	.
15.917	3.0943	16.34	.	Q	.	.V	.	.	.
15.933	3.1181	17.23	.	Q	.	.V	.	.	.
15.950	3.1430	18.13	.	.Q	.	.V	.	.	.
15.967	3.1692	19.02	.	.Q	.	.V	.	.	.
15.983	3.1966	19.91	.	.Q	.	.V	.	.	.
16.000	3.2253	20.81	.	.Q	.	.V	.	.	.
16.017	3.2592	24.63	.	.	Q	.V	.	.	.
16.033	3.3024	31.36	.	.	Q.	.V	.	.	.
16.050	3.3549	38.10	.	.	.	QV	.	.	.
16.067	3.4167	44.84	.	.	.	.V	Q	.	.
16.083	3.4877	51.58	.	.	.	.V	.Q	.	.
16.100	3.5681	58.32	.	.	.	.V	.	Q	.
16.117	3.6574	64.86	.	.	.	.V	.	.	Q
16.133	3.7353	56.53	.	.	.	.V	.	Q	.
16.150	3.8020	48.46	.	.	.	.V	Q.	.	.
16.167	3.8576	40.38	.	.	.	Q	.V	.	.
16.183	3.9021	32.30	.	.	Q.	.V	.	.	.
16.200	3.9355	24.22	.	.	Q	.V	.	.	.
16.217	3.9577	16.16	.	Q.	.	.V	.	.	.
16.233	3.9746	12.24	.	Q	.	.V	.	.	.
16.250	3.9906	11.63	.	Q	.	.V	.	.	.
16.267	4.0058	11.01	.	Q	.	.V	.	.	.
16.283	4.0201	10.39	.	Q	.	.V	.	.	.
16.300	4.0336	9.78	.	Q	.	.V	.	.	.
16.317	4.0462	9.16	.	Q	.	.V	.	.	.
16.333	4.0581	8.62	.	Q	.	.V	.	.	.
16.350	4.0697	8.43	.	Q	.	.V	.	.	.
16.367	4.0811	8.27	.	Q	.	.V	.	.	.
16.383	4.0922	8.11	.	Q	.	.V	.	.	.
16.400	4.1032	7.96	.	Q	.	.V	.	.	.
16.417	4.1139	7.80	.	Q	.	.V	.	.	.
16.433	4.1245	7.65	.	Q	.	.V	.	.	.
16.450	4.1348	7.51	.	Q	.	.V	.	.	.
16.467	4.1450	7.39	.	Q	.	.V	.	.	.
16.483	4.1550	7.26	.	Q	.	.V	.	.	.
16.500	4.1648	7.14	.	Q	.	.V	.	.	.
16.517	4.1745	7.02	.	Q	.	.V	.	.	.
16.533	4.1840	6.90	.	Q	.	.V	.	.	.
16.550	4.1933	6.78	.	Q	.	.V	.	.	.
16.567	4.2025	6.66	.	Q	.	.V	.	.	.
16.583	4.2115	6.55	.	Q	.	.V	.	.	.
16.600	4.2204	6.44	.	Q	.	.V	.	.	.
16.617	4.2291	6.32	.	Q	.	.V	.	.	.
16.633	4.2377	6.21	.	Q	.	.V	.	.	.

16.650	4.2460	6.10	.	Q	.	.	.	.V	.
16.667	4.2543	6.00	.	Q	.	.	.	.V	.
16.683	4.2625	5.92	.	Q	.	.	.	.V	.
16.700	4.2705	5.83	.	Q	.	.	.	.V	.
16.717	4.2784	5.75	.	Q	.	.	.	.V	.
16.733	4.2862	5.67	.	Q	.	.	.	.V	.
16.750	4.2939	5.58	.	Q	.	.	.	.V	.
16.767	4.3015	5.50	.	Q	.	.	.	.V	.
16.783	4.3090	5.44	.	Q	.	.	.	.V	.
16.800	4.3164	5.37	.	Q	.	.	.	.V	.
16.817	4.3237	5.31	.	Q	.	.	.	.V	.
16.833	4.3309	5.24	.	Q	.	.	.	.V	.
16.850	4.3381	5.18	.	Q	.	.	.	.V	.
16.867	4.3451	5.11	.	Q	.	.	.	.V	.
16.883	4.3521	5.06	.	Q	.	.	.	.V	.
16.900	4.3590	5.00	.	Q	.	.	.	.V	.
16.917	4.3658	4.95	.	Q	.	.	.	.V	.
16.933	4.3725	4.90	.	Q	.	.	.	.V	.
16.950	4.3792	4.84	.	Q	.	.	.	.V	.
16.967	4.3858	4.79	.	Q	.	.	.	.V	.
16.983	4.3923	4.74	.	Q	.	.	.	.V	.
17.000	4.3988	4.70	.	Q	.	.	.	.V	.
17.017	4.4052	4.65	.	Q	.	.	.	.V	.
17.033	4.4115	4.61	.	Q	.	.	.	.V	.
17.050	4.4178	4.56	.	Q	.	.	.	.V	.
17.067	4.4241	4.52	.	Q	.	.	.	.V	.
17.083	4.4302	4.48	.	Q	.	.	.	.V	.
17.100	4.4363	4.44	.	Q	.	.	.	.V	.
17.117	4.4424	4.40	.	Q	.	.	.	.V	.
17.133	4.4484	4.36	.	Q	.	.	.	.V	.
17.150	4.4543	4.32	.	Q	.	.	.	.V	.
17.167	4.4602	4.28	.	Q	.	.	.	.V	.
17.183	4.4661	4.24	.	Q	.	.	.	.V	.
17.200	4.4718	4.20	.	Q	.	.	.	.V	.
17.217	4.4776	4.17	.	Q	.	.	.	.V	.
17.233	4.4833	4.14	.	Q	.	.	.	.V	.
17.250	4.4889	4.10	.	Q	.	.	.	.V	.
17.267	4.4945	4.07	.	Q	.	.	.	.V	.
17.283	4.5001	4.04	.	Q	.	.	.	.V	.
17.300	4.5056	4.01	.	Q	.	.	.	.V	.
17.317	4.5111	3.98	.	Q	.	.	.	.V	.
17.333	4.5166	3.95	.	Q	.	.	.	.V	.
17.350	4.5220	3.92	.	Q	.	.	.	.V	.
17.367	4.5273	3.90	.	Q	.	.	.	.V	.
17.383	4.5327	3.87	.	Q	.	.	.	.V	.
17.400	4.5379	3.84	.	Q	.	.	.	.V	.
17.417	4.5432	3.82	.	Q	.	.	.	.V	.
17.433	4.5484	3.79	.	Q	.	.	.	.V	.
17.450	4.5536	3.77	.	Q	.	.	.	.V	.
17.467	4.5588	3.74	.	Q	.	.	.	.V	.

17.483	4.5639	3.72	.	Q	.	.	.	.V	.
17.500	4.5690	3.69	.	Q	.	.	.	.V	.
17.517	4.5740	3.67	.	Q	.	.	.	.V	.
17.533	4.5791	3.65	.	Q	.	.	.	.V	.
17.550	4.5841	3.63	.	Q	.	.	.	.V	.
17.567	4.5890	3.60	.	Q	.	.	.	.V	.
17.583	4.5940	3.58	.	Q	.	.	.	.V	.
17.600	4.5989	3.56	.	Q	.	.	.	.V	.
17.617	4.6037	3.54	.	Q	.	.	.	.V	.
17.633	4.6086	3.52	.	Q	.	.	.	.V	.
17.650	4.6134	3.50	.	Q	.	.	.	.V	.
17.667	4.6182	3.48	.	Q	.	.	.	.V	.
17.683	4.6230	3.46	.	Q	.	.	.	.V	.
17.700	4.6277	3.44	.	Q	.	.	.	.V	.
17.717	4.6324	3.42	.	Q	.	.	.	.V	.
17.733	4.6371	3.40	.	Q	.	.	.	.V	.
17.750	4.6418	3.38	.	Q	.	.	.	.V	.
17.767	4.6464	3.37	.	Q	.	.	.	.V	.
17.783	4.6510	3.35	.	Q	.	.	.	.V	.
17.800	4.6556	3.33	.	Q	.	.	.	.V	.
17.817	4.6602	3.31	.	Q	.	.	.	.V	.
17.833	4.6647	3.30	.	Q	.	.	.	.V	.
17.850	4.6692	3.28	.	Q	.	.	.	.V	.
17.867	4.6737	3.26	.	Q	.	.	.	.V	.
17.883	4.6782	3.25	.	Q	.	.	.	.V	.
17.900	4.6826	3.23	.	Q	.	.	.	.V	.
17.917	4.6871	3.22	.	Q	.	.	.	.V	.
17.933	4.6915	3.20	.	Q	.	.	.	.V	.
17.950	4.6959	3.18	.	Q	.	.	.	.V	.
17.967	4.7002	3.17	.	Q	.	.	.	.V	.
17.983	4.7046	3.15	.	Q	.	.	.	.V	.
18.000	4.7089	3.14	.	Q	.	.	.	.V	.
18.017	4.7132	3.13	.	Q	.	.	.	.V	.
18.033	4.7175	3.11	.	Q	.	.	.	.V	.
18.050	4.7218	3.10	.	Q	.	.	.	.V	.
18.067	4.7259	3.03	.	Q	.	.	.	.V	.
18.083	4.7299	2.92	.	Q	.	.	.	.V	.
18.100	4.7338	2.81	.	Q	.	.	.	.V	.
18.117	4.7375	2.70	.	Q	.	.	.	.V	.
18.133	4.7411	2.59	.	Q	.	.	.	.V	.
18.150	4.7445	2.48	.	Q	.	.	.	.V	.
18.167	4.7478	2.39	.	Q	.	.	.	.V	.
18.183	4.7511	2.37	.	Q	.	.	.	.V	.
18.200	4.7543	2.36	.	Q	.	.	.	.V	.
18.217	4.7576	2.35	.	Q	.	.	.	.V	.
18.233	4.7608	2.34	.	Q	.	.	.	.V	.
18.250	4.7640	2.33	.	Q	.	.	.	.V	.
18.267	4.7672	2.31	.	Q	.	.	.	.V	.
18.283	4.7703	2.30	.	Q	.	.	.	.V	.
18.300	4.7735	2.29	.	Q	.	.	.	.V	.

18.317	4.7766	2.28	.Q	.	.	.	V	.
18.333	4.7798	2.27	.Q	.	.	.	V	.
18.350	4.7829	2.26	.Q	.	.	.	V	.
18.367	4.7860	2.25	.Q	.	.	.	V	.
18.383	4.7891	2.24	.Q	.	.	.	V	.
18.400	4.7921	2.23	.Q	.	.	.	V	.
18.417	4.7952	2.22	.Q	.	.	.	V	.
18.433	4.7982	2.21	.Q	.	.	.	V	.
18.450	4.8013	2.20	.Q	.	.	.	V	.
18.467	4.8043	2.19	.Q	.	.	.	V	.
18.483	4.8073	2.18	.Q	.	.	.	V	.
18.500	4.8103	2.17	.Q	.	.	.	V	.
18.517	4.8132	2.16	.Q	.	.	.	V	.
18.533	4.8162	2.15	.Q	.	.	.	V	.
18.550	4.8192	2.14	.Q	.	.	.	V	.
18.567	4.8221	2.13	.Q	.	.	.	V	.
18.583	4.8250	2.12	.Q	.	.	.	V	.
18.600	4.8279	2.11	.Q	.	.	.	V	.
18.617	4.8308	2.11	.Q	.	.	.	V	.
18.633	4.8337	2.10	.Q	.	.	.	V	.
18.650	4.8366	2.09	.Q	.	.	.	V	.
18.667	4.8395	2.08	.Q	.	.	.	V	.
18.683	4.8423	2.07	.Q	.	.	.	V	.
18.700	4.8452	2.06	.Q	.	.	.	V	.
18.717	4.8480	2.06	.Q	.	.	.	V	.
18.733	4.8508	2.05	.Q	.	.	.	V	.
18.750	4.8536	2.04	.Q	.	.	.	V	.
18.767	4.8564	2.03	.Q	.	.	.	V	.
18.783	4.8592	2.02	.Q	.	.	.	V	.
18.800	4.8620	2.02	.Q	.	.	.	V	.
18.817	4.8648	2.01	.Q	.	.	.	V	.
18.833	4.8675	2.00	.Q	.	.	.	V	.
18.850	4.8703	1.99	.Q	.	.	.	V	.
18.867	4.8730	1.98	.Q	.	.	.	V	.
18.883	4.8757	1.98	.Q	.	.	.	V	.
18.900	4.8784	1.97	.Q	.	.	.	V	.
18.917	4.8811	1.96	.Q	.	.	.	V	.
18.933	4.8838	1.96	.Q	.	.	.	V	.
18.950	4.8865	1.95	.Q	.	.	.	V	.
18.967	4.8892	1.94	.Q	.	.	.	V	.
18.983	4.8918	1.93	.Q	.	.	.	V	.
19.000	4.8945	1.93	.Q	.	.	.	V	.
19.017	4.8971	1.92	.Q	.	.	.	V	.
19.033	4.8998	1.91	.Q	.	.	.	V	.
19.050	4.9024	1.91	.Q	.	.	.	V	.
19.067	4.9050	1.90	.Q	.	.	.	V	.
19.083	4.9076	1.89	.Q	.	.	.	V	.
19.100	4.9102	1.89	.Q	.	.	.	V	.
19.117	4.9128	1.88	.Q	.	.	.	V	.
19.133	4.9154	1.87	.Q	.	.	.	V	.

19.150	4.9180	1.87	.Q	.	.	.	V	.
19.167	4.9205	1.86	.Q	.	.	.	V	.
19.183	4.9231	1.85	.Q	.	.	.	V	.
19.200	4.9256	1.85	.Q	.	.	.	V	.
19.217	4.9282	1.84	.Q	.	.	.	V	.
19.233	4.9307	1.84	.Q	.	.	.	V	.
19.250	4.9332	1.83	.Q	.	.	.	V	.
19.267	4.9357	1.82	.Q	.	.	.	V	.
19.283	4.9382	1.82	.Q	.	.	.	V	.
19.300	4.9407	1.81	.Q	.	.	.	V	.
19.317	4.9432	1.81	.Q	.	.	.	V	.
19.333	4.9457	1.80	.Q	.	.	.	V	.
19.350	4.9482	1.79	.Q	.	.	.	V	.
19.367	4.9506	1.79	.Q	.	.	.	V	.
19.383	4.9531	1.78	.Q	.	.	.	V	.
19.400	4.9555	1.78	.Q	.	.	.	V	.
19.417	4.9580	1.77	.Q	.	.	.	V	.
19.433	4.9604	1.77	.Q	.	.	.	V	.
19.450	4.9628	1.76	.Q	.	.	.	V	.
19.467	4.9652	1.75	.Q	.	.	.	V	.
19.483	4.9677	1.75	.Q	.	.	.	V	.
19.500	4.9701	1.74	.Q	.	.	.	V	.
19.517	4.9725	1.74	.Q	.	.	.	V	.
19.533	4.9748	1.73	.Q	.	.	.	V	.
19.550	4.9772	1.73	.Q	.	.	.	V	.
19.567	4.9796	1.72	.Q	.	.	.	V	.
19.583	4.9820	1.72	.Q	.	.	.	V	.
19.600	4.9843	1.71	.Q	.	.	.	V	.
19.617	4.9867	1.71	.Q	.	.	.	V	.
19.633	4.9890	1.70	.Q	.	.	.	V	.
19.650	4.9914	1.70	.Q	.	.	.	V	.
19.667	4.9937	1.69	.Q	.	.	.	V	.
19.683	4.9960	1.69	.Q	.	.	.	V	.
19.700	4.9983	1.68	.Q	.	.	.	V	.
19.717	5.0006	1.68	.Q	.	.	.	V	.
19.733	5.0029	1.67	.Q	.	.	.	V	.
19.750	5.0052	1.67	.Q	.	.	.	V	.
19.767	5.0075	1.66	.Q	.	.	.	V	.
19.783	5.0098	1.66	.Q	.	.	.	V	.
19.800	5.0121	1.65	.Q	.	.	.	V	.
19.817	5.0144	1.65	.Q	.	.	.	V	.
19.833	5.0166	1.64	.Q	.	.	.	V	.
19.850	5.0189	1.64	.Q	.	.	.	V	.
19.867	5.0211	1.64	.Q	.	.	.	V	.
19.883	5.0234	1.63	.Q	.	.	.	V	.
19.900	5.0256	1.63	.Q	.	.	.	V	.
19.917	5.0279	1.62	.Q	.	.	.	V	.
19.933	5.0301	1.62	Q	.	.	.	V	.
19.950	5.0323	1.61	Q	.	.	.	V	.
19.967	5.0345	1.61	Q	.	.	.	V	.

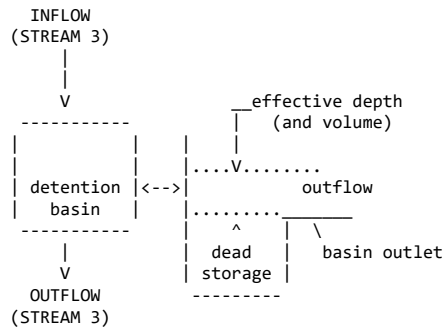
19.983 5.0367 1.60 Q . . . V .
20.000 5.0389 1.60 Q . . . V .

