PRELIMINARY HYDROLOGY & HYDRAULIC STUDY FOR BUFFALO GROVE

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CALIFORNIA

PREPARED FOR:

CENTURY COMMUNITIES
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APRIL 29, 2025

This report has been prepared by or under the direction of the following registered civil engineer who attests to the technical information contained herein. The registered civil engineer has also judged the qualifications of any technical specialists providing engineering data upon which recommendations, conclusions, and decisions are based.



04/29/2025

Joseph L. Castaneda RCE 59835 Registered Civil Engineer	Date	Seal

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I. PURPOSE AND SCOPE

The purpose of this study is to evaluate the proposed residential development known as Buffalo Grove. The report will provide a preliminary analysis of the proposed storm drain infrastructure required to serve the project site.

The scope of the study includes the following:

1. Perform existing condition rational method analyses for the project site.
2. Perform proposed condition rational method and unit hydrograph analyses for the project site.
3. Perform a basin routing analysis of the proposed subsurface systems.
4. Perform preliminary pipe sizing calculations.
5. Preparation of a hydrology and hydraulics report, which consists of hydrological and analytical results and exhibits.

II. PROJECT SITE AND DRAINAGE AREA OVERVIEW

Buffalo Grove is a proposed residential project in the City of Upland, in the County of San Bernardino. The project is located on the south side of Foothill Blvd and to the east of Central Ave and west of Benson Ave. A Vicinity Map has been included as Figure 1. The project area is approximately 4.5 acres.

The existing site condition includes a building, a parking lot area, and undeveloped land. Runoff flows from the north to the south through the project site. In the existing condition, runoff leaves the project site along the southern edge and flows into an existing parking lot to the south.

In the proposed condition, onsite runoff will be collected and conveyed to two subsurface systems. The subsurface systems will infiltrate the water quality volume and provide storage for increased runoff mitigation. The project will discharge runoff to the south, in the same locations as the existing condition. The project site is providing increased runoff mitigation based on San Bernardino Basin Criteria, as follows:

1. The 100-year post-project condition outflow must be less than 90% of the pre-project 100-year flow rate assessed using the 25-year rainfall and an AMC value of II.
2. The 25-year post-project condition outflow must be less than 90% of the pre-project 25-year flow rate assessed using the 10-year rainfall and an AMC value of II.
3. The 10-year post-project condition outflow must be less than 90% of the pre-project 10-year flow rate assessed using the 5-year rainfall and an AMC value of II.
4. The 2-year post-project condition outflow must be less than 90% of the pre-project 2-year flow rate assessed using the 2-year rainfall and an AMC value of I.

III. HYDROLOGY

Hydrology Parameters

The San Bernardino County Hydrology Manual (Reference 1) was used to develop the hydrological parameters for the hydrology analyses. The rational method, unit hydrograph method, and basin routing calculations were used for the analyses and the computations were performed using the computer program developed by Civil Cadd/Civil Design.

Rainfall depths were obtained from NOAA Atlas 14 and have been included as Excerpt B. A slope value of 0.6 was used. The rainfall depths used in the hydrology calculations are as follows:

Table 1: Rainfall Values

Storm Event & Duration	1-Hour	6-Hour	24-Hour
2-Year	0.63”	1.71”	3.23”
5-Year	0.83”	-	-
10-Year	1.00”	2.64”	5.13”
25-Year	1.23”	3.22”	6.33”
100-Year	1.61”	4.16”	8.26”

Note: Only values used for the calculations have been provided.

The existing soil classification for the project site consists of hydraulic Soil Groups “A” as shown in Excerpt A. Excerpt A is a Soils Map obtained from the National Resource Conservation Service Websoil Survey. An Antecedent Moisture Condition of III was used for 100-year (post-project) calculations. An Antecedent Moisture Condition of II was used for the 100-year (pre-project), 25-year, 10-year calculations. A Antecedent Moisture Condition of I was used for the 2-year calculations.

Land uses of Residential (11+ du/ac) and Undeveloped (poor cover) were used for the analysis. Undeveloped (poor cover) was used for the existing condition analysis and the open space area in the proposed condition. Residential (11+ du/ac) was used for the proposed condition. The following table documents the parameters of each land use type.

Table 2: Land Use Information

Land Use	Runoff Index Value for Soil A, AMC II	Pervious Area Ratio
Residential (11+ du/ac)	32	0.2
Undeveloped (poor cover)	67	1

Pre-Project Rational Method Analysis

A rational method analysis was prepared for the project site for the existing condition. One area, Area A, was assessed. The existing condition rational method analysis utilized shifted rainfall values, as established by the San Bernardino Basin Sizing Criteria and discussed in the previous section. The results of the analysis are as follows:

Table 3: Existing Condition Rational Method Results

Storm Event	Flow Rate (ft^3/s)	Time of Concentration (min)
2-Year (with 2-Year rainfall)	3.65	8.19
10-Year (with 5-Year rainfall)	6.36	8.19
25-Year (with 10-Year rainfall)	8.01	8.19
100-Year (with 25-Year rainfall)	10.24	8.19

The existing condition rational method results were used to establish the increased runoff mitigation criteria for the project site.

The existing condition site hydrology map is included as Exhibit A. The rational method calculations are included in Appendix A.

Post-Project Rational Method and Unit Hydrograph Analysis

The proposed condition consists of two areas. Area A is the northern portion of the project site and tributary to subsurface Basin A. Area B is the southern portion of the project site and tributary to subsurface Basin B. A rational method analysis was performed. The results of the analysis are as follows:

Table 4: Proposed Condition Rational Method Results

Storm Event	Area A		Area B	
	Flow Rate (ft^3/s)	Time of Concentration (min)	Flow Rate (ft^3/s)	Time of Concentration (min)
2-Year	5.21	5.28	4.16	4.99
10-Year	8.58	5.28	6.68	4.99
25-Year	10.67	5.26	8.29	4.99
100-Year	14.26	5.24	11.01	4.99

The results from the proposed condition rational method calculations were used to size the proposed storm drain systems. The overall runoff index value, pervious area ratio, and time of concentration were used for the unit hydrograph analysis.

A unit hydrograph analysis was performed for the proposed condition. The results of the unit hydrograph analysis are as follows:

Table 5: Proposed Condition Unit Hydrograph Results

Storm Event	Area A		Area B	
	Peak Flow Rate (ft^3/s)	Total Volume (ac-ft)	Peak Flow Rate (ft^3/s)	Total Volume (ac-ft)
2-Year	4.52	0.48	3.41	0.37
10-Year	7.48	0.78	5.59	0.61
25-Year	9.34	0.99	6.96	0.77
100-Year	12.53	1.42	9.26	1.08

The results from the unit hydrograph calculations were used in the basin routing analysis to determine the sizing for the proposed subsurface systems.

The proposed condition site hydrology map is included as Exhibit B. The proposed condition rational method calculations are included in Appendix B. The proposed condition unit hydrograph calculations are included in Appendix C.

IV. HYDRAULICS

System Overview

The project proposes inlets, storm drain systems, and two subsurface systems to collect, convey, and treat the runoff from the project site. A drainage facilities map is included as Exhibit C.

The Line A system consists of three lines which collect runoff from the northern portion of the project site and convey runoff into subsurface system A. Subsurface system A is designed to infiltrate the water quality volume and provide storage for increased runoff mitigation. An orifice plate will restrict flows leaving the basin. A line will convey runoff from the basin to the southern edge of the project site.

The Line B system consists of three lines which collect runoff from the southern portion of the project site and convey runoff into subsurface system B. Subsurface system B is designed to infiltrate the water quality volume and provide storage for increased runoff mitigation. A pump will convey runoff out of the basin. A line will convey runoff from the basin to the southern edge of the project site.

Preliminary Pipe Sizing

The proposed storm drain systems were sized at a preliminary level. The FlowMaster program was used to calculate the flow rate capacities for a variety of pipe sizes. The calculations assumed a slope of 0.005 and a 75% full condition. The pipe sizing capacities are as follows:

Table 6: Pipe Flow Rate Capacities

Pipe Diameter (inches)	Flow Rate Capacity (ft^3/s)
18”	6.7 ft^3/s
24”	14.5 ft^3/s
30”	26.4 ft^3/s

The flow rate capacity calculations were used to provide preliminary pipe sizing. The calculations have been included in Appendix D.