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1201.0
10%	440.0
20%	115.0
30%	70.0
40%	50.0
50%	40.0
60%	35.0
70%	25.0
80%	15.0
90%	5.0

FLOW PROCESS FROM NODE 540.00 TO NODE 540.00 IS CODE = 3.2

>>>>FLOW-THROUGH DETENTION BASIN ROUTING MODEL APPLIED TO STREAM #3<<<<



ROUTE RUNOFF HYDROGRAPH FROM STREAM NUMBER 3
THROUGH A FLOW-THROUGH DETENTION BASIN
SPECIFIED BASIN CONDITIONS ARE AS FOLLOWS:
DEAD STORAGE(AF) = 0.000

SPECIFIED DEAD STORAGE(AF) FILLED = 0.000
SPECIFIED EFFECTIVE VOLUME(AF) FILLED ABOVE OUTLET = 0.000
DETENTION BASIN CONSTANT LOSS RATE(CFS) = 0.00

BASIN DEPTH VERSUS OUTFLOW AND STORAGE INFORMATION:

INTERVAL NUMBER	DEPTH (FT)	OUTFLOW (CFS)	STORAGE (AF)
1	0.00	0.00	0.000
2	0.25	0.01	0.043
3	0.50	0.02	0.087
4	0.75	0.03	0.144
5	1.00	4.25	0.213
6	1.25	6.02	0.289
7	1.50	7.37	0.368
8	1.75	8.51	0.450
9	2.00	9.51	0.534
10	2.25	10.42	0.619
11	2.50	11.26	0.704
12	2.75	12.03	0.788
13	3.00	12.76	0.870
14	3.25	13.45	0.950
15	3.50	14.11	1.025
16	3.75	14.74	1.094
17	4.00	15.34	1.152
18	4.25	18.04	1.195
19	4.50	22.48	1.238
20	4.75	28.05	1.282
21	5.00	34.52	1.325

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

CLOCK TIME (HRS)	DEAD-STORAGE FILLED(AF)	INFLOW (CFS)	LOSS (CFS)	EFFECTIVE DEPTH(FT)	MEAN OUTFLOW (CFS)	EFFECTIVE VOLUME(AF)
10.000	0.000	1.87	0.00	0.86	1.8	0.173
10.017	0.000	1.87	0.00	0.86	1.8	0.173
10.033	0.000	1.88	0.00	0.86	1.8	0.174
10.050	0.000	1.88	0.00	0.86	1.8	0.174
10.067	0.000	1.88	0.00	0.86	1.8	0.174
10.083	0.000	1.89	0.00	0.86	1.8	0.174
10.100	0.000	1.89	0.00	0.86	1.9	0.174
10.117	0.000	1.89	0.00	0.86	1.9	0.174
10.133	0.000	1.89	0.00	0.86	1.9	0.174

11.817	0.000	2.34	0.00	0.88	2.3	0.181
11.833	0.000	2.34	0.00	0.88	2.3	0.181
11.850	0.000	2.34	0.00	0.88	2.3	0.181
11.867	0.000	2.35	0.00	0.88	2.3	0.181
11.883	0.000	2.35	0.00	0.88	2.3	0.181
11.900	0.000	2.36	0.00	0.88	2.3	0.181
11.917	0.000	2.36	0.00	0.88	2.3	0.181
11.933	0.000	2.37	0.00	0.88	2.3	0.181
11.950	0.000	2.38	0.00	0.89	2.3	0.181
11.967	0.000	2.39	0.00	0.89	2.3	0.181
11.983	0.000	2.39	0.00	0.89	2.3	0.181
12.000	0.000	2.40	0.00	0.89	2.3	0.182
12.017	0.000	2.41	0.00	0.89	2.3	0.182
12.033	0.000	2.47	0.00	0.89	2.3	0.182
12.050	0.000	2.54	0.00	0.89	2.4	0.182
12.067	0.000	2.60	0.00	0.89	2.4	0.182
12.083	0.000	2.67	0.00	0.89	2.4	0.183
12.100	0.000	2.73	0.00	0.89	2.4	0.183
12.117	0.000	2.80	0.00	0.89	2.4	0.184
12.133	0.000	2.86	0.00	0.90	2.5	0.184
12.150	0.000	2.90	0.00	0.90	2.5	0.185
12.167	0.000	2.94	0.00	0.90	2.5	0.185
12.183	0.000	2.99	0.00	0.90	2.6	0.186
12.200	0.000	3.03	0.00	0.90	2.6	0.186
12.217	0.000	3.07	0.00	0.91	2.6	0.187
12.233	0.000	3.11	0.00	0.91	2.7	0.188
12.250	0.000	3.13	0.00	0.91	2.7	0.188
12.267	0.000	3.13	0.00	0.91	2.8	0.189
12.283	0.000	3.13	0.00	0.91	2.8	0.189
12.300	0.000	3.14	0.00	0.92	2.8	0.190
12.317	0.000	3.14	0.00	0.92	2.8	0.190
12.333	0.000	3.15	0.00	0.92	2.9	0.190
12.350	0.000	3.16	0.00	0.92	2.9	0.191
12.367	0.000	3.17	0.00	0.92	2.9	0.191
12.383	0.000	3.18	0.00	0.92	2.9	0.192
12.400	0.000	3.19	0.00	0.92	3.0	0.192
12.417	0.000	3.20	0.00	0.92	3.0	0.192
12.433	0.000	3.21	0.00	0.93	3.0	0.192
12.450	0.000	3.22	0.00	0.93	3.0	0.193
12.467	0.000	3.22	0.00	0.93	3.0	0.193
12.483	0.000	3.23	0.00	0.93	3.0	0.193
12.500	0.000	3.23	0.00	0.93	3.1	0.194
12.517	0.000	3.24	0.00	0.93	3.1	0.194
12.533	0.000	3.24	0.00	0.93	3.1	0.194
12.550	0.000	3.25	0.00	0.93	3.1	0.194
12.567	0.000	3.26	0.00	0.93	3.1	0.194
12.583	0.000	3.27	0.00	0.93	3.1	0.195
12.600	0.000	3.28	0.00	0.93	3.1	0.195
12.617	0.000	3.29	0.00	0.93	3.1	0.195
12.633	0.000	3.30	0.00	0.94	3.2	0.195

12.650	0.000	3.31	0.00	0.94	3.2	0.195
12.667	0.000	3.32	0.00	0.94	3.2	0.196
12.683	0.000	3.33	0.00	0.94	3.2	0.196
12.700	0.000	3.34	0.00	0.94	3.2	0.196
12.717	0.000	3.34	0.00	0.94	3.2	0.196
12.733	0.000	3.35	0.00	0.94	3.2	0.196
12.750	0.000	3.35	0.00	0.94	3.2	0.196
12.767	0.000	3.36	0.00	0.94	3.2	0.197
12.783	0.000	3.37	0.00	0.94	3.3	0.197
12.800	0.000	3.38	0.00	0.94	3.3	0.197
12.817	0.000	3.39	0.00	0.94	3.3	0.197
12.833	0.000	3.41	0.00	0.94	3.3	0.197
12.850	0.000	3.42	0.00	0.94	3.3	0.197
12.867	0.000	3.43	0.00	0.94	3.3	0.198
12.883	0.000	3.44	0.00	0.94	3.3	0.198
12.900	0.000	3.45	0.00	0.95	3.3	0.198
12.917	0.000	3.46	0.00	0.95	3.3	0.198
12.933	0.000	3.46	0.00	0.95	3.3	0.198
12.950	0.000	3.47	0.00	0.95	3.4	0.198
12.967	0.000	3.48	0.00	0.95	3.4	0.199
12.983	0.000	3.48	0.00	0.95	3.4	0.199
13.000	0.000	3.49	0.00	0.95	3.4	0.199
13.017	0.000	3.51	0.00	0.95	3.4	0.199
13.033	0.000	3.52	0.00	0.95	3.4	0.199
13.050	0.000	3.53	0.00	0.95	3.4	0.199
13.067	0.000	3.55	0.00	0.95	3.4	0.200
13.083	0.000	3.56	0.00	0.95	3.4	0.200
13.100	0.000	3.57	0.00	0.95	3.4	0.200
13.117	0.000	3.58	0.00	0.95	3.5	0.200
13.133	0.000	3.59	0.00	0.95	3.5	0.200
13.150	0.000	3.60	0.00	0.95	3.5	0.200
13.167	0.000	3.60	0.00	0.95	3.5	0.201
13.183	0.000	3.61	0.00	0.96	3.5	0.201
13.200	0.000	3.62	0.00	0.96	3.5	0.201
13.217	0.000	3.63	0.00	0.96	3.5	0.201
13.233	0.000	3.65	0.00	0.96	3.5	0.201
13.250	0.000	3.66	0.00	0.96	3.5	0.201
13.267	0.000	3.68	0.00	0.96	3.5	0.202
13.283	0.000	3.69	0.00	0.96	3.6	0.202
13.300	0.000	3.71	0.00	0.96	3.6	0.202
13.317	0.000	3.72	0.00	0.96	3.6	0.202
13.333	0.000	3.73	0.00	0.96	3.6	0.202
13.350	0.000	3.74	0.00	0.96	3.6	0.202
13.367	0.000	3.74	0.00	0.96	3.6	0.203
13.383	0.000	3.75	0.00	0.96	3.6	0.203
13.400	0.000	3.76	0.00	0.96	3.6	0.203
13.417	0.000	3.77	0.00	0.96	3.6	0.203
13.433	0.000	3.78	0.00	0.96	3.7	0.203
13.450	0.000	3.80	0.00	0.97	3.7	0.204
13.467	0.000	3.82	0.00	0.97	3.7	0.204

13.483	0.000	3.84	0.00	0.97	3.7	0.204
13.500	0.000	3.85	0.00	0.97	3.7	0.204
13.517	0.000	3.87	0.00	0.97	3.7	0.204
13.533	0.000	3.88	0.00	0.97	3.7	0.205
13.550	0.000	3.89	0.00	0.97	3.7	0.205
13.567	0.000	3.90	0.00	0.97	3.8	0.205
13.583	0.000	3.91	0.00	0.97	3.8	0.205
13.600	0.000	3.92	0.00	0.97	3.8	0.205
13.617	0.000	3.93	0.00	0.97	3.8	0.206
13.633	0.000	3.94	0.00	0.97	3.8	0.206
13.650	0.000	3.96	0.00	0.97	3.8	0.206
13.667	0.000	3.98	0.00	0.98	3.8	0.206
13.683	0.000	4.00	0.00	0.98	3.8	0.206
13.700	0.000	4.02	0.00	0.98	3.9	0.207
13.717	0.000	4.04	0.00	0.98	3.9	0.207
13.733	0.000	4.06	0.00	0.98	3.9	0.207
13.750	0.000	4.07	0.00	0.98	3.9	0.207
13.767	0.000	4.08	0.00	0.98	3.9	0.208
13.783	0.000	4.09	0.00	0.98	3.9	0.208
13.800	0.000	4.10	0.00	0.98	3.9	0.208
13.817	0.000	4.12	0.00	0.98	4.0	0.208
13.833	0.000	4.13	0.00	0.98	4.0	0.208
13.850	0.000	4.14	0.00	0.98	4.0	0.209
13.867	0.000	4.16	0.00	0.99	4.0	0.209
13.883	0.000	4.18	0.00	0.99	4.0	0.209
13.900	0.000	4.20	0.00	0.99	4.0	0.209
13.917	0.000	4.23	0.00	0.99	4.0	0.210
13.933	0.000	4.25	0.00	0.99	4.1	0.210
13.950	0.000	4.27	0.00	0.99	4.1	0.210
13.967	0.000	4.29	0.00	0.99	4.1	0.210
13.983	0.000	4.30	0.00	0.99	4.1	0.211
14.000	0.000	4.31	0.00	0.99	4.1	0.211
14.017	0.000	4.33	0.00	0.99	4.1	0.211
14.033	0.000	4.34	0.00	0.99	4.2	0.211
14.050	0.000	4.35	0.00	1.00	4.2	0.212
14.067	0.000	4.37	0.00	1.00	4.2	0.212
14.083	0.000	4.39	0.00	1.00	4.2	0.212
14.100	0.000	4.42	0.00	1.00	4.2	0.213
14.117	0.000	4.45	0.00	1.00	4.2	0.213
14.133	0.000	4.48	0.00	1.00	4.3	0.213
14.150	0.000	4.51	0.00	1.00	4.3	0.214
14.167	0.000	4.54	0.00	1.00	4.3	0.214
14.183	0.000	4.57	0.00	1.00	4.3	0.214
14.200	0.000	4.58	0.00	1.01	4.3	0.215
14.217	0.000	4.60	0.00	1.01	4.3	0.215
14.233	0.000	4.61	0.00	1.01	4.3	0.216
14.250	0.000	4.63	0.00	1.01	4.3	0.216
14.267	0.000	4.64	0.00	1.01	4.3	0.216
14.283	0.000	4.66	0.00	1.01	4.3	0.217
14.300	0.000	4.69	0.00	1.01	4.3	0.217

14.317	0.000	4.72	0.00	1.02	4.4	0.218
14.333	0.000	4.75	0.00	1.02	4.4	0.218
14.350	0.000	4.78	0.00	1.02	4.4	0.219
14.367	0.000	4.81	0.00	1.02	4.4	0.219
14.383	0.000	4.85	0.00	1.02	4.4	0.220
14.400	0.000	4.87	0.00	1.03	4.4	0.221
14.417	0.000	4.89	0.00	1.03	4.4	0.221
14.433	0.000	4.90	0.00	1.03	4.5	0.222
14.450	0.000	4.92	0.00	1.03	4.5	0.222
14.467	0.000	4.94	0.00	1.03	4.5	0.223
14.483	0.000	4.96	0.00	1.04	4.5	0.224
14.500	0.000	4.98	0.00	1.04	4.5	0.224
14.517	0.000	5.02	0.00	1.04	4.5	0.225
14.533	0.000	5.05	0.00	1.04	4.5	0.226
14.550	0.000	5.09	0.00	1.04	4.6	0.227
14.567	0.000	5.13	0.00	1.05	4.6	0.227
14.583	0.000	5.17	0.00	1.05	4.6	0.228
14.600	0.000	5.21	0.00	1.05	4.6	0.229
14.617	0.000	5.24	0.00	1.06	4.6	0.230
14.633	0.000	5.26	0.00	1.06	4.7	0.231
14.650	0.000	5.28	0.00	1.06	4.7	0.231
14.667	0.000	5.30	0.00	1.06	4.7	0.232
14.683	0.000	5.32	0.00	1.07	4.7	0.233
14.700	0.000	5.35	0.00	1.07	4.7	0.234
14.717	0.000	5.37	0.00	1.07	4.7	0.235
14.733	0.000	5.42	0.00	1.07	4.8	0.236
14.750	0.000	5.47	0.00	1.08	4.8	0.237
14.767	0.000	5.52	0.00	1.08	4.8	0.238
14.783	0.000	5.57	0.00	1.08	4.8	0.239
14.800	0.000	5.62	0.00	1.09	4.9	0.240
14.817	0.000	5.67	0.00	1.09	4.9	0.241
14.833	0.000	5.70	0.00	1.09	4.9	0.242
14.850	0.000	5.73	0.00	1.10	4.9	0.243
14.867	0.000	5.76	0.00	1.10	5.0	0.244
14.883	0.000	5.78	0.00	1.11	5.0	0.245
14.900	0.000	5.81	0.00	1.11	5.0	0.246
14.917	0.000	5.84	0.00	1.11	5.0	0.247
14.933	0.000	5.88	0.00	1.12	5.1	0.248
14.950	0.000	5.94	0.00	1.12	5.1	0.250
14.967	0.000	6.00	0.00	1.12	5.1	0.251
14.983	0.000	6.07	0.00	1.13	5.1	0.252
15.000	0.000	6.13	0.00	1.13	5.2	0.253
15.017	0.000	6.20	0.00	1.14	5.2	0.255
15.033	0.000	6.26	0.00	1.14	5.2	0.256
15.050	0.000	6.31	0.00	1.15	5.3	0.258
15.067	0.000	6.34	0.00	1.15	5.3	0.259
15.083	0.000	6.38	0.00	1.16	5.3	0.260
15.100	0.000	6.42	0.00	1.16	5.4	0.262
15.117	0.000	6.45	0.00	1.17	5.4	0.263
15.133	0.000	6.49	0.00	1.17	5.4	0.265

15.150	0.000	6.54	0.00	1.18	5.5	0.266
15.167	0.000	6.63	0.00	1.18	5.5	0.268
15.183	0.000	6.72	0.00	1.19	5.5	0.269
15.200	0.000	6.81	0.00	1.19	5.6	0.271
15.217	0.000	6.90	0.00	1.20	5.6	0.273
15.233	0.000	6.99	0.00	1.20	5.7	0.275
15.250	0.000	7.08	0.00	1.21	5.7	0.277
15.267	0.000	7.14	0.00	1.22	5.8	0.279
15.283	0.000	7.20	0.00	1.22	5.8	0.280
15.300	0.000	7.25	0.00	1.23	5.8	0.282
15.317	0.000	7.30	0.00	1.23	5.9	0.284
15.333	0.000	7.36	0.00	1.24	5.9	0.286
15.350	0.000	7.41	0.00	1.25	6.0	0.288
15.367	0.000	7.44	0.00	1.25	6.0	0.290
15.383	0.000	7.43	0.00	1.26	6.1	0.292
15.400	0.000	7.41	0.00	1.27	6.1	0.294
15.417	0.000	7.39	0.00	1.27	6.1	0.296
15.433	0.000	7.38	0.00	1.28	6.1	0.297
15.450	0.000	7.36	0.00	1.28	6.2	0.299
15.467	0.000	7.35	0.00	1.29	6.2	0.301
15.483	0.000	7.41	0.00	1.29	6.2	0.302
15.500	0.000	7.50	0.00	1.30	6.3	0.304
15.517	0.000	7.59	0.00	1.30	6.3	0.306
15.533	0.000	7.67	0.00	1.31	6.3	0.308
15.550	0.000	7.76	0.00	1.32	6.4	0.310
15.567	0.000	7.85	0.00	1.32	6.4	0.312
15.583	0.000	8.00	0.00	1.33	6.4	0.314
15.600	0.000	8.25	0.00	1.34	6.5	0.316
15.617	0.000	8.50	0.00	1.34	6.5	0.319
15.633	0.000	8.75	0.00	1.35	6.6	0.322
15.650	0.000	9.00	0.00	1.36	6.6	0.325
15.667	0.000	9.25	0.00	1.38	6.7	0.329
15.683	0.000	9.49	0.00	1.39	6.7	0.333
15.700	0.000	9.70	0.00	1.40	6.8	0.337
15.717	0.000	9.89	0.00	1.41	6.9	0.341
15.733	0.000	10.09	0.00	1.43	6.9	0.345
15.750	0.000	10.29	0.00	1.44	7.0	0.350
15.767	0.000	10.48	0.00	1.46	7.1	0.354
15.783	0.000	10.68	0.00	1.47	7.2	0.359
15.800	0.000	11.11	0.00	1.49	7.3	0.364
15.817	0.000	11.83	0.00	1.51	7.4	0.371
15.833	0.000	12.55	0.00	1.53	7.5	0.378
15.850	0.000	13.28	0.00	1.55	7.6	0.385
15.867	0.000	14.00	0.00	1.58	7.7	0.394
15.883	0.000	14.72	0.00	1.61	7.8	0.404
15.900	0.000	15.47	0.00	1.64	7.9	0.414
15.917	0.000	16.34	0.00	1.68	8.1	0.425
15.933	0.000	17.23	0.00	1.71	8.3	0.438
15.950	0.000	18.13	0.00	1.75	8.4	0.451
15.967	0.000	19.02	0.00	1.80	8.6	0.465

15.983	0.000	19.91	0.00	1.84	8.8	0.481
16.000	0.000	20.81	0.00	1.89	9.0	0.497
16.017	0.000	24.63	0.00	1.95	9.2	0.518
16.033	0.000	31.36	0.00	2.04	9.5	0.548
16.050	0.000	38.10	0.00	2.16	9.9	0.587
16.067	0.000	44.84	0.00	2.30	10.3	0.635
16.083	0.000	51.58	0.00	2.46	10.9	0.691
16.100	0.000	58.32	0.00	2.65	11.4	0.756
16.117	0.000	64.86	0.00	2.87	12.1	0.828
16.133	0.000	56.53	0.00	3.06	12.7	0.889
16.150	0.000	48.46	0.00	3.21	13.1	0.937
16.167	0.000	40.38	0.00	3.33	13.5	0.974
16.183	0.000	32.30	0.00	3.42	13.8	1.000
16.200	0.000	24.22	0.00	3.46	14.0	1.014
16.217	0.000	16.16	0.00	3.47	14.0	1.017
16.233	0.000	12.24	0.00	3.47	14.0	1.015
16.250	0.000	11.63	0.00	3.45	14.0	1.011
16.267	0.000	11.01	0.00	3.44	14.0	1.007
16.283	0.000	10.39	0.00	3.42	13.9	1.002
16.300	0.000	9.78	0.00	3.41	13.9	0.997
16.317	0.000	9.16	0.00	3.38	13.8	0.990
16.333	0.000	8.62	0.00	3.36	13.8	0.983
16.350	0.000	8.43	0.00	3.34	13.7	0.976
16.367	0.000	8.27	0.00	3.31	13.6	0.968
16.383	0.000	8.11	0.00	3.29	13.6	0.961
16.400	0.000	7.96	0.00	3.26	13.5	0.953
16.417	0.000	7.80	0.00	3.24	13.4	0.945
16.433	0.000	7.65	0.00	3.21	13.4	0.938
16.450	0.000	7.51	0.00	3.19	13.3	0.930
16.467	0.000	7.39	0.00	3.16	13.2	0.922
16.483	0.000	7.26	0.00	3.14	13.2	0.913
16.500	0.000	7.14	0.00	3.11	13.1	0.905
16.517	0.000	7.02	0.00	3.08	13.0	0.897
16.533	0.000	6.90	0.00	3.06	13.0	0.889
16.550	0.000	6.78	0.00	3.03	12.9	0.880
16.567	0.000	6.66	0.00	3.01	12.8	0.872
16.583	0.000	6.55	0.00	2.98	12.7	0.863
16.600	0.000	6.44	0.00	2.95	12.7	0.855
16.617	0.000	6.32	0.00	2.93	12.6	0.846
16.633	0.000	6.21	0.00	2.90	12.5	0.837
16.650	0.000	6.10	0.00	2.87	12.4	0.829
16.667	0.000	6.00	0.00	2.85	12.4	0.820
16.683	0.000	5.92	0.00	2.82	12.3	0.811
16.700	0.000	5.83	0.00	2.79	12.2	0.802
16.717	0.000	5.75	0.00	2.77	12.1	0.793
16.733	0.000	5.67	0.00	2.74	12.0	0.785
16.750	0.000	5.58	0.00	2.71	12.0	0.776
16.767	0.000	5.50	0.00	2.69	11.9	0.767
16.783	0.000	5.44	0.00	2.66	11.8	0.758
16.800	0.000	5.37	0.00	2.64	11.7	0.750

16.817	0.000	5.31	0.00	2.61	11.6	0.741
16.833	0.000	5.24	0.00	2.58	11.6	0.732
16.850	0.000	5.18	0.00	2.56	11.5	0.724
16.867	0.000	5.11	0.00	2.53	11.4	0.715
16.883	0.000	5.06	0.00	2.51	11.3	0.706
16.900	0.000	5.00	0.00	2.48	11.2	0.698
16.917	0.000	4.95	0.00	2.46	11.2	0.689
16.933	0.000	4.90	0.00	2.43	11.1	0.681
16.950	0.000	4.84	0.00	2.41	11.0	0.672
16.967	0.000	4.79	0.00	2.38	10.9	0.664
16.983	0.000	4.74	0.00	2.36	10.8	0.655
17.000	0.000	4.70	0.00	2.33	10.7	0.647
17.017	0.000	4.65	0.00	2.31	10.7	0.639
17.033	0.000	4.61	0.00	2.28	10.6	0.631
17.050	0.000	4.56	0.00	2.26	10.5	0.622
17.067	0.000	4.52	0.00	2.24	10.4	0.614
17.083	0.000	4.48	0.00	2.21	10.3	0.606
17.100	0.000	4.44	0.00	2.19	10.2	0.598
17.117	0.000	4.40	0.00	2.17	10.2	0.590
17.133	0.000	4.36	0.00	2.14	10.1	0.582
17.150	0.000	4.32	0.00	2.12	10.0	0.575
17.167	0.000	4.28	0.00	2.10	9.9	0.567
17.183	0.000	4.24	0.00	2.07	9.8	0.559
17.200	0.000	4.20	0.00	2.05	9.7	0.552
17.217	0.000	4.17	0.00	2.03	9.7	0.544
17.233	0.000	4.14	0.00	2.01	9.6	0.536
17.250	0.000	4.10	0.00	1.99	9.5	0.529
17.267	0.000	4.07	0.00	1.96	9.4	0.522
17.283	0.000	4.04	0.00	1.94	9.3	0.514
17.300	0.000	4.01	0.00	1.92	9.2	0.507
17.317	0.000	3.98	0.00	1.90	9.2	0.500
17.333	0.000	3.95	0.00	1.88	9.1	0.493
17.350	0.000	3.92	0.00	1.86	9.0	0.486
17.367	0.000	3.90	0.00	1.84	8.9	0.479
17.383	0.000	3.87	0.00	1.82	8.8	0.472
17.400	0.000	3.84	0.00	1.80	8.7	0.466
17.417	0.000	3.82	0.00	1.78	8.7	0.459
17.433	0.000	3.79	0.00	1.76	8.6	0.452
17.450	0.000	3.77	0.00	1.74	8.5	0.446
17.467	0.000	3.74	0.00	1.72	8.4	0.439
17.483	0.000	3.72	0.00	1.70	8.3	0.433
17.500	0.000	3.69	0.00	1.68	8.2	0.427
17.517	0.000	3.67	0.00	1.66	8.1	0.421
17.533	0.000	3.65	0.00	1.64	8.1	0.415
17.550	0.000	3.63	0.00	1.62	8.0	0.409
17.567	0.000	3.60	0.00	1.61	7.9	0.403
17.583	0.000	3.58	0.00	1.59	7.8	0.397
17.600	0.000	3.56	0.00	1.57	7.7	0.391
17.617	0.000	3.54	0.00	1.55	7.7	0.385
17.633	0.000	3.52	0.00	1.54	7.6	0.380

17.650	0.000	3.50	0.00	1.52	7.5	0.374
17.667	0.000	3.48	0.00	1.50	7.4	0.369
17.683	0.000	3.46	0.00	1.49	7.3	0.364
17.700	0.000	3.44	0.00	1.47	7.2	0.358
17.717	0.000	3.42	0.00	1.45	7.2	0.353
17.733	0.000	3.40	0.00	1.44	7.1	0.348
17.750	0.000	3.38	0.00	1.42	7.0	0.343
17.767	0.000	3.37	0.00	1.41	6.9	0.338
17.783	0.000	3.35	0.00	1.39	6.8	0.334
17.800	0.000	3.33	0.00	1.38	6.7	0.329
17.817	0.000	3.31	0.00	1.36	6.7	0.324
17.833	0.000	3.30	0.00	1.35	6.6	0.320
17.850	0.000	3.28	0.00	1.33	6.5	0.315
17.867	0.000	3.26	0.00	1.32	6.4	0.311
17.883	0.000	3.25	0.00	1.31	6.4	0.307
17.900	0.000	3.23	0.00	1.29	6.3	0.302
17.917	0.000	3.22	0.00	1.28	6.2	0.298
17.933	0.000	3.20	0.00	1.27	6.1	0.294
17.950	0.000	3.18	0.00	1.25	6.1	0.290
17.967	0.000	3.17	0.00	1.24	6.0	0.286
17.983	0.000	3.15	0.00	1.23	5.9	0.283
18.000	0.000	3.14	0.00	1.22	5.8	0.279
18.017	0.000	3.13	0.00	1.20	5.7	0.275
18.033	0.000	3.11	0.00	1.19	5.7	0.272
18.050	0.000	3.10	0.00	1.18	5.6	0.268
18.067	0.000	3.03	0.00	1.17	5.5	0.265
18.083	0.000	2.92	0.00	1.16	5.4	0.262
18.100	0.000	2.81	0.00	1.15	5.3	0.258
18.117	0.000	2.70	0.00	1.14	5.3	0.255
18.133	0.000	2.59	0.00	1.12	5.2	0.251
18.150	0.000	2.48	0.00	1.11	5.1	0.247
18.167	0.000	2.39	0.00	1.10	5.0	0.244
18.183	0.000	2.37	0.00	1.09	4.9	0.240
18.200	0.000	2.36	0.00	1.08	4.8	0.237
18.217	0.000	2.35	0.00	1.07	4.8	0.233
18.233	0.000	2.34	0.00	1.06	4.7	0.230
18.250	0.000	2.33	0.00	1.05	4.6	0.227
18.267	0.000	2.31	0.00	1.04	4.5	0.224
18.283	0.000	2.30	0.00	1.03	4.5	0.221
18.300	0.000	2.29	0.00	1.02	4.4	0.218
18.317	0.000	2.28	0.00	1.01	4.3	0.215
18.333	0.000	2.27	0.00	1.00	4.3	0.213
18.350	0.000	2.26	0.00	0.99	4.1	0.210
18.367	0.000	2.25	0.00	0.98	4.0	0.208
18.383	0.000	2.24	0.00	0.97	3.9	0.205
18.400	0.000	2.23	0.00	0.96	3.7	0.203
18.417	0.000	2.22	0.00	0.96	3.6	0.201
18.433	0.000	2.21	0.00	0.95	3.5	0.200
18.450	0.000	2.20	0.00	0.95	3.4	0.198
18.467	0.000	2.19	0.00	0.94	3.3	0.196

18.483	0.000	2.18	0.00	0.93	3.2	0.195
18.500	0.000	2.17	0.00	0.93	3.1	0.194
18.517	0.000	2.16	0.00	0.93	3.0	0.193
18.533	0.000	2.15	0.00	0.92	3.0	0.191
18.550	0.000	2.14	0.00	0.92	2.9	0.190
18.567	0.000	2.13	0.00	0.91	2.8	0.189
18.583	0.000	2.12	0.00	0.91	2.8	0.188
18.600	0.000	2.11	0.00	0.91	2.7	0.188
18.617	0.000	2.11	0.00	0.91	2.7	0.187
18.633	0.000	2.10	0.00	0.90	2.6	0.186
18.650	0.000	2.09	0.00	0.90	2.6	0.185
18.667	0.000	2.08	0.00	0.90	2.5	0.185
18.683	0.000	2.07	0.00	0.90	2.5	0.184
18.700	0.000	2.06	0.00	0.89	2.5	0.184
18.717	0.000	2.06	0.00	0.89	2.4	0.183
18.733	0.000	2.05	0.00	0.89	2.4	0.183
18.750	0.000	2.04	0.00	0.89	2.4	0.182
18.767	0.000	2.03	0.00	0.89	2.4	0.182
18.783	0.000	2.02	0.00	0.89	2.3	0.181
18.800	0.000	2.02	0.00	0.88	2.3	0.181
18.817	0.000	2.01	0.00	0.88	2.3	0.180
18.833	0.000	2.00	0.00	0.88	2.3	0.180
18.850	0.000	1.99	0.00	0.88	2.2	0.180
18.867	0.000	1.98	0.00	0.88	2.2	0.179
18.883	0.000	1.98	0.00	0.88	2.2	0.179
18.900	0.000	1.97	0.00	0.88	2.2	0.179
18.917	0.000	1.96	0.00	0.88	2.2	0.179
18.933	0.000	1.96	0.00	0.87	2.1	0.178
18.950	0.000	1.95	0.00	0.87	2.1	0.178
18.967	0.000	1.94	0.00	0.87	2.1	0.178
18.983	0.000	1.93	0.00	0.87	2.1	0.178
19.000	0.000	1.93	0.00	0.87	2.1	0.177
19.017	0.000	1.92	0.00	0.87	2.1	0.177
19.033	0.000	1.91	0.00	0.87	2.1	0.177
19.050	0.000	1.91	0.00	0.87	2.0	0.177
19.067	0.000	1.90	0.00	0.87	2.0	0.177
19.083	0.000	1.89	0.00	0.87	2.0	0.176
19.100	0.000	1.89	0.00	0.87	2.0	0.176
19.117	0.000	1.88	0.00	0.87	2.0	0.176
19.133	0.000	1.87	0.00	0.87	2.0	0.176
19.150	0.000	1.87	0.00	0.87	2.0	0.176
19.167	0.000	1.86	0.00	0.86	2.0	0.176
19.183	0.000	1.85	0.00	0.86	2.0	0.175
19.200	0.000	1.85	0.00	0.86	2.0	0.175
19.217	0.000	1.84	0.00	0.86	1.9	0.175
19.233	0.000	1.84	0.00	0.86	1.9	0.175
19.250	0.000	1.83	0.00	0.86	1.9	0.175
19.267	0.000	1.82	0.00	0.86	1.9	0.175
19.283	0.000	1.82	0.00	0.86	1.9	0.175
19.300	0.000	1.81	0.00	0.86	1.9	0.175

19.317	0.000	1.81	0.00	0.86	1.9	0.174
19.333	0.000	1.80	0.00	0.86	1.9	0.174
19.350	0.000	1.79	0.00	0.86	1.9	0.174
19.367	0.000	1.79	0.00	0.86	1.9	0.174
19.383	0.000	1.78	0.00	0.86	1.9	0.174
19.400	0.000	1.78	0.00	0.86	1.9	0.174
19.417	0.000	1.77	0.00	0.86	1.9	0.174
19.433	0.000	1.77	0.00	0.86	1.8	0.174
19.450	0.000	1.76	0.00	0.86	1.8	0.173
19.467	0.000	1.75	0.00	0.86	1.8	0.173
19.483	0.000	1.75	0.00	0.86	1.8	0.173
19.500	0.000	1.74	0.00	0.86	1.8	0.173
19.517	0.000	1.74	0.00	0.86	1.8	0.173
19.533	0.000	1.73	0.00	0.85	1.8	0.173
19.550	0.000	1.73	0.00	0.85	1.8	0.173
19.567	0.000	1.72	0.00	0.85	1.8	0.173
19.583	0.000	1.72	0.00	0.85	1.8	0.173
19.600	0.000	1.71	0.00	0.85	1.8	0.173
19.617	0.000	1.71	0.00	0.85	1.8	0.172
19.633	0.000	1.70	0.00	0.85	1.8	0.172
19.650	0.000	1.70	0.00	0.85	1.8	0.172
19.667	0.000	1.69	0.00	0.85	1.8	0.172
19.683	0.000	1.69	0.00	0.85	1.8	0.172
19.700	0.000	1.68	0.00	0.85	1.7	0.172
19.717	0.000	1.68	0.00	0.85	1.7	0.172
19.733	0.000	1.67	0.00	0.85	1.7	0.172
19.750	0.000	1.67	0.00	0.85	1.7	0.172
19.767	0.000	1.66	0.00	0.85	1.7	0.172
19.783	0.000	1.66	0.00	0.85	1.7	0.172
19.800	0.000	1.65	0.00	0.85	1.7	0.171
19.817	0.000	1.65	0.00	0.85	1.7	0.171
19.833	0.000	1.64	0.00	0.85	1.7	0.171
19.850	0.000	1.64	0.00	0.85	1.7	0.171
19.867	0.000	1.64	0.00	0.85	1.7	0.171
19.883	0.000	1.63	0.00	0.85	1.7	0.171
19.900	0.000	1.63	0.00	0.85	1.7	0.171
19.917	0.000	1.62	0.00	0.85	1.7	0.171
19.933	0.000	1.62	0.00	0.85	1.7	0.171
19.950	0.000	1.61	0.00	0.85	1.7	0.171
19.967	0.000	1.61	0.00	0.85	1.7	0.171
19.983	0.000	1.60	0.00	0.85	1.7	0.171
20.000	0.000	1.60	0.00	0.85	1.7	0.170

PROCESS SUMMARY OF STORAGE:

INFLOW VOLUME =	5.467 AF	
BASIN STORAGE =	0.007 AF (WITH	0.000 AF INITIALLY FILLED)
OUTFLOW VOLUME =	5.460 AF	
LOSS VOLUME =	0.000 AF	

FLOW PROCESS FROM NODE 700.00 TO NODE 700.00 IS CODE = 7

>>>>STREAM NUMBER 3 ADDED TO STREAM NUMBER 2<<<<<

FLOW PROCESS FROM NODE 700.00 TO NODE 700.00 IS CODE = 7

>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<

FLOW PROCESS FROM NODE 700.00 TO NODE 700.00 IS CODE = 11

>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<

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

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	50.0	100.0	150.0	200.0
10.000	3.7520	7.64	.Q V .	.	.	.	.
10.017	3.7625	7.65	.Q V .	.	.	.	.
10.033	3.7731	7.66	.Q V .	.	.	.	.
10.050	3.7837	7.68	.Q V .	.	.	.	.
10.067	3.7943	7.69	.Q V .	.	.	.	.
10.083	3.8049	7.70	.Q V .	.	.	.	.
10.100	3.8155	7.72	.Q V .	.	.	.	.
10.117	3.8261	7.73	.Q V .	.	.	.	.
10.133	3.8368	7.74	.Q V .	.	.	.	.
10.150	3.8475	7.76	.Q V .	.	.	.	.
10.167	3.8582	7.77	.Q V .	.	.	.	.
10.183	3.8689	7.78	.Q V .	.	.	.	.
10.200	3.8796	7.79	.Q V .	.	.	.	.
10.217	3.8904	7.81	.Q V .	.	.	.	.
10.233	3.9012	7.82	.Q V .	.	.	.	.
10.250	3.9120	7.83	.Q V .	.	.	.	.
10.267	3.9228	7.85	.Q V .	.	.	.	.
10.283	3.9336	7.86	.Q V .	.	.	.	.
10.300	3.9444	7.87	.Q V .	.	.	.	.
10.317	3.9553	7.89	.Q V .	.	.	.	.
10.333	3.9662	7.90	.Q V .	.	.	.	.
10.350	3.9771	7.92	.Q V .	.	.	.	.
10.367	3.9880	7.93	.Q V .	.	.	.	.