Basin Analysis

The project proposed two subsurface systems to infiltrate the water quality volume and provide storage for increased runoff mitigation. The following table documents the design of each subsurface system:

Table 7: Subsurface Systems Attribute Table

System Name	Subsurface System A	Subsurface System B
Pipe Size	8’	7’
System Length	55’	240’
Number of Cells	4	1
Bottom of Gravel Elevation	1319.0	1310.0
Top of Gravel Elevation	1329.0	1319.0
Pipe Invert	1320.0	1311.0
Pipe Soffit	1328.0	1318.0
Water Quality Volume	0.21 ac-ft	0.17 ac-ft
Water Quality Ponding Elevation	1324.7	1314.9
Outlet Information	12” Orifice at Elevation 1325.0	1.5 ft^3/s Pump at Elevation 1315.0

A basin routing analysis was performed for both basins. Stage-storage-outflow tables were prepared for both basins. The results of the basin routing analysis are as follows:

Table 8: Basin Routing Analysis Results

Storm Event	Basin A		Basin B	
	Peak Outflow Rate (ft^3/s)*	Peak depth (ft)	Peak Outflow Rate (ft^3/s)*	Peak depth (ft)
2-Year	0.54	6.17	0.45	4.62
10-Year	3.90	7.52	1.59	5.88
25-Year	4.71	8.00	1.59	6.44
100-Year	6.23	9.14	1.59	7.76

*Outflow values include both outflow due to infiltration and outflow due to gravity flow (orifice) or pump.

The basin routing results were used for the increased runoff mitigation analysis. The calculations are included in Appendix E for Basin A and Appendix F for Basin B.

Increased Runoff Mitigation Analysis

The proposed project must meet increased runoff mitigation criteria. The San Bernardino basin requirements state that the post-project outflow must be less than 90% of the pre-project flow rate using shifted rainfall. The allowable outflow rates for the project site are as follows:

Table 9: Calculation of Allowable Outflow for Project

Storm Event	Pre-Project Flow Rate (ft^3/s) (per Table 3)	Allowable Outflow (90% of the Pre-Project Flow Rate) (ft^3/s)
2-Year	3.65	3.29
10-Year	6.36	5.72
25-Year	8.01	7.21
100-Year	10.24	9.22

The following table calculates the total outflow leaving the project site.

Table 10: Total Outflow Leaving Project Site

Storm Event	Basin A	Basin B	Total Outflow Rate (ft^3/s)*
	Peak Outflow (ft^3/s) (per Table 8)*	Peak Outflow (ft^3/s) (per Table 8)*	
2-Year	0.54	0.45	0.99
10-Year	3.90	1.59	5.49
25-Year	4.71	1.59	6.30
100-Year	6.23	1.59	7.82

*Outflow values include outflows due to infiltration.

The following table compares the allowable outflow to the proposed outflow.

Table 11: Increased Runoff Mitigation Comparison Table

Storm Event	Allowable Outflow (ft^3/s) (per Table 9)	Proposed Outflow (ft^3/s) (per Table 10)*
2-Year	3.29	0.99
10-Year	5.72	5.49
25-Year	7.21	6.30
100-Year	9.22	7.82

*Outflow values include outflows due to infiltration.

Based on the above table, the outflow from the project site is less than the allowable outflow values. Therefore, the project is meeting increased runoff mitigation criteria.

As noted in the previous tables, the outflow values include runoff leaving the site through infiltration. The infiltration flowrate is contributing flows to the discharge points at the southern edge of the project site. The infiltration flow rate is small compared to the overall outflow rate numbers. Including the infiltration flow rate in the total outflow for comparison is a conservative approach.