10.383	3.9990	7.94	.Q V .	.	.	.	.
10.400	4.0099	7.96	.Q V .	.	.	.	.
10.417	4.0209	7.97	.Q V .	.	.	.	.
10.433	4.0319	7.98	.Q V .	.	.	.	.
10.450	4.0429	8.00	.Q V .	.	.	.	.
10.467	4.0539	8.01	.Q V .	.	.	.	.
10.483	4.0650	8.03	.Q V .	.	.	.	.
10.500	4.0761	8.04	.Q V .	.	.	.	.
10.517	4.0872	8.06	.Q V .	.	.	.	.
10.533	4.0983	8.07	.Q V .	.	.	.	.
10.550	4.1094	8.08	.Q V .	.	.	.	.
10.567	4.1206	8.10	.Q V .	.	.	.	.
10.583	4.1317	8.11	.Q V .	.	.	.	.
10.600	4.1429	8.13	.Q V .	.	.	.	.
10.617	4.1542	8.14	.Q V .	.	.	.	.
10.633	4.1654	8.16	.Q V .	.	.	.	.
10.650	4.1766	8.17	.Q V .	.	.	.	.
10.667	4.1879	8.19	.Q V .	.	.	.	.
10.683	4.1992	8.20	.Q V .	.	.	.	.
10.700	4.2105	8.22	.Q V .	.	.	.	.
10.717	4.2219	8.23	.Q V .	.	.	.	.
10.733	4.2332	8.25	.Q V .	.	.	.	.
10.750	4.2446	8.26	.Q V .	.	.	.	.
10.767	4.2560	8.28	.Q V .	.	.	.	.
10.783	4.2674	8.29	.Q V .	.	.	.	.
10.800	4.2789	8.31	.Q V .	.	.	.	.
10.817	4.2904	8.32	.Q V .	.	.	.	.
10.833	4.3018	8.34	.Q V .	.	.	.	.
10.850	4.3133	8.36	.Q V .	.	.	.	.
10.867	4.3249	8.37	.Q V .	.	.	.	.
10.883	4.3364	8.39	.Q V .	.	.	.	.
10.900	4.3480	8.40	.Q V .	.	.	.	.
10.917	4.3596	8.42	.Q V .	.	.	.	.
10.933	4.3712	8.44	.Q V .	.	.	.	.
10.950	4.3829	8.45	.Q V .	.	.	.	.
10.967	4.3945	8.47	.Q V .	.	.	.	.
10.983	4.4062	8.48	.Q V .	.	.	.	.
11.000	4.4179	8.50	.Q V .	.	.	.	.
11.017	4.4297	8.52	.Q V .	.	.	.	.
11.033	4.4414	8.53	.Q V .	.	.	.	.
11.050	4.4532	8.55	.Q V .	.	.	.	.
11.067	4.4650	8.57	.Q V .	.	.	.	.
11.083	4.4768	8.58	.Q V .	.	.	.	.
11.100	4.4887	8.60	.Q V .	.	.	.	.
11.117	4.5005	8.62	.Q V .	.	.	.	.
11.133	4.5124	8.64	.Q V .	.	.	.	.
11.150	4.5243	8.65	.Q V .	.	.	.	.
11.167	4.5363	8.67	.Q V .	.	.	.	.
11.183	4.5483	8.69	.Q V .	.	.	.	.
11.200	4.5602	8.70	.Q V .	.	.	.	.

11.217	4.5723	8.72	.Q	V	.	.	.
11.233	4.5843	8.74	.Q	V	.	.	.
11.250	4.5964	8.76	.Q	V	.	.	.
11.267	4.6084	8.78	.Q	V	.	.	.
11.283	4.6206	8.79	.Q	V	.	.	.
11.300	4.6327	8.81	.Q	V	.	.	.
11.317	4.6449	8.83	.Q	V	.	.	.
11.333	4.6570	8.85	.Q	V	.	.	.
11.350	4.6693	8.87	.Q	V	.	.	.
11.367	4.6815	8.89	.Q	V	.	.	.
11.383	4.6938	8.90	.Q	V	.	.	.
11.400	4.7061	8.92	.Q	V	.	.	.
11.417	4.7184	8.94	.Q	V	.	.	.
11.433	4.7307	8.96	.Q	V	.	.	.
11.450	4.7431	8.98	.Q	V	.	.	.
11.467	4.7555	9.00	.Q	V	.	.	.
11.483	4.7679	9.02	.Q	V	.	.	.
11.500	4.7803	9.04	.Q	V	.	.	.
11.517	4.7928	9.06	.Q	V	.	.	.
11.533	4.8053	9.08	.Q	V	.	.	.
11.550	4.8178	9.10	.Q	V	.	.	.
11.567	4.8304	9.12	.Q	V	.	.	.
11.583	4.8430	9.14	.Q	V	.	.	.
11.600	4.8556	9.16	.Q	V	.	.	.
11.617	4.8682	9.18	.Q	V	.	.	.
11.633	4.8809	9.19	.Q	V	.	.	.
11.650	4.8936	9.21	.Q	V	.	.	.
11.667	4.9063	9.23	.Q	V	.	.	.
11.683	4.9191	9.25	.Q	V	.	.	.
11.700	4.9318	9.28	.Q	V	.	.	.
11.717	4.9446	9.30	.Q	V	.	.	.
11.733	4.9575	9.32	.Q	V	.	.	.
11.750	4.9703	9.34	.Q	V	.	.	.
11.767	4.9832	9.36	.Q	V	.	.	.
11.783	4.9962	9.38	.Q	V	.	.	.
11.800	5.0091	9.40	.Q	V	.	.	.
11.817	5.0221	9.43	.Q	V	.	.	.
11.833	5.0351	9.45	.Q	V	.	.	.
11.850	5.0481	9.47	.Q	V	.	.	.
11.867	5.0612	9.49	.Q	V	.	.	.
11.883	5.0743	9.51	.Q	V	.	.	.
11.900	5.0874	9.53	.Q	V	.	.	.
11.917	5.1006	9.55	.Q	V	.	.	.
11.933	5.1138	9.58	.Q	V	.	.	.
11.950	5.1270	9.60	.Q	V	.	.	.
11.967	5.1403	9.62	.Q	V	.	.	.
11.983	5.1536	9.65	.Q	V	.	.	.
12.000	5.1669	9.67	.Q	V	.	.	.
12.017	5.1802	9.69	.Q	V	.	.	.
12.033	5.1936	9.72	.Q	V	.	.	.

12.050	5.2071	9.76	.Q	V	.	.	.
12.067	5.2206	9.80	.Q	V	.	.	.
12.083	5.2342	9.86	.Q	V	.	.	.
12.100	5.2478	9.93	.Q	V	.	.	.
12.117	5.2616	10.02	.Q	V	.	.	.
12.133	5.2756	10.12	.Q	V	.	.	.
12.150	5.2897	10.23	.Q	V	.	.	.
12.167	5.3039	10.34	.Q	V	.	.	.
12.183	5.3183	10.46	.Q	V	.	.	.
12.200	5.3329	10.59	.Q	V	.	.	.
12.217	5.3477	10.71	.Q	V	.	.	.
12.233	5.3626	10.84	.Q	V	.	.	.
12.250	5.3777	10.96	.Q	V	.	.	.
12.267	5.3929	11.07	.Q	V	.	.	.
12.283	5.4083	11.16	.Q	V	.	.	.
12.300	5.4238	11.25	.Q	V	.	.	.
12.317	5.4394	11.33	.Q	V	.	.	.
12.333	5.4551	11.40	.Q	V	.	.	.
12.350	5.4709	11.47	.Q	V	.	.	.
12.367	5.4868	11.52	.Q	V	.	.	.
12.383	5.5027	11.57	.Q	V	.	.	.
12.400	5.5187	11.62	.Q	V	.	.	.
12.417	5.5348	11.67	.Q	V	.	.	.
12.433	5.5509	11.71	.Q	V	.	.	.
12.450	5.5671	11.76	.Q	V	.	.	.
12.467	5.5833	11.80	.Q	V	.	.	.
12.483	5.5997	11.85	.Q	V	.	.	.
12.500	5.6160	11.89	.Q	V	.	.	.
12.517	5.6325	11.93	.Q	V	.	.	.
12.533	5.6490	11.98	.Q	V	.	.	.
12.550	5.6655	12.02	.Q	V	.	.	.
12.567	5.6821	12.06	.Q	V	.	.	.
12.583	5.6988	12.10	.Q	V	.	.	.
12.600	5.7155	12.14	.Q	V	.	.	.
12.617	5.7323	12.18	.Q	V	.	.	.
12.633	5.7491	12.22	.Q	V	.	.	.
12.650	5.7660	12.26	.Q	V	.	.	.
12.667	5.7829	12.30	.Q	V	.	.	.
12.683	5.7999	12.34	.Q	V	.	.	.
12.700	5.8170	12.38	.Q	V	.	.	.
12.717	5.8341	12.41	.Q	V	.	.	.
12.733	5.8512	12.45	.Q	V	.	.	.
12.750	5.8684	12.49	.Q	V	.	.	.
12.767	5.8857	12.53	.Q	V	.	.	.
12.783	5.9030	12.57	.Q	V	.	.	.
12.800	5.9204	12.60	.Q	V	.	.	.
12.817	5.9378	12.64	.Q	V	.	.	.
12.833	5.9552	12.68	.Q	V	.	.	.
12.850	5.9728	12.72	.Q	V	.	.	.
12.867	5.9903	12.75	.Q	V	.	.	.

12.883	6.0079	12.79	. Q	V	.	.	.
12.900	6.0256	12.83	. Q	V	.	.	.
12.917	6.0434	12.87	. Q	V	.	.	.
12.933	6.0611	12.91	. Q	V	.	.	.
12.950	6.0790	12.95	. Q	V	.	.	.
12.967	6.0968	12.98	. Q	V	.	.	.
12.983	6.1148	13.02	. Q	V	.	.	.
13.000	6.1328	13.06	. Q	V	.	.	.
13.017	6.1508	13.10	. Q	V	.	.	.
13.033	6.1689	13.13	. Q	V	.	.	.
13.050	6.1870	13.17	. Q	V	.	.	.
13.067	6.2052	13.21	. Q	V	.	.	.
13.083	6.2235	13.25	. Q	V	.	.	.
13.100	6.2418	13.29	. Q	V	.	.	.
13.117	6.2602	13.33	. Q	V	.	.	.
13.133	6.2786	13.37	. Q	V	.	.	.
13.150	6.2971	13.41	. Q	V	.	.	.
13.167	6.3156	13.45	. Q	.V	.	.	.
13.183	6.3342	13.49	. Q	.V	.	.	.
13.200	6.3528	13.53	. Q	.V	.	.	.
13.217	6.3715	13.57	. Q	.V	.	.	.
13.233	6.3902	13.61	. Q	.V	.	.	.
13.250	6.4090	13.65	. Q	.V	.	.	.
13.267	6.4279	13.69	. Q	.V	.	.	.
13.283	6.4468	13.73	. Q	.V	.	.	.
13.300	6.4657	13.77	. Q	.V	.	.	.
13.317	6.4848	13.81	. Q	.V	.	.	.
13.333	6.5038	13.85	. Q	.V	.	.	.
13.350	6.5230	13.89	. Q	.V	.	.	.
13.367	6.5422	13.94	. Q	.V	.	.	.
13.383	6.5614	13.98	. Q	.V	.	.	.
13.400	6.5807	14.02	. Q	.V	.	.	.
13.417	6.6001	14.06	. Q	.V	.	.	.
13.433	6.6195	14.11	. Q	.V	.	.	.
13.450	6.6390	14.15	. Q	.V	.	.	.
13.467	6.6586	14.19	. Q	.V	.	.	.
13.483	6.6782	14.23	. Q	.V	.	.	.
13.500	6.6979	14.28	. Q	.V	.	.	.
13.517	6.7176	14.32	. Q	.V	.	.	.
13.533	6.7374	14.37	. Q	.V	.	.	.
13.550	6.7572	14.41	. Q	.V	.	.	.
13.567	6.7771	14.46	. Q	.V	.	.	.
13.583	6.7971	14.50	. Q	.V	.	.	.
13.600	6.8172	14.55	. Q	.V	.	.	.
13.617	6.8373	14.60	. Q	.V	.	.	.
13.633	6.8574	14.64	. Q	.V	.	.	.
13.650	6.8777	14.69	. Q	.V	.	.	.
13.667	6.8980	14.73	. Q	. V	.	.	.
13.683	6.9183	14.78	. Q	. V	.	.	.
13.700	6.9387	14.83	. Q	. V	.	.	.

13.717	6.9592	14.88	. Q	. V	.	.	.
13.733	6.9798	14.92	. Q	. V	.	.	.
13.750	7.0004	14.97	. Q	. V	.	.	.
13.767	7.0211	15.02	. Q	. V	.	.	.
13.783	7.0419	15.08	. Q	. V	.	.	.
13.800	7.0627	15.13	. Q	. V	.	.	.
13.817	7.0836	15.18	. Q	. V	.	.	.
13.833	7.1046	15.23	. Q	. V	.	.	.
13.850	7.1256	15.28	. Q	. V	.	.	.
13.867	7.1467	15.33	. Q	. V	.	.	.
13.883	7.1679	15.38	. Q	. V	.	.	.
13.900	7.1892	15.43	. Q	. V	.	.	.
13.917	7.2105	15.48	. Q	. V	.	.	.
13.933	7.2319	15.54	. Q	. V	.	.	.
13.950	7.2534	15.59	. Q	. V	.	.	.
13.967	7.2749	15.65	. Q	. V	.	.	.
13.983	7.2966	15.70	. Q	. V	.	.	.
14.000	7.3183	15.76	. Q	. V	.	.	.
14.017	7.3401	15.82	. Q	. V	.	.	.
14.033	7.3619	15.87	. Q	. V	.	.	.
14.050	7.3839	15.93	. Q	. V	.	.	.
14.067	7.4059	15.99	. Q	. V	.	.	.
14.083	7.4280	16.05	. Q	. V	.	.	.
14.100	7.4502	16.10	. Q	. V	.	.	.
14.117	7.4725	16.16	. Q	. V	.	.	.
14.133	7.4948	16.22	. Q	. V	.	.	.
14.150	7.5172	16.27	. Q	. V	.	.	.
14.167	7.5397	16.31	. Q	. V	.	.	.
14.183	7.5622	16.36	. Q	. V	.	.	.
14.200	7.5848	16.41	. Q	. V	.	.	.
14.217	7.6075	16.45	. Q	. V	.	.	.
14.233	7.6302	16.49	. Q	. V	.	.	.
14.250	7.6530	16.54	. Q	. V	.	.	.
14.267	7.6758	16.58	. Q	. V	.	.	.
14.283	7.6987	16.63	. Q	. V	.	.	.
14.300	7.7217	16.68	. Q	. V	.	.	.
14.317	7.7447	16.72	. Q	. V	.	.	.
14.333	7.7678	16.77	. Q	. V	.	.	.
14.350	7.7910	16.82	. Q	. V	.	.	.
14.367	7.8142	16.87	. Q	. V	.	.	.
14.383	7.8375	16.92	. Q	. V	.	.	.
14.400	7.8609	16.98	. Q	. V	.	.	.
14.417	7.8844	17.03	. Q	. V	.	.	.
14.433	7.9079	17.08	. Q	. V	.	.	.
14.450	7.9315	17.14	. Q	. V	.	.	.
14.467	7.9552	17.20	. Q	. V	.	.	.
14.483	7.9790	17.25	. Q	. V	.	.	.
14.500	8.0028	17.31	. Q	. V	.	.	.
14.517	8.0267	17.37	. Q	. V	.	.	.
14.533	8.0508	17.43	. Q	. V	.	.	.

14.550	8.0748	17.49	.	Q	.	V	.	.	.
14.567	8.0990	17.55	.	Q	.	V	.	.	.
14.583	8.1233	17.62	.	Q	.	V	.	.	.
14.600	8.1476	17.68	.	Q	.	V	.	.	.
14.617	8.1721	17.75	.	Q	.	V	.	.	.
14.633	8.1966	17.81	.	Q	.	V	.	.	.
14.650	8.2212	17.88	.	Q	.	V	.	.	.
14.667	8.2460	17.95	.	Q	.	V	.	.	.
14.683	8.2708	18.02	.	Q	.	V	.	.	.
14.700	8.2957	18.09	.	Q	.	V	.	.	.
14.717	8.3207	18.16	.	Q	.	V	.	.	.
14.733	8.3458	18.23	.	Q	.	V	.	.	.
14.750	8.3710	18.31	.	Q	.	V	.	.	.
14.767	8.3964	18.38	.	Q	.	V	.	.	.
14.783	8.4218	18.46	.	Q	.	V	.	.	.
14.800	8.4473	18.54	.	Q	.	V	.	.	.
14.817	8.4730	18.62	.	Q	.	V	.	.	.
14.833	8.4987	18.70	.	Q	.	V	.	.	.
14.850	8.5246	18.78	.	Q	.	V	.	.	.
14.867	8.5506	18.87	.	Q	.	V	.	.	.
14.883	8.5767	18.95	.	Q	.	V	.	.	.
14.900	8.6029	19.04	.	Q	.	V	.	.	.
14.917	8.6292	19.12	.	Q	.	V	.	.	.
14.933	8.6557	19.21	.	Q	.	V	.	.	.
14.950	8.6823	19.30	.	Q	.	V	.	.	.
14.967	8.7090	19.40	.	Q	.	V	.	.	.
14.983	8.7359	19.49	.	Q	.	V	.	.	.
15.000	8.7628	19.59	.	Q	.	V	.	.	.
15.017	8.7900	19.69	.	Q	.	V	.	.	.
15.033	8.8172	19.79	.	Q	.	V	.	.	.
15.050	8.8446	19.89	.	Q	.	V	.	.	.
15.067	8.8722	20.00	.	Q	.	V	.	.	.
15.083	8.8998	20.09	.	Q	.	V	.	.	.
15.100	8.9277	20.19	.	Q	.	V	.	.	.
15.117	8.9556	20.29	.	Q	.	V	.	.	.
15.133	8.9837	20.39	.	Q	.	V	.	.	.
15.150	9.0119	20.49	.	Q	.	V	.	.	.
15.167	9.0403	20.59	.	Q	.	V	.	.	.
15.183	9.0688	20.69	.	Q	.	V	.	.	.
15.200	9.0974	20.80	.	Q	.	V	.	.	.
15.217	9.1262	20.91	.	Q	.	V	.	.	.
15.233	9.1552	21.03	.	Q	.	V	.	.	.
15.250	9.1843	21.15	.	Q	.	V	.	.	.
15.267	9.2136	21.27	.	Q	.	V	.	.	.
15.283	9.2431	21.39	.	Q	.	V	.	.	.
15.300	9.2727	21.52	.	Q	.	V	.	.	.
15.317	9.3025	21.64	.	Q	.	V	.	.	.
15.333	9.3325	21.77	.	Q	.	V	.	.	.
15.350	9.3627	21.90	.	Q	.	V	.	.	.
15.367	9.3930	22.02	.	Q	.	V	.	.	.

15.383	9.4235	22.14	.	Q	.	V	.	.	.
15.400	9.4542	22.26	.	Q	.	V	.	.	.
15.417	9.4850	22.37	.	Q	.	V	.	.	.
15.433	9.5159	22.48	.	Q	.	V	.	.	.
15.450	9.5471	22.59	.	Q	.	V	.	.	.
15.467	9.5783	22.70	.	Q	.	V	.	.	.
15.483	9.6097	22.80	.	Q	.	V	.	.	.
15.500	9.6413	22.91	.	Q	.	V	.	.	.
15.517	9.6730	23.02	.	Q	.	V	.	.	.
15.533	9.7049	23.14	.	Q	.	V	.	.	.
15.550	9.7369	23.25	.	Q	.	V	.	.	.
15.567	9.7691	23.37	.	Q	.	V	.	.	.
15.583	9.8014	23.49	.	Q	.	V	.	.	.
15.600	9.8340	23.62	.	Q	.	V	.	.	.
15.617	9.8667	23.75	.	Q	.	V	.	.	.
15.633	9.8996	23.89	.	Q	.	V	.	.	.
15.650	9.9327	24.05	.	Q	.	V	.	.	.
15.667	9.9661	24.22	.	Q	.	V	.	.	.
15.683	9.9997	24.39	.	Q	.	V	.	.	.
15.700	10.0335	24.58	.	Q	.	V	.	.	.
15.717	10.0677	24.77	.	Q	.	V	.	.	.
15.733	10.1021	24.97	.	Q	.	V	.	.	.
15.750	10.1367	25.18	.	Q	.	V	.	.	.
15.767	10.1717	25.39	.	Q	.	V	.	.	.
15.783	10.2070	25.62	.	Q	.	V	.	.	.
15.800	10.2426	25.85	.	Q	.	V	.	.	.
15.817	10.2786	26.11	.	Q	.	V	.	.	.
15.833	10.3149	26.40	.	Q	.	V	.	.	.
15.850	10.3517	26.69	.	Q	.	V	.	.	.
15.867	10.3889	27.01	.	Q	.	V	.	.	.
15.883	10.4266	27.36	.	Q	.	V	.	.	.
15.900	10.4648	27.74	.	Q	.	V	.	.	.
15.917	10.5036	28.15	.	Q	.	V	.	.	.
15.933	10.5430	28.59	.	Q	.	V	.	.	.
15.950	10.5830	29.07	.	Q	.	V	.	.	.
15.967	10.6237	29.55	.	Q	.	V	.	.	.
15.983	10.6651	30.04	.	Q	.	V	.	.	.
16.000	10.7072	30.56	.	Q	.	V	.	.	.
16.017	10.7501	31.16	.	Q	.	V	.	.	.
16.033	10.7941	31.97	.	Q	.	V	.	.	.
16.050	10.8396	33.01	.	Q	.	V	.	.	.
16.067	10.8868	34.26	.	Q	.	V	.	.	.
16.083	10.9361	35.81	.	Q	.	V	.	.	.
16.100	10.9903	39.32	.	Q	.	V	.	.	.
16.117	11.0616	51.76	.	Q	.	V	.	.	.
16.133	11.1612	72.35	.	.	Q	V	.	.	.
16.150	11.2876	91.76	.	.	.	QV	.	.	.
16.167	11.4324	105.10	.	.	.	V.Q	.	.	.
16.183	11.5854	111.07	.	.	.	V Q	.	.	.
16.200	11.7379	110.72	.	.	.	V Q	.	.	.

16.217	11.8831	105.42	.	.		VQ	.	.
16.233	12.0170	97.25	.	.		QV	.	.
16.250	12.1394	88.80	.	.	Q	.V	.	.
16.267	12.2519	81.73	.	.	Q	.V	.	.
16.283	12.3565	75.92	.	.	Q	.V	.	.
16.300	12.4540	70.77	.	.	Q	.V	.	.
16.317	12.5457	66.58	.	.	Q	.V	.	.
16.333	12.6333	63.60	.	.	Q	.V	.	.
16.350	12.7176	61.22	.	.	Q	.V	.	.
16.367	12.7989	58.99	.	.	.Q	.V	.	.
16.383	12.8773	56.91	.	.	.Q	.V	.	.
16.400	12.9530	55.00	.	.	Q	.V	.	.
16.417	13.0263	53.23	.	.	Q	.V	.	.
16.433	13.0974	51.58	.	.	Q	.V	.	.
16.450	13.1664	50.07	.	.	Q	.V	.	.
16.467	13.2332	48.56	.	.	Q.	.V	.	.
16.483	13.2980	47.05	.	.	Q.	.V	.	.
16.500	13.3610	45.69	.	.	Q.	.V	.	.
16.517	13.4223	44.50	.	.	Q.	.V	.	.
16.533	13.4821	43.45	.	.	Q.	.V	.	.
16.550	13.5407	42.49	.	.	Q.	.V	.	.
16.567	13.5981	41.72	.	.	Q.	.V	.	.
16.583	13.6549	41.23	.	.	Q.	.V	.	.
16.600	13.7112	40.88	.	.	Q.	.V	.	.
16.617	13.7670	40.53	.	.	Q.	.V	.	.
16.633	13.8224	40.18	.	.	Q.	.V	.	.
16.650	13.8772	39.84	.	.	Q.	.V	.	.
16.667	13.9317	39.50	.	.	Q.	.V	.	.
16.683	13.9856	39.16	.	.	Q.	.V	.	.
16.700	14.0391	38.83	.	.	Q.	.V	.	.
16.717	14.0921	38.51	.	.	Q.	.V	.	.
16.733	14.1447	38.18	.	.	Q.	.V	.	.
16.750	14.1969	37.86	.	.	Q.	.V	.	.
16.767	14.2486	37.55	.	.	Q.	.V	.	.
16.783	14.2999	37.24	.	.	Q.	.V	.	.
16.800	14.3509	37.03	.	.	Q.	.V	.	.
16.817	14.4017	36.90	.	.	Q.	.V	.	.
16.833	14.4524	36.77	.	.	Q.	.V	.	.
16.850	14.5028	36.64	.	.	Q.	.V	.	.
16.867	14.5531	36.51	.	.	Q.	.V	.	.
16.883	14.6033	36.38	.	.	Q.	.V	.	.
16.900	14.6532	36.25	.	.	Q.	.V	.	.
16.917	14.7029	36.12	.	.	Q.	.V	.	.
16.933	14.7525	35.98	.	.	Q.	.V	.	.
16.950	14.8019	35.84	.	.	Q.	.V	.	.
16.967	14.8510	35.71	.	.	Q.	.V	.	.
16.983	14.9000	35.57	.	.	Q.	.V	.	.
17.000	14.9488	35.43	.	.	Q.	.V	.	.
17.017	14.9974	35.29	.	.	Q.	.V	.	.
17.033	15.0459	35.16	.	.	Q.	.V	.	.

17.050	15.0941	35.02	.	Q	.	.	V	.	.
17.067	15.1422	34.88	.	Q	.	.	V	.	.
17.083	15.1900	34.74	.	Q	.	.	V	.	.
17.100	15.2376	34.59	.	Q	.	.	V	.	.
17.117	15.2851	34.45	.	Q	.	.	V	.	.
17.133	15.3324	34.31	.	Q	.	.	V	.	.
17.150	15.3794	34.16	.	Q	.	.	V	.	.
17.167	15.4263	34.02	.	Q	.	.	V	.	.
17.183	15.4729	33.87	.	Q	.	.	V	.	.
17.200	15.5194	33.73	.	Q	.	.	V	.	.
17.217	15.5656	33.58	.	Q	.	.	V	.	.
17.233	15.6117	33.42	.	Q	.	.	V	.	.
17.250	15.6575	33.26	.	Q	.	.	V	.	.
17.267	15.7030	33.09	.	Q	.	.	V	.	.
17.283	15.7484	32.92	.	Q	.	.	V	.	.
17.300	15.7935	32.75	.	Q	.	.	V	.	.
17.317	15.8384	32.59	.	Q	.	.	V	.	.
17.333	15.8831	32.42	.	Q	.	.	V	.	.
17.350	15.9275	32.26	.	Q	.	.	V	.	.
17.367	15.9717	32.09	.	Q	.	.	V	.	.
17.383	16.0157	31.93	.	Q	.	.	V	.	.
17.400	16.0594	31.77	.	Q	.	.	V	.	.
17.417	16.1030	31.60	.	Q	.	.	V	.	.
17.433	16.1463	31.44	.	Q	.	.	V	.	.
17.450	16.1893	31.28	.	Q	.	.	V	.	.
17.467	16.2322	31.11	.	Q	.	.	V	.	.
17.483	16.2748	30.94	.	Q	.	.	V	.	.
17.500	16.3172	30.77	.	Q	.	.	V	.	.
17.517	16.3594	30.61	.	Q	.	.	V	.	.
17.533	16.4013	30.44	.	Q	.	.	V	.	.
17.550	16.4430	30.28	.	Q	.	.	V	.	.
17.567	16.4845	30.12	.	Q	.	.	V	.	.
17.583	16.5257	29.95	.	Q	.	.	V	.	.
17.600	16.5668	29.79	.	Q	.	.	V	.	.
17.617	16.6076	29.63	.	Q	.	.	V	.	.
17.633	16.6482	29.47	.	Q	.	.	V	.	.
17.650	16.6886	29.32	.	Q	.	.	V	.	.
17.667	16.7287	29.16	.	Q	.	.	V	.	.
17.683	16.7687	29.00	.	Q	.	.	V	.	.
17.700	16.8084	28.83	.	Q	.	.	V	.	.
17.717	16.8479	28.66	.	Q	.	.	V	.	.
17.733	16.8871	28.49	.	Q	.	.	V	.	.
17.750	16.9261	28.33	.	Q	.	.	V	.	.
17.767	16.9649	28.17	.	Q	.	.	V	.	.
17.783	17.0035	28.00	.	Q	.	.	V	.	.
17.800	17.0419	27.84	.	Q	.	.	V	.	.
17.817	17.0800	27.69	.	Q	.	.	V	.	.
17.833	17.1179	27.53	.	Q	.	.	V	.	.
17.850	17.1556	27.37	.	Q	.	.	V	.	.
17.867	17.1931	27.22	.	Q	.	.	V	.	.

17.883	17.2304	27.06	.	Q	.	.	V	.
17.900	17.2674	26.90	.	Q	.	.	V	.
17.917	17.3043	26.74	.	Q	.	.	V	.
17.933	17.3409	26.59	.	Q	.	.	V	.
17.950	17.3773	26.43	.	Q	.	.	V	.
17.967	17.4135	26.27	.	Q	.	.	V	.
17.983	17.4494	26.10	.	Q	.	.	V	.
18.000	17.4852	25.93	.	Q	.	.	V	.
18.017	17.5206	25.76	.	Q	.	.	V	.
18.033	17.5559	25.60	.	Q	.	.	V	.
18.050	17.5909	25.43	.	Q	.	.	V	.
18.067	17.6257	25.27	.	Q	.	.	V	.
18.083	17.6603	25.10	.	Q	.	.	V	.
18.100	17.6947	24.93	.	Q	.	.	V	.
18.117	17.7288	24.76	.	Q	.	.	V	.
18.133	17.7626	24.59	.	Q	.	.	V	.
18.150	17.7963	24.42	.	Q	.	.	.V	.
18.167	17.8297	24.24	.	Q	.	.	.V	.
18.183	17.8628	24.06	.	Q	.	.	.V	.
18.200	17.8957	23.89	.	Q	.	.	.V	.
18.217	17.9284	23.71	.	Q	.	.	.V	.
18.233	17.9608	23.53	.	Q	.	.	.V	.
18.250	17.9929	23.35	.	Q	.	.	.V	.
18.267	18.0248	23.17	.	Q	.	.	.V	.
18.283	18.0565	23.00	.	Q	.	.	.V	.
18.300	18.0880	22.83	.	Q	.	.	.V	.
18.317	18.1192	22.66	.	Q	.	.	.V	.
18.333	18.1502	22.49	.	Q	.	.	.V	.
18.350	18.1808	22.27	.	Q	.	.	.V	.
18.367	18.2112	22.02	.	Q	.	.	.V	.
18.383	18.2412	21.78	.	Q	.	.	.V	.
18.400	18.2708	21.55	.	Q	.	.	.V	.
18.417	18.3002	21.33	.	Q	.	.	.V	.
18.433	18.3293	21.12	.	Q	.	.	.V	.
18.450	18.3581	20.92	.	Q	.	.	.V	.
18.467	18.3867	20.73	.	Q	.	.	.V	.
18.483	18.4150	20.55	.	Q	.	.	.V	.
18.500	18.4430	20.37	.	Q	.	.	.V	.
18.517	18.4709	20.20	.	Q	.	.	.V	.
18.533	18.4985	20.03	.	Q	.	.	.V	.
18.550	18.5258	19.86	.	Q	.	.	.V	.
18.567	18.5529	19.70	.	Q	.	.	.V	.
18.583	18.5799	19.54	.	Q	.	.	.V	.
18.600	18.6065	19.38	.	Q	.	.	.V	.
18.617	18.6330	19.22	.	Q	.	.	.V	.
18.633	18.6593	19.07	.	Q	.	.	.V	.
18.650	18.6854	18.93	.	Q	.	.	.V	.
18.667	18.7113	18.79	.	Q	.	.	.V	.
18.683	18.7369	18.65	.	Q	.	.	.V	.
18.700	18.7624	18.51	.	Q	.	.	.V	.

18.717	18.7877	18.38	.	Q	.	.	.	V	.
18.733	18.8129	18.25	.	Q	.	.	.	V	.
18.750	18.8378	18.12	.	Q	.	.	.	V	.
18.767	18.8626	18.00	.	Q	.	.	.	V	.
18.783	18.8872	17.87	.	Q	.	.	.	V	.
18.800	18.9117	17.75	.	Q	.	.	.	V	.
18.817	18.9360	17.64	.	Q	.	.	.	V	.
18.833	18.9601	17.52	.	Q	.	.	.	V	.
18.850	18.9841	17.41	.	Q	.	.	.	V	.
18.867	19.0079	17.29	.	Q	.	.	.	V	.
18.883	19.0316	17.18	.	Q	.	.	.	V	.
18.900	19.0551	17.07	.	Q	.	.	.	V	.
18.917	19.0784	16.95	.	Q	.	.	.	V	.
18.933	19.1016	16.84	.	Q	.	.	.	V	.
18.950	19.1247	16.72	.	Q	.	.	.	V	.
18.967	19.1476	16.61	.	Q	.	.	.	V	.
18.983	19.1703	16.49	.	Q	.	.	.	V	.
19.000	19.1928	16.37	.	Q	.	.	.	V	.
19.017	19.2152	16.26	.	Q	.	.	.	V	.
19.033	19.2374	16.14	.	Q	.	.	.	V	.
19.050	19.2595	16.03	.	Q	.	.	.	V	.
19.067	19.2814	15.91	.	Q	.	.	.	V	.
19.083	19.3032	15.80	.	Q	.	.	.	V	.
19.100	19.3248	15.69	.	Q	.	.	.	V	.
19.117	19.3463	15.59	.	Q	.	.	.	V	.
19.133	19.3676	15.48	.	Q	.	.	.	V	.
19.150	19.3888	15.37	.	Q	.	.	.	V	.
19.167	19.4098	15.27	.	Q	.	.	.	V	.
19.183	19.4307	15.17	.	Q	.	.	.	V	.
19.200	19.4515	15.06	.	Q	.	.	.	V	.
19.217	19.4721	14.96	.	Q	.	.	.	V	.
19.233	19.4926	14.86	.	Q	.	.	.	V	.
19.250	19.5129	14.77	.	Q	.	.	.	V	.
19.267	19.5331	14.67	.	Q	.	.	.	V	.
19.283	19.5532	14.57	.	Q	.	.	.	V	.
19.300	19.5731	14.48	.	Q	.	.	.	V	.
19.317	19.5929	14.38	.	Q	.	.	.	V	.
19.333	19.6126	14.29	.	Q	.	.	.	V	.
19.350	19.6322	14.20	.	Q	.	.	.	V	.
19.367	19.6516	14.10	.	Q	.	.	.	V	.
19.383	19.6708	13.99	.	Q	.	.	.	V	.
19.400	19.6900	13.89	.	Q	.	.	.	V	.
19.417	19.7090	13.78	.	Q	.	.	.	V	.
19.433	19.7278	13.68	.	Q	.	.	.	V	.
19.450	19.7465	13.58	.	Q	.	.	.	V	.
19.467	19.7651	13.47	.	Q	.	.	.	V	.
19.483	19.7835	13.36	.	Q	.	.	.	V	.
19.500	19.8017	13.25	.	Q	.	.	.	V	.
19.517	19.8198	13.14	.	Q	.	.	.	V	.
19.533	19.8378	13.04	.	Q	.	.	.	V	.

19.550	19.8556	12.93	. Q	.	.	.	V	.
19.567	19.8733	12.82	. Q	.	.	.	V	.
19.583	19.8908	12.72	. Q	.	.	.	V	.
19.600	19.9082	12.62	. Q	.	.	.	V	.
19.617	19.9254	12.52	. Q	.	.	.	V	.
19.633	19.9425	12.42	. Q	.	.	.	V	.
19.650	19.9595	12.32	. Q	.	.	.	V	.
19.667	19.9763	12.23	. Q	.	.	.	V	.
19.683	19.9931	12.13	. Q	.	.	.	V	.
19.700	20.0096	12.04	. Q	.	.	.	V	.
19.717	20.0261	11.95	. Q	.	.	.	V	.
19.733	20.0424	11.86	. Q	.	.	.	V	.
19.750	20.0587	11.77	. Q	.	.	.	V	.
19.767	20.0747	11.68	. Q	.	.	.	V	.
19.783	20.0907	11.60	. Q	.	.	.	V	.
19.800	20.1066	11.51	. Q	.	.	.	V	.
19.817	20.1223	11.43	. Q	.	.	.	V	.
19.833	20.1379	11.34	. Q	.	.	.	V	.
19.850	20.1535	11.26	. Q	.	.	.	V	.
19.867	20.1689	11.18	. Q	.	.	.	V	.
19.883	20.1841	11.10	. Q	.	.	.	V	.
19.900	20.1993	11.02	. Q	.	.	.	V	.
19.917	20.2144	10.95	. Q	.	.	.	V	.
19.933	20.2294	10.87	. Q	.	.	.	V	.
19.950	20.2443	10.79	. Q	.	.	.	V	.
19.967	20.2590	10.72	. Q	.	.	.	V	.
19.983	20.2737	10.65	. Q	.	.	.	V	.
20.000	20.2882	10.57	. Q	.	.	.	V	.