V. RECOMMENDATIONS

The hydrology and hydraulic analyses evaluated the proposed storm drain infrastructure for the proposed residential development. The following recommendations have been developed based on the findings of this report:

1. The project is a proposed high-density residential development on approximately 4.5 acres of land.
2. The project is required to provide increased runoff mitigation per the San Bernardino basin criteria.
3. The project proposes two subsurface basins. Both basins will infiltrate the water quality volume and provide storage for increased runoff mitigation. The proposed systems are sufficiently sized.
4. The storm drain systems have been sized on the preliminary level.

VI. REFERENCES

1. San Bernardino Flood Control Hydrology Manual, August 1986.

FIGURES

FIGURE 1: VICINITY MAP



SCALE 1"=1200'

VICINITY MAP

FIGURE 1

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Drawing Name: O:\320.05.25\Engineering\Hydrology_Plan\Exhibits\Figure_1_Vicinity_Map.dwg
Last Opened: Apr 24, 2025 - 5:18pm by Sophie

APPENDICIES

APPENDIX A: EXISTING CONDITION RATIONAL METHOD CALCULATIONS

APPENDIX A.1: RATIONAL METHOD CALCULATIONS, AREA A, 2-YEAR WITH 2-YEAR RAINFALL

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2014 Version 9.0
Rational Hydrology Study Date: 04/28/25

320.05 BUFFALO GROVE
PRE-PROJECT RATIONAL METHOD
AREA A
2-YR STORM WITH 2-YR RAINFALL; AMC I (BASIN CRITERIA)

Program License Serial Number 6279

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

Rational hydrology study storm event year is 2.0
Computed rainfall intensity:
Storm year = 2.00 1 hour rainfall = 0.630 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 1

++
Process from Point/Station 101.000 to Point/Station 103.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 67.00
Adjusted SCS curve number for AMC 1 = 47.40
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.840(In/Hr)
Initial subarea data:
Initial area flow distance = 624.000(Ft.)
Top (of initial area) elevation = 53.000(Ft.)
Bottom (of initial area) elevation = 26.000(Ft.)
Difference in elevation = 27.000(Ft.)
Slope = 0.04327 s(%)= 4.33
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 12.912 min.
Rainfall intensity = 1.584(In/Hr) for a 2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.423
Subarea runoff = 2.222(CFS)
Total initial stream area = 3.320(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.840(In/Hr)

++
Process from Point/Station 101.000 to Point/Station 103.000
**** CONFLUENCE OF MAIN STREAMS ****

```
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      3.320(Ac.)
Runoff from this stream =      2.222(CFS)
Time of concentration =   12.91 min.
Rainfall intensity =     1.584(In/Hr)
Area averaged loss rate (Fm) =    0.8399(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      103.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 67.00
Adjusted SCS curve number for AMC 1 = 47.40
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.840(In/Hr)
Initial subarea data:
Initial area flow distance =   296.000(Ft.)
Top (of initial area) elevation =    54.000(Ft.)
Bottom (of initial area) elevation =    26.000(Ft.)
Difference in elevation =    28.000(Ft.)
Slope =    0.09459  s(%)=       9.46
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.194 min.
Rainfall intensity =      2.080(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.537
Subarea runoff =      1.295(CFS)
Total initial stream area =        1.160(Ac.)
Pervious area fraction = 1.000
Initial area Fm value =    0.840(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      103.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      1.160(Ac.)
Runoff from this stream =      1.295(CFS)
Time of concentration =    8.19 min.
Rainfall intensity =     2.080(In/Hr)
Area averaged loss rate (Fm) =    0.8399(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Summary of stream data:

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


1      2.22     3.320     12.91    0.840      1.584
```

```
2      1.30     1.160      8.19    0.840      2.080
Qmax(1) =
         1.000 *    1.000 *     2.222) +
         0.600 *    1.000 *     1.295) + =       2.998
Qmax(2) =
         1.668 *    0.635 *     2.222) +
         1.000 *    1.000 *     1.295) + =       3.647

Total of 2 main streams to confluence:
Flow rates before confluence point:
       3.222       2.295
Maximum flow rates at confluence using above data:
        2.998        3.647
Area of streams before confluence:
        3.320        1.160
Effective area values after confluence:
        4.480        3.267


Results of confluence:
Total flow rate =      3.647(CFS)
Time of concentration =     8.194 min.
Effective stream area after confluence  =      3.267(Ac.)
Study area average Pervious fraction(Ap) =  1.000
Study area average soil loss rate(Fm) =    0.840(In/Hr)
Study area total =       4.48(Ac.)
End of computations, Total Study Area =            4.48 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number =  67.0
```