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

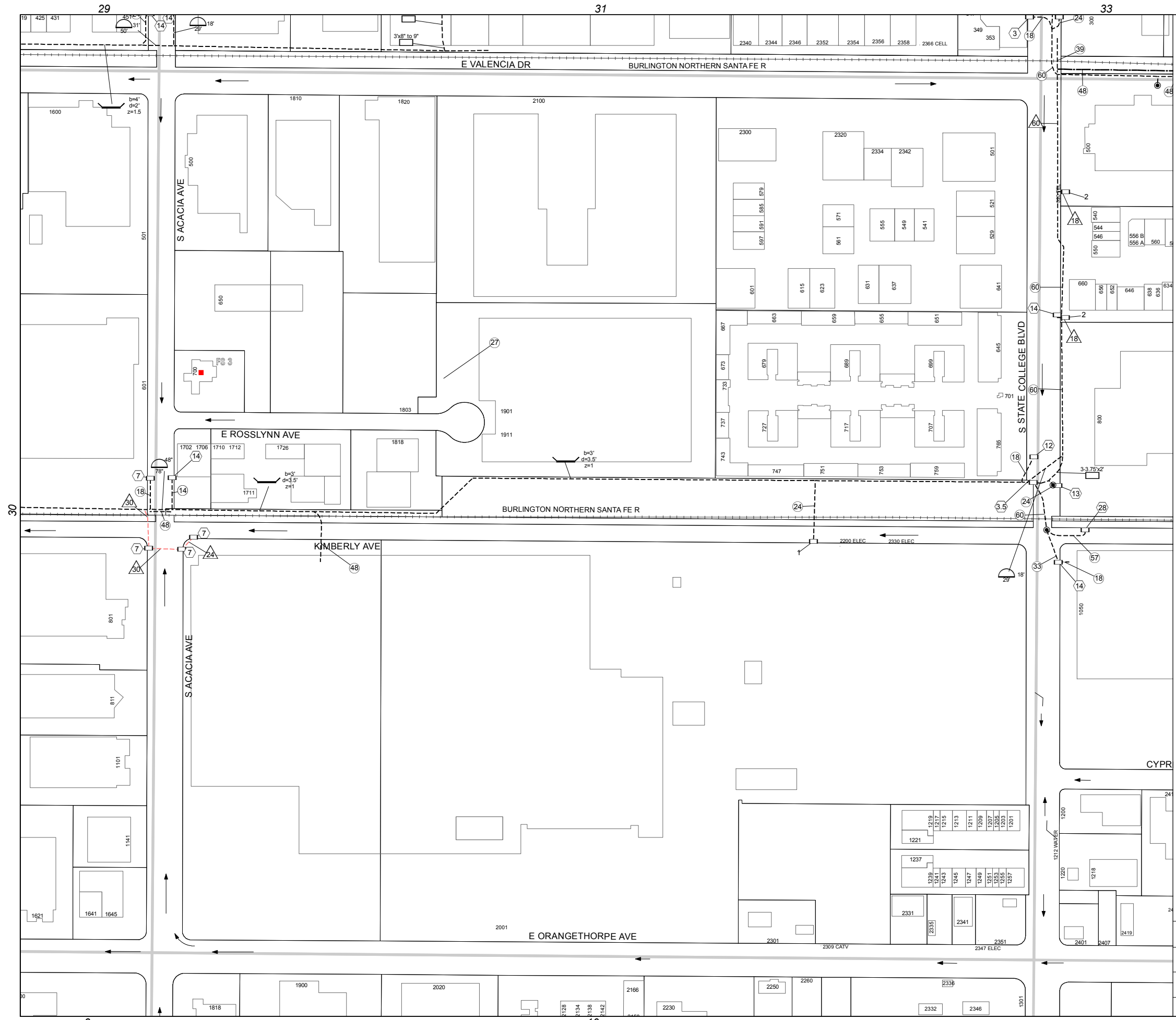
Percentile of Estimated Peak Flow Rate	Duration (minutes)
=====	=====
0%	1201.0
10%	1201.0
20%	890.0
30%	355.0
40%	125.0
50%	80.0
60%	55.0
70%	40.0
80%	30.0
90%	20.0

=====

END OF FLOODSCx ROUTING ANALYSIS

Appendix G – Kimberly Storm Channel As-built Plans

Kimberly Storm Channel As-built Plans for Reference



CITY OF FULLERTON

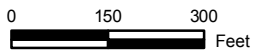
STORMWATER SYSTEM



LEGEND	
FACILITIES	
---	CITY OF FULLERTON
---	ORANGE COUNTY
---	FLOOD CONTROL DISTRICT (OCFCD)
---	PRIVATE
---	NATURAL SWALE
---	OTHER CITY
○	REINFORCED CONCRETE PIPE (IN.)
△	C - PLAIN CONCRETE
◐	CORRUGATED METAL PIPE (IN.)
◑	CORRUGATED METAL PIPE ARCH
◒	BASE X DEPTH (IN.)
◓	REINFORCED CONCRETE BOX CULVERT
◔	BARRELS, BASE X DEPTH (FT.)
⌋	TRAPEZOIDAL CHANNEL
⌋	BASE (b), DEPTH (d), (FT.), SLOPE RATIO (z)
⌋	VERTICAL WALL CHANNEL
⌋	BASE X DEPTH (FT.)
---	LINED PIPE
⌋	CATCH BASIN, OPENING WIDTH (FT.)
⌋	GRATE INLET, NUMBER OF GRATES
→	FLOW DIRECTION
●	MANHOLE
■	SCHOOL
■	PARK
■	ATLAS GRID
■	EASEMENT
---	PRIVATE STREET
---	CITY BOUNDARY
---	RAILROAD
■	POINT OF INTEREST

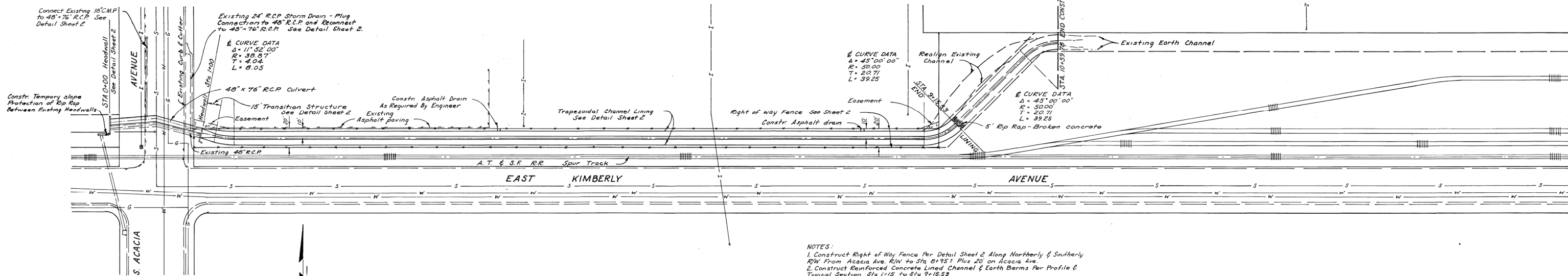
THIS MAP IS NOT AN OFFICIAL RECORD OF THE CITY BUT IS COMPILED FROM DATA FURNISHED BY PRIVATE CONTRACTORS AND OTHER SOURCES. LOCATIONS AND SIZE OF STORMDRAINS AND OTHER RELATED FACILITIES ARE SHOWN BASED ON THESE SOURCES. THIS INFORMATION IS FURNISHED TO ANY PERSON STRICTLY AS A CONVENIENCE AND THE CITY DOES NOT ASSUME ANY RESPONSIBILITY FOR THE ACCURACY AND COMPLETENESS.

BASE UPDATED
COUNTY - 2008
OVERLAY REVISED
MAR 2010



GRID 12 - C

PAGE 32



1. Construct Right of Way Fence Per Detail Sheet 2 Along Northerly & Southerly RW From Acacia Ave. RW to Sta 8+75.2 Plus 20 on Acacia Ave.
2. Construct Reinforced Concrete Liner Channel & Earth Berms Per Profile & Typical Section Sta 9+15.53 to Sta 10+59.78
3. Construct Earth Channel & Berms Per Profile & Typical Section Sta 9+15.53 to Sta 10+59.78.
4. For Construction of Culvert And Appurtenant Work at Street Intersection See Sheet 2 For Details.

THESE PLANS WERE PREPARED UNDER
THE SUPERVISION OF:

S.W. Lee, Jr., F.R.S. *4719*
REGISTERED CIVIL ENGINEER NO.

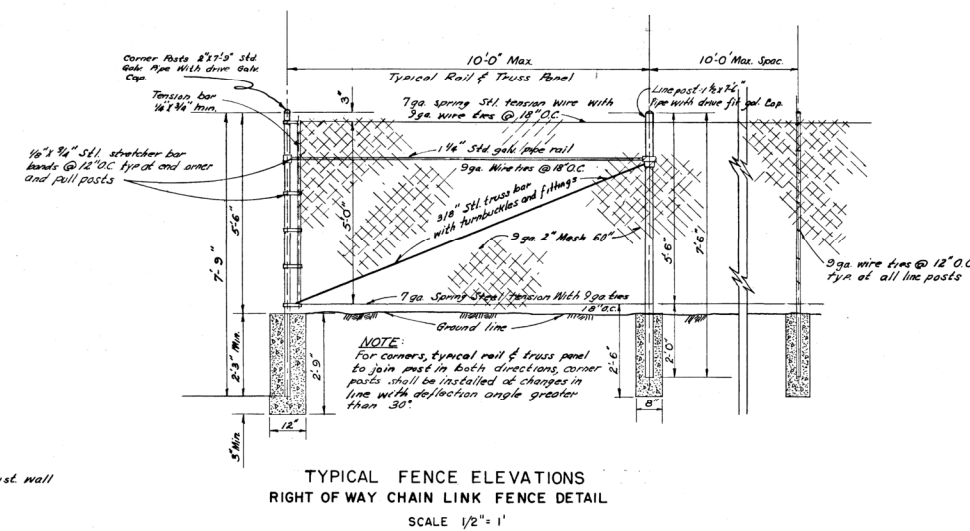
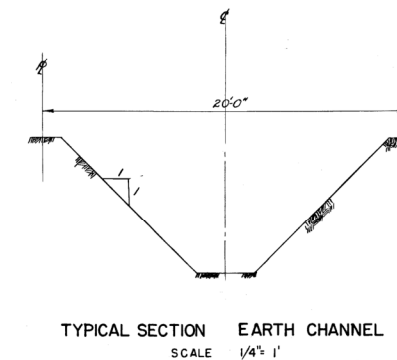
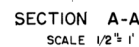
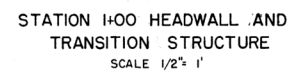
FOR ENGINEERS USE	
DRAWN	INITIAL DATE <i>C.E.</i> <i>5/11/62</i>
CHECKED	<i>R.D.</i> <i>5/11/62</i>

CITY OF FULLERTON
OFFICE OF THE CITY ENGINEER

PLAN AND PROFILE

KIMBERLY AVE. STORM DRAIN
UNIT IV

R E V I S I O N S	
DATE	DESCRIPTION

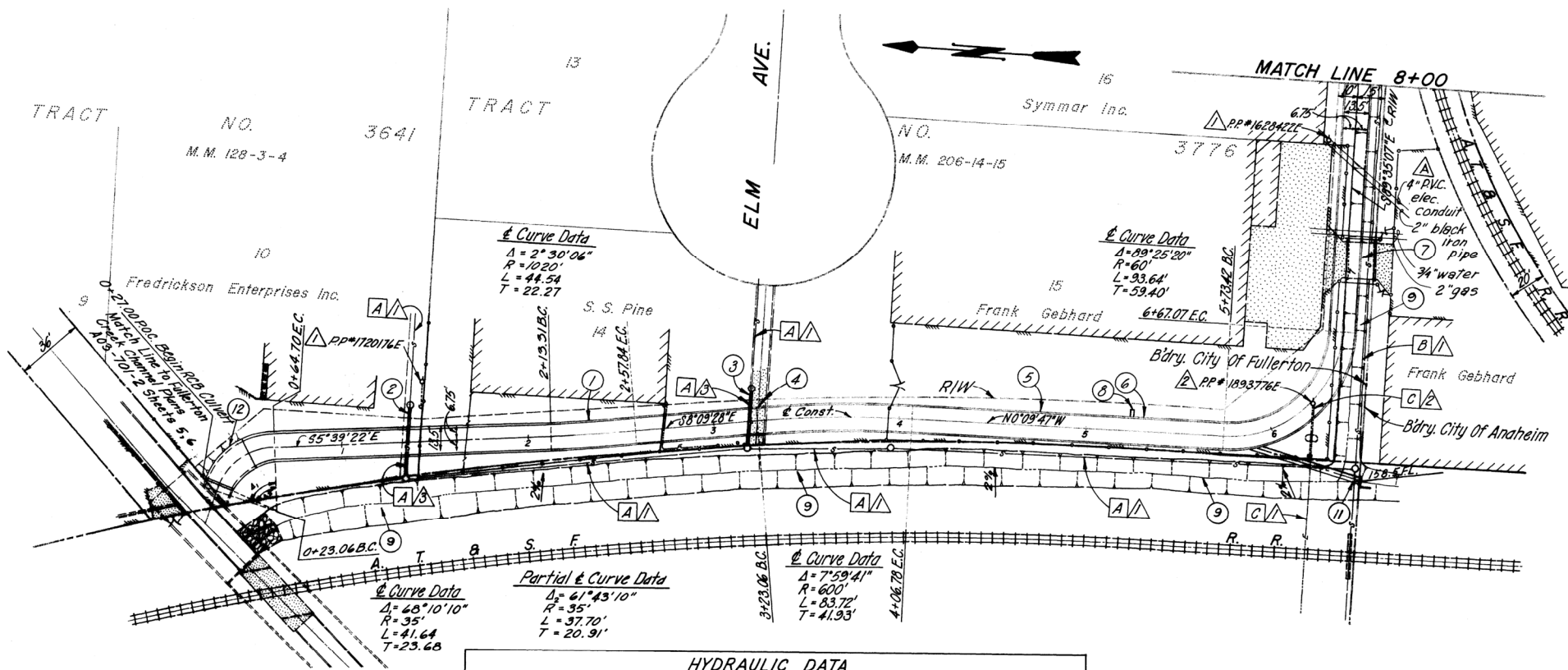


THESE PLANS WERE PREPARED UNDER
THE SUPERVISION OF:

DATE: 5/16/22 John F. Keady 4710
REGISTERED CIVIL ENGINEER NO.

REVISIONS

DATE	DESCRIPTION



HYDRAULIC DATA

Station To Station	Q25	b	s	n=0.13			n=0.15			Dc
				Dn	Vn	F	Dn	Vn	F	
0+44.72 - 3+24	735	13.5	0.00253	4.77	11.41	.92	5.29	10.29	.79	4.52
3+24 - 5+88	715	13.5	0.00253	4.63	11.32	.92	5.19	10.20	.79	4.43
5+88 - 8+00	705	13.5	0.00253	4.63	11.28	.92	5.13	10.18	.79	4.39

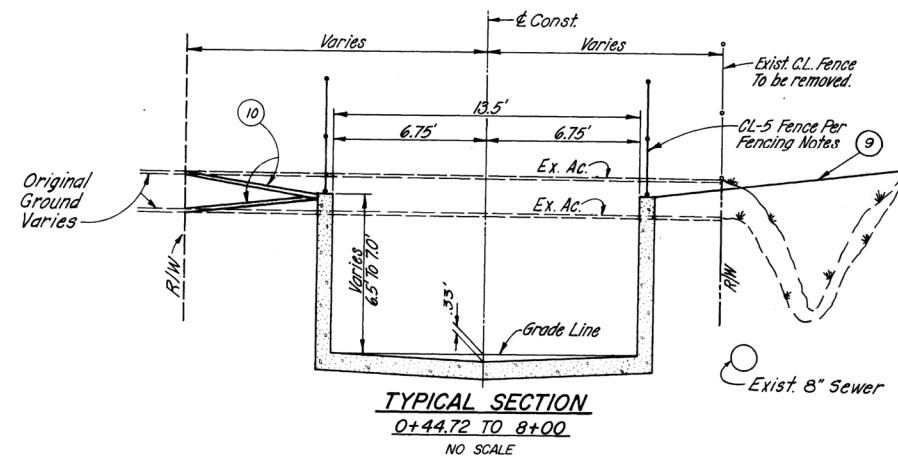
PLAN
Scale: 1" = 40'

UTILITY NOTES

UTILITY	OWNER
A 8" SEWER	CITY OF FULLERTON
B 18" INDUSTRIAL SEWER	CITY OF FULLERTON
C ELECTRICAL CONDUIT	SO. CALIF. EDISON CO.

LEGEND

1	PROTECT
2	TO BE RELOCATED BY OTHERS
3	TO BE RELOCATED BY CONTRACTOR



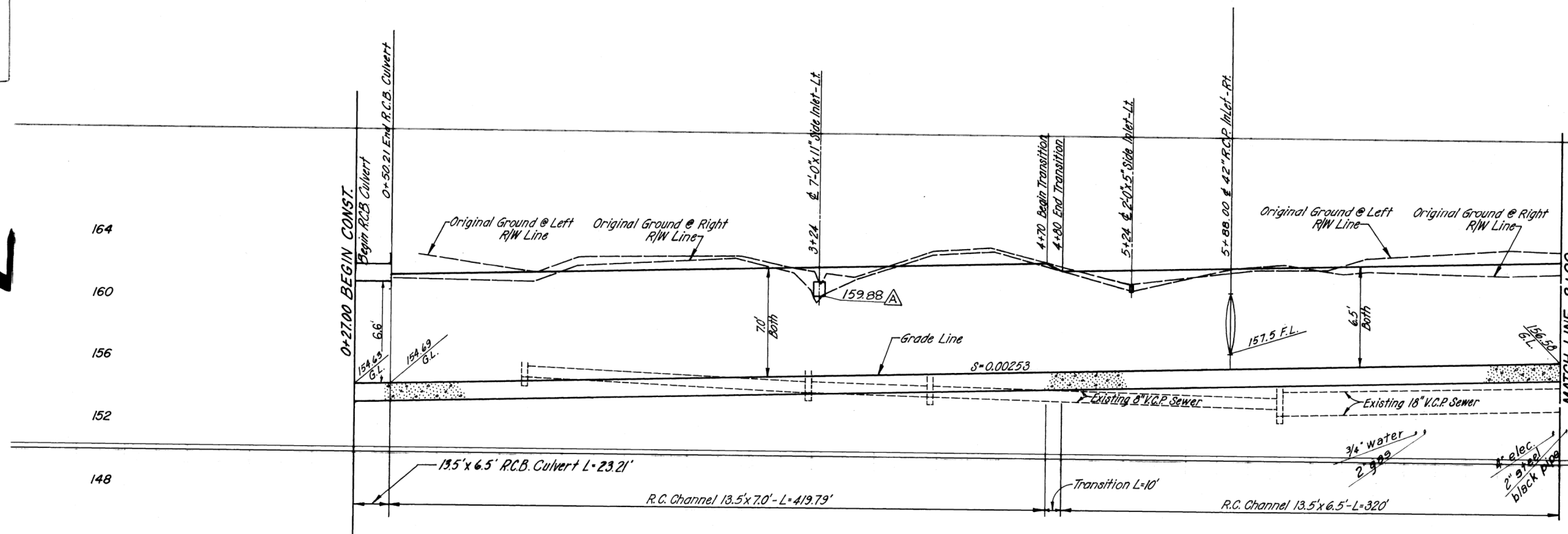
CONSTRUCTION NOTES

1. CONSTRUCT 13.5' x 7.0' R.C. CHANNEL FROM 0+50.21 TO 4+70.00.
2. CONSTRUCT SEWER SIPHON AT STATION 1+36 ± PER DETAILS SEE SHEET 7.
3. CONSTRUCT SEWER SIPHON AT STATION 3+19 ± PER DETAILS SEE SHEET 7.
4. CONSTRUCT 7' x 11" SIDE INLET PER DETAIL SEE SHEET 7.
5. CONSTRUCT R.C. CHANNEL TRANSITION FROM 4+70 TO 4+80 CHANGING WALL HEIGHT FROM 7.0' TO 6.5'.
6. CONSTRUCT 13.5' x 6.5' RC CHANNEL FROM 4+80.00 TO 8+00.

FENCING NOTES

1. INSTALL PER OCFCD STD-101-1 TYPE CL-5 FENCE, ON TOP OF PARAPET WALLS AT 0+27 AND 0+50, AND ON TOP OF CHANNEL WALLS FROM 0+50 TO 8+00.
2. REMOVE FENCE FROM WESTERLY SIDE OF CHANNEL AND OTHER INTERFERING PORTIONS WITHIN R/W.
3. RESTORE FENCES AND GATES WITHIN R/W WHICH ARE NECESSARY TO SECURE PREVIOUSLY FENCED AREAS.
4. SET FENCE POSTS OR SLEEVES IN CHANNEL WALL AT LOCATION OF TIMBER BRIDGE. AFTER RECONSTRUCTION OF TIMBER BRIDGE, FENCE ACROSS BRIDGE TO JOIN CHANNEL WALL FENCE.

7. REMOVE TIMBER BRIDGE AND PLACE ON OWNERS PROPERTY. CONTRACTOR SHALL COOPERATE WITH THE OWNER'S CONTRACTOR WHO WILL BE RESETTling BRIDGE AND UNDERGROUNDING PRIVATE POWER SUPPLY UNDER THE NEW CHANNEL.
8. CONSTRUCT 2' x 0.42' SIDE INLET STA 5+24 PER DETAIL SHEET 7.
9. FILL EXISTING CHANNEL AND GRADE TO DRAIN AT MINIMUM 2% WITH COMPACTED FILL.
10. FROM 0+20 ± TO 7+70 ±, APPLY SOIL STERILANT AND CONSTRUCT 3" A.C. PAVEMENT BETWEEN EASTERLY CHANNEL WALL AND R/W LINE.
11. CONSTRUCT 54 LIN. FT. OF 42" RCP AND RC "L" HEADWALL PER DETAIL SHEET 7. JOIN CHANNEL PER STD-JS2-1/.
12. CONSTRUCT 13.5' x 16.5' RCB CULVERT.

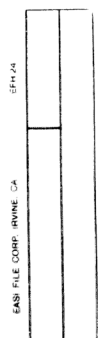


PROFILE
Scale: Horiz. 1" = 40'
Vert. 1" = 4'

BENCH MARK NO. 2F-12-69
EL. = 149.12
ALUMINUM CAP 0.55 MI. N. OF RIVERSIDE FRWY ALONG HARBOR BLVD. AT 14.5' N. OF HILL AVE. AND 28' E. OF HARBOR, IN THE TOP OF THE N.W. CORNER OF CATCH BASIN.
DATUM OCFCD = O.C.S. ADJUSTED 1970.

EDA PROJECT NO. 07-01-01697

PRELIMINARY REVISION CODE			ORANGE COUNTY FLOOD CONTROL DISTRICT	
Disregard Prints Bearing Earlier Codes			A	B
MARK	DATE	DESCRIPTION	KIMBERLY STORM CHANNEL PLAN AND PROFILE STA. 0+44.72 TO STA. 8+00	
1	6-77	As built		
DESIGNED B.C. SMITH			RECOMMENDED	
DRAWN E. DUFFIELD CHECKED M.A.C.			DESIGN DIVISION ENGINEER	
SUBMITTED T.A. BLASS DESIGN ENGINEER			SCALE AS SHOWN	DATE APRIL '76 DWG. NO. A03S05-701-1-A



3

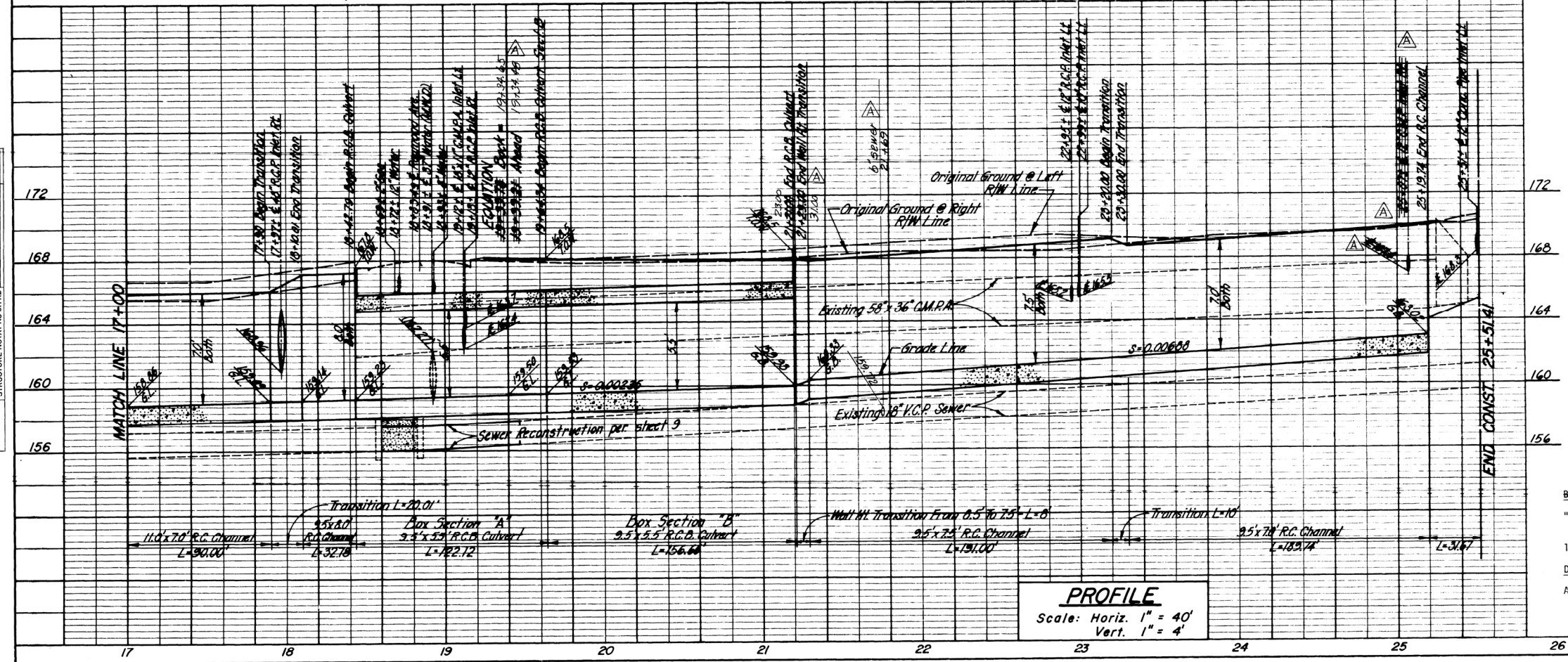


- 3



3

PROFILE NOTE BOOK NO. _____	SURVEYED _____	BY _____	DATE _____
	PLOTTED _____		
	GRADES CHECKED _____		
	B. M. S NOTED _____		
	STRUCTURE NOTATIONS CHK'D _____		



HYDRAULIC DATA										
Station To Station	Q25	b	S	n=.013			n=.015			Dc
				Dn	Vn	F	Dn	Vn	F	
17+00 - 17+90	570	11'	0.00253	4.81	10.77	.749	5.33	9.71	.741	4.36
18+00 - 21+21	530	9.5'	0.00253	5.27	10.50	.812	5.00	9.48	.689	4.59
21+29 - 25+19.74	530	9.5'	0.00060	3.64	15.33	.142	4.04	13.01	1.21	4.59

LEGEND

- 1 PROTECT
- 2 REMOVE INTERFERING PORTIONS
- 3 PLUG AT R/W
- 4 REMOVE
- 5 TO BE RELOCATED BY OTHERS
- 6 TO BE RELOCATED BY CONTRACTOR PER DETAIL SHEETS 5 & 7.
- 7 TO BE RELOCATED BY CONTRACTOR PER PLANS PREPARED BY M.W.D.
- 8 TO BE RECONSTRUCTED BY CONTRACTOR PER DETAIL SHEET 9.

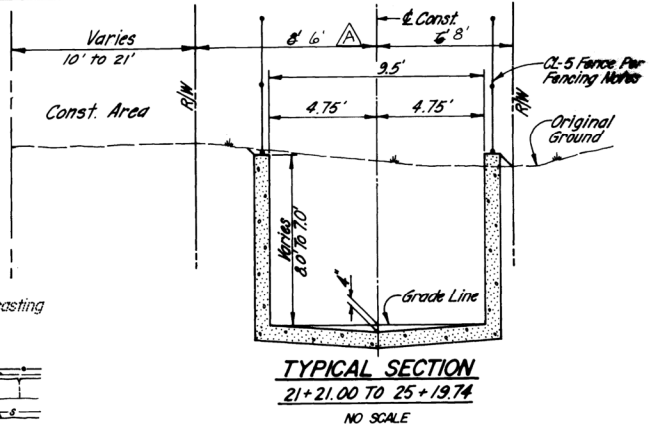
UTILITY

A	18" INDUSTRIAL SEWER	CITY OF FULLERTON
B	12" IRRIGATION LINE	ABANDONED
C	2" GAS	SOUTHERN CALIF. GAS CO.
D	12" WATER (CAST IRON)	CITY OF FULLERTON
E	10" SEWER (UCP)	CITY OF FULLERTON
F	37" WATER TRUNK LINE	METROPOLITAN WATER DISTRICT
G	8" WATER (CAST IRON)	CITY OF FULLERTON
H	ELECTROLIER #4084	CITY OF FULLERTON
I	R.R. GATE AND CONTROL	AT&SF RY

OWNER

FENCING NOTES

- 1 INSTALL PER OCFB BOTH WALLS FROM 21+21.00 TO 25+ WALL STATION 18
- 2 INSTALL PER OCFB FROM NORTHERLY C APPROX 42 LIN FT 25+52.2.

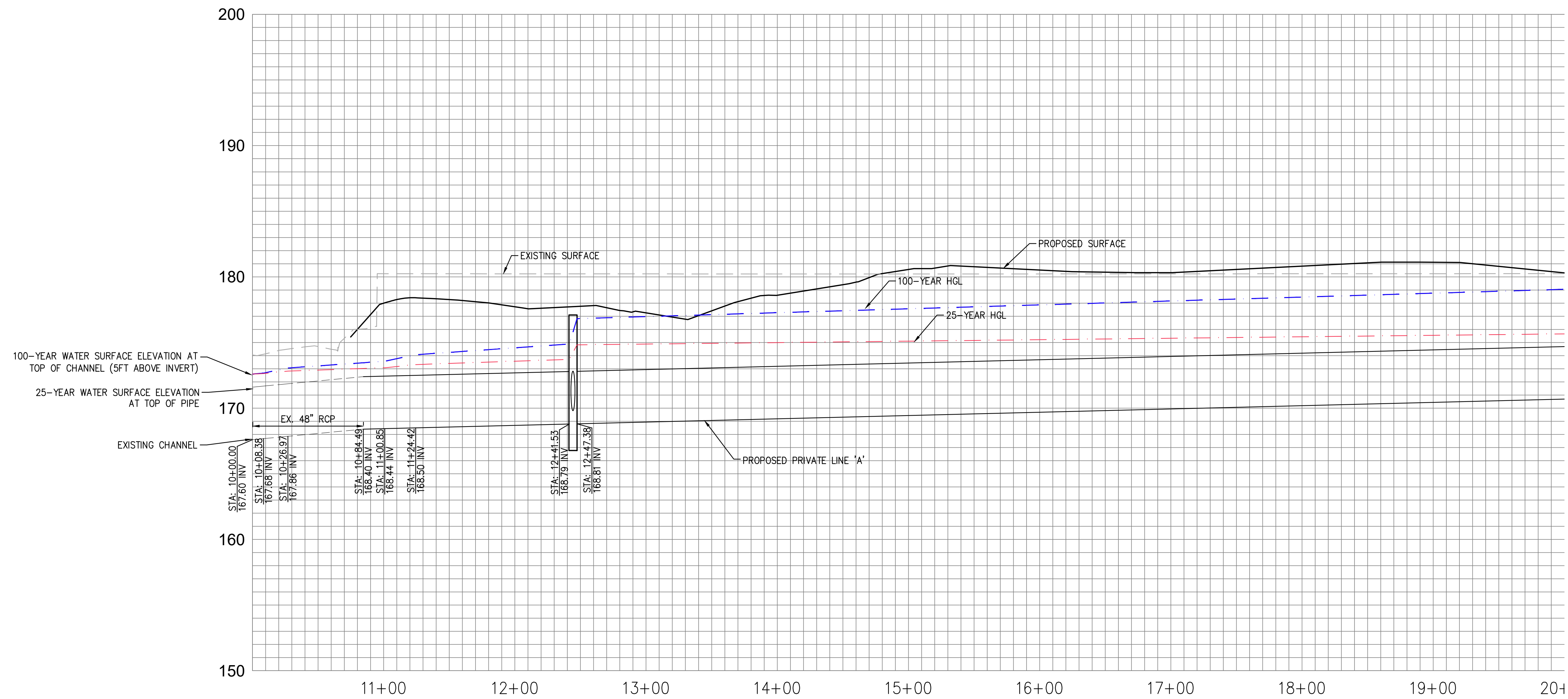


- (1) CONSTRUCT 11.0' x 7.0' RC CHANNEL FROM 17+00 TO 17+90.
 - (2) CONSTRUCT TRANSITION FROM 17+90 TO 18+10. JOIN EXISTING 48" RCP. PER STD-JS2-1.
 - (3) CONSTRUCT 9.5' x 8.0' RC CHANNEL FROM 18+10 TO 18+43.08.
 - (4) CONSTRUCT RCB CULVERT 9.5' x 5.5' FROM 18+43.06 TO 19+24.98 IN TWO PHASES PER DETOUR PLAN ON SHEET B, AND DETAILS FROM SECTION A ON SHEET 5.
 - (5) CONSTRUCT RCB CULVERT 9.5' x 5.5' FROM 19+24.98 TO 19+64.34. PER DETAILS FROM SECTION A ON SHEET 5.
 - (6) CONSTRUCT RCB CULVERT 9.5' x 5.5' FROM 19+64.34 TO 21+21.00 PER SECTION B DETAILS ON SHEET 5.
 - (7) CONSTRUCT RC CHANNEL TRANSITION FROM 21+21.00 TO 21+29.00 CHANGING WALL HEIGHT FROM 8.5' TO 7.5'.
 - (8) CONSTRUCT 9.5' x 7.5' RC CHANNEL FROM 21+29.00 TO 23+20.00.
 - (9) CONSTRUCT RC CHANNEL TRANSITION FROM 23+20.00 TO 23+30.00 CHANGING WALL HEIGHT FROM ~~8.5'~~ TO 7.5'.
 - (10) CONSTRUCT 9.5' x 7.0' RC CHANNEL FROM 23+30.00 TO 25+19.74 WITH WING WALLS STATION 25+19.74 PER DETAIL ON SHEET 7.
 - (11) REMOVE APPROXIMATELY 680 LIN. FT. OF 58" x 36" CMPA AND EXISTING TRASHRACK ENTRANCE STRUCTURE. SALVAGE TRASHRACK BARS AND OTHER GRATES AND REUSABLE APPURTENANCES TO CITY OF FULLERTON, BASQUE MAINTENANCE YARD, 116 S. BASQUE. BACKFILL TO MINIMUM 95% RELATIVE COMPACTION WITHIN 10 FEET OF RAILROAD TRACKS AND MINIMUM 90% ELSEWHERE.
 - (12) REMOVE RC JUNCTION ON CMPA AND CONSTRUCT 13 LIN. FT. OF 12" RCP AND 13 LIN. FT. OF 10" RCP IN KIND FROM JUNCTION RC CHANNEL. JOIN CHANNEL PER STD-JS2-1.
 - (13) GRADE EARTH TRANSITION AND PLACE RIP RAP TO FORM TRAPEZOIDAL CHANNEL, BASE = 3', SIDE SLOPES MAXIMUM 1:1. PER DETAIL SHEET 7.
 - (14) REPAVE RAYMOND AVE. PER DETAIL SHEET 9.
 - (15) PLACE 2-INCH AC PAVEMENT AT 40 FT. RADIUS FOR TEMPORARY ACCESS BY PROPERTY OWNERS. REMOVE AND RESTORE GRASS, BUSHES AND SPRINKLER SYSTEM IN KIND.
 - (16) PLACE 4-INCH AC DRIVEWAY APPROXIMATELY 22' x 275' AFTER CHANNEL CONSTRUCTION AND GRADING IS COMPLETED. USE SC 250 PRIME COAT.
 - (17) FROM Sta 17+00 to Sta. 18+42± apply soil sterilant and constr. 3" A.C.paving - No chan. wall & R/W.
- 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100
- 3 inches on original drawing**

PRELIMINARY REVISION CODE			A	B	C			
Disregard Printings Bearing Earlier Codes								
REVISIONS			ORANGE COUNTY FLOOD CONTROL DISTRICT					
MARK	DATE	DESCRIPTION	KIMBERLY STORM CHANNEL PLAN AND PROFILE STA. 17+00 TO STA. 25+51.41					
△	5-3-76	PROTECT [1]						
△	6-77	As built SG						
DESIGNED B.C. SMITH			RECOMMENDED <i>[Signature]</i>					
DRAWN L. DUFFIELD, CHECKED M.A.C.			DESIGN DIVISION ENGINEER					
SUBMITTED			SCALE		DATE		DWG. NO.	
T.A. GLASS DESIGN ENGINEER			AS SHOWN		APRIL 76		A03S05 - 701 - 1-A	

Appendix H –Profile Main Line A & HGL Calculations

Main Private Line A to Outfall 1 (Ex. 48" RCP)

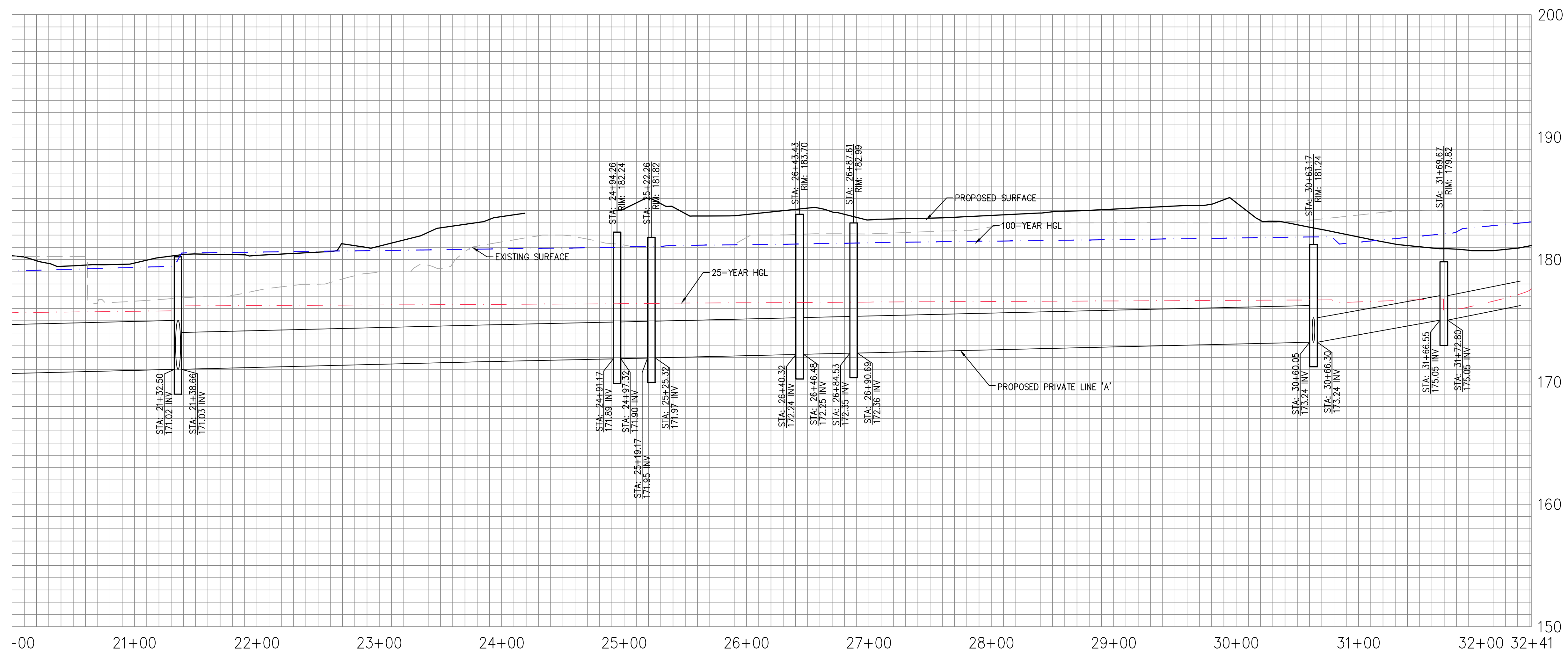


LEGEND

- EXISTING GROUND
- FINISHED SURFACE
- 25-YEAR HYDRAULIC GRADE LINE
- 100-YEAR HYDRAULIC GRADE LINE

ABBREVIATIONS

- HGL HYDRAULIC GRADE LINE
- EX. EXISTING
- INV. INVERT
- RCP REINFORCED CONCRETE PIPE



STORM DRAIN LINE 'A'