APPENDIX A.2: RATIONAL METHOD CALCULATIONS, AREA A, 10-YEAR WITH 5-YEAR RAINFALL

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2014 Version 9.0
Rational Hydrology Study Date: 04/28/25

320.05 BUFFALO GROVE
PRE-PROJECT RATIONAL METHOD
AREA A
10-YR STORM WITH 5-YR RAINFALL; AMC II (BASIN CRITERIA)

Program License Serial Number 6279

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

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.830 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 101.000 to Point/Station 103.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 67.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.578(In/Hr)
Initial subarea data:
Initial area flow distance = 624.000(Ft.)
Top (of initial area) elevation = 53.000(Ft.)
Bottom (of initial area) elevation = 26.000(Ft.)
Difference in elevation = 27.000(Ft.)
Slope = 0.04327 s(%)= 4.33
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 12.912 min.
Rainfall intensity = 2.086(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.651
Subarea runoff = 4.506(CFS)
Total initial stream area = 3.320(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.578(In/Hr)

++
Process from Point/Station 101.000 to Point/Station 103.000
**** CONFLUENCE OF MAIN STREAMS ****

```
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      3.320(Ac.)
Runoff from this stream =      4.506(CFS)
Time of concentration =   12.91 min.
Rainfall intensity =     2.086(In/Hr)
Area averaged loss rate (Fm) =    0.5783(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      103.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 67.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.578(In/Hr)
Initial subarea data:
Initial area flow distance =   296.000(Ft.)
Top (of initial area) elevation =    54.000(Ft.)
Bottom (of initial area) elevation =    26.000(Ft.)
Difference in elevation =    28.000(Ft.)
Slope =    0.09459  s(%)=       9.46
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.194 min.
Rainfall intensity =      2.741(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.710
Subarea runoff =      2.258(CFS)
Total initial stream area =        1.160(Ac.)
Pervious area fraction = 1.000
Initial area Fm value =    0.578(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      103.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      1.160(Ac.)
Runoff from this stream =      2.258(CFS)
Time of concentration =    8.19 min.
Rainfall intensity =     2.741(In/Hr)
Area averaged loss rate (Fm) =    0.5783(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Summary of stream data:

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


1      4.51     3.320     12.91    0.578      2.086
2      2.26     1.160      8.19    0.578      2.741
Qmax(1) =
```

```
         1.000 *    1.000 *     4.506) +
         0.697 *    1.000 *     2.258) + =       6.080
Qmax(2) =
         1.434 *    0.635 *     4.506) +
         1.000 *    1.000 *     2.258) + =       6.358

Total of 2 main streams to confluence:
Flow rates before confluence point:
       5.506       3.258
Maximum flow rates at confluence using above data:
        6.080        6.358
Area of streams before confluence:
        3.320        1.160
Effective area values after confluence:
        4.480        3.267


Results of confluence:
Total flow rate =      6.358(CFS)
Time of concentration =     8.194 min.
Effective stream area after confluence  =      3.267(Ac.)
Study area average Pervious fraction(Ap) =  1.000
Study area average soil loss rate(Fm) =    0.578(In/Hr)
Study area total =       4.48(Ac.)
End of computations, Total Study Area =            4.48 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number =  67.0
```

APPENDIX A.3: RATIONAL METHOD CALCULATIONS, AREA A, 25-YEAR WITH 10-YEAR RAINFALL

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2014 Version 9.0
Rational Hydrology Study Date: 04/28/25