100 YEAR TO OUTLET 1 - 48" RCP

Program Package Serial Number: 7132

WATER SURFACE PROFILE LISTING

Date: 5- 7-2021 Time: 2:20:54

GOODMAN LOGISTICS CENTER FULLERTON

STORM DRAIN MAIN LINE 48-INCH MITIGATED CONDITION

100-YEAR STORM - WSE ASSUMED CHANNEL FULL

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1000.000	167.600	5.000	172.600	129.90	10.34	1.66	174.26	.00	3.41	.00	4.000	.000	.00	1 .0
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	-
8.380	.0095					.0082	.07	5.00	.00	3.04	.013	.00	.00	PIPE
1008.380	167.680	4.989	172.669	129.90	10.34	1.66	174.33	.00	3.41	.00	4.000	.000	.00	1 .0
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	-
18.590	.0097					.0082	.15	.00	.00	3.02	.013	.00	.00	PIPE
1026.970	167.860	5.199	173.059	129.90	10.34	1.66	174.72	.00	3.41	.00	4.000	.000	.00	1 .0
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	-
57.520	.0094					.0070	.40	5.20	.00	2.86	.012	.00	.00	PIPE
1084.490	168.400	5.060	173.460	129.90	10.34	1.66	175.12	.00	3.41	.00	4.000	.000	.00	1 .0
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	-
16.360	.0024					.0070	.11	5.06	.00	4.00	.012	.00	.00	PIPE
1100.850	168.440	5.134	173.574	129.90	10.34	1.66	175.23	.00	3.41	.00	4.000	.000	.00	1 .0
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	-
23.570	.0025					.0070	.16	.00	.00	4.00	.012	.00	.00	PIPE
1124.420	168.500	5.570	174.070	129.90	10.34	1.66	175.73	.00	3.41	.00	4.000	.000	.00	1 .0
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	-
117.110	.0025					.0070	.82	5.57	.00	4.00	.012	.00	.00	PIPE
1241.530	168.793	6.093	174.886	129.90	10.34	1.66	176.55	.00	3.41	.00	4.000	.000	.00	1 .0
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	-
JUNCT STR	.0024					.0050	.03	6.09	.00		.012	.00	.00	PIPE
1247.380	168.807	8.011	176.818	84.85	6.75	.71	177.53	.00	2.79	.00	4.000	.000	.00	1 .0
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	-
885.120	.0025					.0030	2.63	8.01	.00	4.00	.012	.00	.00	PIPE
2132.500	171.020	8.429	179.449	84.85	6.75	.71	180.16	.00	2.79	.00	4.000	.000	.00	1 .0
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	-
JUNCT STR	.0011					.0020	.01	8.43	.00		.012	.00	.00	PIPE

Program Package Serial Number: 7132

WATER SURFACE PROFILE LISTING

Date: 5- 7-2021 Time: 2:20:54

GOODMAN LOGISTICS CENTER FULLERTON

STORM DRAIN MAIN LINE 48-INCH MITIGATED CONDITION

100-YEAR STORM - WSE ASSUMED CHANNEL FULL

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
2138.660	171.027	9.504	180.531	24.25	3.43	.18	180.71	.00	1.59	.00	3.000	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
195.210	.0024					.0011	.22	9.50	.00	1.83	.012	.00	.00	PIPE
2333.870	171.489	9.289	180.778	24.25	3.43	.18	180.96	.00	1.59	.00	3.000	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
93.870	.0024					.0011	.11	9.29	.00	1.83	.012	.00	.00	PIPE
2427.740	171.712	9.199	180.911	24.25	3.43	.18	181.09	.00	1.59	.00	3.000	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
66.670	.0024					.0011	.08	9.20	.00	1.83	.012	.00	.00	PIPE
2494.410	171.870	9.116	180.986	24.25	3.43	.18	181.17	.00	1.59	.00	3.000	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
JUNCT STR	.0022					.0011	.01	9.12	.00		.012	.00	.00	PIPE
2500.660	171.884	9.109	180.993	24.25	3.43	.18	181.18	.00	1.59	.00	3.000	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2500.661	171.885	9.162	181.047	24.25	3.43	.18	181.23	.00	1.59	.00	3.000	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30.149	.0024					.0011	.03	9.16	.00	1.83	.012	.00	.00	PIPE
2530.810	171.956	9.125	181.081	24.25	3.43	.18	181.26	.00	1.59	.00	3.000	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
JUNCT STR	.0024					.0011	.01	9.13	.00		.012	.00	.00	PIPE
2537.060	171.971	9.117	181.088	24.25	3.43	.18	181.27	.00	1.59	.00	3.000	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2537.060	171.972	9.171	181.143	24.25	3.43	.18	181.33	.00	1.59	.00	3.000	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
115.720	.0000					.0011	.13	9.17	.00	.00	.012	.00	.00	PIPE
2652.780	171.972	9.301	181.273	24.25	3.43	.18	181.46	.00	1.59	.00	3.000	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
JUNCT STR	-.0002					.0011	.01	9.30	.00		.012	.00	.00	PIPE
2659.010	171.971	9.309	181.280	24.25	3.43	.18	181.46	.00	1.59	.00	3.000	.000	.00	1 .0

- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
2659.010	172.245	9.062	181.307	24.25	3.43	.18	181.49	.00	1.59	.00	3.000	.000	.00	1	.0		
- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	
36.270	.0004					.0011	.04	9.06	.00	3.00	.012	.00	.00	PIPE			

Program Package Serial Number: 7132

WATER SURFACE PROFILE LISTING

Date: 5- 7-2021 Time: 2:20:54

GOODMAN LOGISTICS CENTER FULLERTON

STORM DRAIN MAIN LINE 48-INCH MITIGATED CONDITION

100-YEAR STORM - WSE ASSUMED CHANNEL FULL

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
2695.280	172.259	9.089	181.348	24.25	3.43	.18	181.53	.00	1.59	.00	3.000	.000	.00	1 .0
JUNCT STR	.0143					.0011	.01	9.09	.00		.012	.00	.00	PIPE
2701.560	172.349	9.006	181.355	24.25	3.43	.18	181.54	.00	1.59	.00	3.000	.000	.00	1 .0
2701.561	172.360	9.022	181.382	24.25	3.43	.18	181.56	.00	1.59	.00	3.000	.000	.00	1 .0
271.909	.0024					.0011	.31	9.02	.00	1.83	.012	.00	.00	PIPE
2973.470	173.007	8.708	181.715	24.25	3.43	.18	181.90	.00	1.59	.00	3.000	.000	.00	1 .0
50.070	.0024					.0011	.06	8.71	.00	1.82	.012	.00	.00	PIPE
3023.540	173.127	8.672	181.799	24.25	3.43	.18	181.98	.00	1.59	.00	3.000	.000	.00	1 .0
54.510	.0021					.0011	.06	8.67	.00	1.92	.012	.00	.00	PIPE
3078.050	173.239	8.621	181.860	24.25	3.43	.18	182.04	.00	1.59	.00	3.000	.000	.00	1 .0
JUNCT STR	.0002					.0055	.03	8.62	.00		.012	.00	.00	PIPE
3084.300	173.240	8.022	181.262	24.25	7.72	.93	182.19	.00	1.74	.00	2.000	.000	.00	1 .0
94.500	.0192					.0098	.93	8.02	.00	1.25	.012	.00	.00	PIPE
3178.800	175.050	7.137	182.187	24.25	7.72	.93	183.11	.00	1.74	.00	2.000	.000	.00	1 .0
JUNCT STR	.0002					.0098	.06	7.14	.00		.012	.00	.00	PIPE
3185.050	175.051	7.197	182.248	24.25	7.72	.93	183.17	.00	1.74	.00	2.000	.000	.00	1 .0
3185.050	175.051	7.472	182.523	24.25	7.72	.93	183.45	.00	1.74	.00	2.000	.000	.00	1 .0
56.000	.0212					.0098	.55	7.47	.00	1.21	.012	.00	.00	PIPE
3241.050	176.240	6.831	183.071	24.25	7.72	.93	184.00	.00	1.74	.00	2.000	.000	.00	1 .0

25 YEAR MAIN LINE TO OUTLET #1 - 48" RCP
 FILE: GP25M.WSW

W S P G W - CIVILDESIGN Version 14.07
 Program Package Serial Number: 7132

PAGE 1

WATER SURFACE PROFILE LISTING
 GOODMAN LOGISTICS CENTER FULLERTON
 STORM DRAIN MAIN LINE 48-INCH MITIGATED CONDITION
 25-YEAR STORM - WSE ASSUMED CHANNEL FULL

Date: 5- 7-2021 Time: 2:19: 5

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1000.000	167.600	5.000	172.600	90.80	7.23	.81	173.41	.00	2.89	.00	4.000	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8.380	.0095					.0040	.03	5.00	.00	2.34	.013	.00	.00	PIPE
1008.380	167.680	4.953	172.633	90.80	7.23	.81	173.44	.00	2.89	.00	4.000	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18.590	.0097					.0040	.07	.00	.00	2.33	.013	.00	.00	PIPE
1026.970	167.860	4.964	172.824	90.80	7.23	.81	173.64	.00	2.89	.00	4.000	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
57.520	.0094					.0034	.20	4.96	.00	2.24	.012	.00	.00	PIPE
1084.490	168.400	4.620	173.020	90.80	7.23	.81	173.83	.00	2.89	.00	4.000	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16.360	.0024					.0034	.06	4.62	.00	4.00	.012	.00	.00	PIPE
1100.850	168.440	4.636	173.076	90.80	7.23	.81	173.89	.00	2.89	.00	4.000	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23.570	.0025					.0034	.08	.00	.00	4.00	.012	.00	.00	PIPE
1124.420	168.500	4.818	173.318	90.80	7.23	.81	174.13	.00	2.89	.00	4.000	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
117.110	.0025					.0034	.40	4.82	.00	4.00	.012	.00	.00	PIPE
1241.530	168.793	4.924	173.717	90.80	7.23	.81	174.53	.00	2.89	.00	4.000	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
JUNCT STR	.0024					.0023	.01	4.92	.00		.012	.00	.00	PIPE
1247.380	168.807	6.015	174.822	51.91	4.13	.26	175.09	.00	2.16	.00	4.000	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
885.120	.0025					.0011	.98	6.01	.00	2.39	.012	.00	.00	PIPE
2132.500	171.020	4.787	175.807	51.91	4.13	.26	176.07	.00	2.16	.00	4.000	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
JUNCT STR	.0011					.0008	.00	4.79	.00		.012	.00	.00	PIPE

WATER SURFACE PROFILE LISTING
GOODMAN LOGISTICS CENTER FULLERTON
STORM DRAIN MAIN LINE 48-INCH MITIGATED CONDITION
25-YEAR STORM - WSE ASSUMED CHANNEL FULL

Date: 5- 7-2021 Time: 2:19: 5

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
2138.660	171.027	5.185	176.212	14.73	2.08	.07	176.28	.00	1.22	.00	3.000	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
195.210	.0024					.0004	.08	5.18	.00	1.35	.012	.00	.00	PIPE
2333.870	171.489	4.814	176.303	14.73	2.08	.07	176.37	.00	1.22	.00	3.000	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
93.870	.0024					.0004	.04	4.81	.00	1.35	.012	.00	.00	PIPE
2427.740	171.712	4.640	176.352	14.73	2.08	.07	176.42	.00	1.22	.00	3.000	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
66.670	.0024					.0004	.03	4.64	.00	1.35	.012	.00	.00	PIPE
2494.410	171.870	4.510	176.380	14.73	2.08	.07	176.45	.00	1.22	.00	3.000	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
JUNCT STR	.0022					.0004	.00	4.51	.00		.012	.00	.00	PIPE
2500.660	171.884	4.498	176.382	14.73	2.08	.07	176.45	.00	1.22	.00	3.000	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2500.661	171.885	4.517	176.402	14.73	2.08	.07	176.47	.00	1.22	.00	3.000	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30.149	.0024					.0004	.01	4.52	.00	1.36	.012	.00	.00	PIPE
2530.810	171.956	4.459	176.415	14.73	2.08	.07	176.48	.00	1.22	.00	3.000	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
JUNCT STR	.0024					.0004	.00	4.46	.00		.012	.00	.00	PIPE
2537.060	171.971	4.446	176.417	14.73	2.08	.07	176.48	.00	1.22	.00	3.000	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2537.060	171.972	4.465	176.437	14.73	2.08	.07	176.50	.00	1.22	.00	3.000	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
115.720	.0000					.0004	.05	4.47	.00	.00	.012	.00	.00	PIPE
2652.780	171.972	4.514	176.486	14.73	2.08	.07	176.55	.00	1.22	.00	3.000	.000	.00	1 .0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
JUNCT STR	-.0002					.0004	.00	4.51	.00		.012	.00	.00	PIPE

2659.010	171.971	4.517	176.488	14.73	2.08	.07	176.56	.00	1.22	.00	3.000	.000	.00	1	.0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2659.010	172.245	4.253	176.498	14.73	2.08	.07	176.57	.00	1.22	.00	3.000	.000	.00	1	.0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36.270	.0004					.0004	.02	4.25	.00	2.57	.012	.00	.00	PIPE	

FILE: GP25M.WSW

W S P G W - CIVILDESIGN Version 14.07

PAGE 3

Program Package Serial Number: 7132

WATER SURFACE PROFILE LISTING

Date: 5- 7-2021 Time: 2:19: 5

GOODMAN LOGISTICS CENTER FULLERTON

STORM DRAIN MAIN LINE 48-INCH MITIGATED CONDITION

25-YEAR STORM - WSE ASSUMED CHANNEL FULL

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
2695.280	172.259	4.254	176.513	14.73	2.08	.07	176.58	.00	1.22	.00	3.000	.000	.00	1 .0
JUNCT STR	.0143					.0004	.00	4.25	.00		.012	.00	.00	PIPE
2701.561	172.360	4.166	176.526	14.73	2.08	.07	176.59	.00	1.22	.00	3.000	.000	.00	1 .0
271.909	.0024					.0004	.11	4.17	.00	1.35	.012	.00	.00	PIPE
2973.470	173.007	3.642	176.649	14.73	2.08	.07	176.72	.00	1.22	.00	3.000	.000	.00	1 .0
50.070	.0024					.0004	.02	3.64	.00	1.35	.012	.00	.00	PIPE
3023.540	173.127	3.553	176.680	14.73	2.08	.07	176.75	.00	1.22	.00	3.000	.000	.00	1 .0
54.510	.0021					.0004	.02	3.55	.00	1.41	.012	.00	.00	PIPE
3078.050	173.239	3.463	176.702	14.73	2.08	.07	176.77	.00	1.22	.00	3.000	.000	.00	1 .0
JUNCT STR	.0002					.0020	.01	3.46	.00		.012	.00	.00	PIPE
3084.300	173.240	3.241	176.481	14.73	4.69	.34	176.82	.00	1.38	.00	2.000	.000	.00	1 .0
79.884	.0192					.0036	.29	3.24	.00	.92	.012	.00	.00	PIPE
3164.184	174.770	2.000	176.770	14.73	4.69	.34	177.11	.00	1.38	.00	2.000	.000	.00	1 .0
5.211	.0192					.0033	.02	2.00	.00	.92	.012	.00	.00	PIPE
3169.395	174.870	1.906	176.775	14.73	4.77	.35	177.13	.00	1.38	.85	2.000	.000	.00	1 .0

HYDRAULIC JUMP																
3169.395	174.870	.993	175.863	14.73	9.46	1.39	177.25	.00	1.38	2.00	2.000	.000	.00	1	.0	
9.405	.0192					.0148	.14	.99	1.89	.92	.012	.00	.00	PIPE		

FILE: GP25M.WSW

W S P G W - CIVILDESIGN Version 14.07
 Program Package Serial Number: 7132

PAGE 4

WATER SURFACE PROFILE LISTING
 GOODMAN LOGISTICS CENTER FULLERTON
 STORM DRAIN MAIN LINE 48-INCH MITIGATED CONDITION
 25-YEAR STORM - WSE ASSUMED CHANNEL FULL

Date: 5- 7-2021 Time: 2:19: 5

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
3178.800	175.050	.993	176.043	14.73	9.46	1.39	177.43	.00	1.38	2.00	2.000	.000	.00	1 .0
JUNCT STR	.0002					.0157	.10	.99	1.89		.012	.00	.00	PIPE
3185.050	175.051	.958	176.010	14.73	9.90	1.52	177.53	.00	1.38	2.00	2.000	.000	.00	1 .0
6.718	.0212					.0164	.11	.96	2.02	.90	.012	.00	.00	PIPE
3191.768	175.194	.969	176.162	14.73	9.77	1.48	177.64	.00	1.38	2.00	2.000	.000	.00	1 .0
16.056	.0212					.0151	.24	.97	1.98	.90	.012	.00	.00	PIPE
3207.824	175.535	1.006	176.540	14.73	9.31	1.35	177.89	.00	1.38	2.00	2.000	.000	.00	1 .0
10.608	.0212					.0133	.14	1.01	1.84	.90	.012	.00	.00	PIPE
3218.431	175.760	1.044	176.804	14.73	8.88	1.22	178.03	.00	1.38	2.00	2.000	.000	.00	1 .0
7.454	.0212					.0118	.09	1.04	1.72	.90	.012	.00	.00	PIPE
3225.885	175.918	1.085	177.003	14.73	8.46	1.11	178.12	.00	1.38	1.99	2.000	.000	.00	1 .0
5.380	.0212					.0104	.06	1.08	1.60	.90	.012	.00	.00	PIPE
3231.265	176.032	1.128	177.160	14.73	8.07	1.01	178.17	.00	1.38	1.98	2.000	.000	.00	1 .0
3.888	.0212					.0092	.04	1.13	1.48	.90	.012	.00	.00	PIPE
3235.154	176.115	1.173	177.287	14.73	7.69	.92	178.21	.00	1.38	1.97	2.000	.000	.00	1 .0