320.05 BUFFALO GROVE
PRE-PROJECT RATIONAL METHOD
AREA A
25-YR STORM WITH 10-YR RAINFALL; AMC II (BASIN CRITERIA)

Program License Serial Number 6279

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

Rational hydrology study storm event year is 25.0
Computed rainfall intensity:
Storm year = 25.00 1 hour rainfall = 1.000 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 101.000 to Point/Station 103.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 67.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.578(In/Hr)
Initial subarea data:
Initial area flow distance = 624.000(Ft.)
Top (of initial area) elevation = 53.000(Ft.)
Bottom (of initial area) elevation = 26.000(Ft.)
Difference in elevation = 27.000(Ft.)
Slope = 0.04327 s(%)= 4.33
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 12.912 min.
Rainfall intensity = 2.514(In/Hr) for a 25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.693
Subarea runoff = 5.783(CFS)
Total initial stream area = 3.320(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.578(In/Hr)

++
Process from Point/Station 101.000 to Point/Station 103.000
**** CONFLUENCE OF MAIN STREAMS ****

```
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      3.320(Ac.)
Runoff from this stream =      5.783(CFS)
Time of concentration =   12.91 min.
Rainfall intensity =     2.514(In/Hr)
Area averaged loss rate (Fm) =    0.5783(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      103.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 67.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.578(In/Hr)
Initial subarea data:
Initial area flow distance =   296.000(Ft.)
Top (of initial area) elevation =    54.000(Ft.)
Bottom (of initial area) elevation =    26.000(Ft.)
Difference in elevation =    28.000(Ft.)
Slope =    0.09459  s(%)=       9.46
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.194 min.
Rainfall intensity =      3.302(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.742
Subarea runoff =      2.844(CFS)
Total initial stream area =        1.160(Ac.)
Pervious area fraction = 1.000
Initial area Fm value =    0.578(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      103.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      1.160(Ac.)
Runoff from this stream =      2.844(CFS)
Time of concentration =    8.19 min.
Rainfall intensity =     3.302(In/Hr)
Area averaged loss rate (Fm) =    0.5783(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Summary of stream data:

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


1      5.78     3.320     12.91    0.578      2.514
2      2.84     1.160      8.19    0.578      3.302
Qmax(1) =
```

```
         1.000 *    1.000 *     5.783) +
         0.711 *    1.000 *     2.844) + =       7.803
Qmax(2) =
         1.407 *    0.635 *     5.783) +
         1.000 *    1.000 *     2.844) + =       8.008

Total of 2 main streams to confluence:
Flow rates before confluence point:
       6.783       3.844
Maximum flow rates at confluence using above data:
        7.803        8.008
Area of streams before confluence:
        3.320        1.160
Effective area values after confluence:
        4.480        3.267


Results of confluence:
Total flow rate =      8.008(CFS)
Time of concentration =     8.194 min.
Effective stream area after confluence  =      3.267(Ac.)
Study area average Pervious fraction(Ap) =  1.000
Study area average soil loss rate(Fm) =    0.578(In/Hr)
Study area total =       4.48(Ac.)
End of computations, Total Study Area =            4.48 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number =  67.0
```

APPENDIX A.4: RATIONAL METHOD CALCULATIONS, AREA A, 100-YEAR WITH 25-YEAR RAINFALL

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2014 Version 9.0
Rational Hydrology Study Date: 04/28/25

320.05 BUFFALO GROVE
PRE-PROJECT RATIONAL METHOD
AREA A
100-YR STORM WITH 25-YR RAINFALL; AMC II (BASIN CRITERIA)

Program License Serial Number 6279

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

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.230 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 101.000 to Point/Station 103.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 67.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.578(In/Hr)
Initial subarea data:
Initial area flow distance = 624.000(Ft.)
Top (of initial area) elevation = 53.000(Ft.)
Bottom (of initial area) elevation = 26.000(Ft.)
Difference in elevation = 27.000(Ft.)
Slope = 0.04327 s(%)= 4.33
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 12.912 min.
Rainfall intensity = 3.092(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.732
Subarea runoff = 7.510(CFS)
Total initial stream area = 3.320(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.578(In/Hr)

++
Process from Point/Station 101.000 to Point/Station 103.000
**** CONFLUENCE OF MAIN STREAMS ****

```
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      3.320(Ac.)
Runoff from this stream =      7.510(CFS)
Time of concentration =   12.91 min.
Rainfall intensity =     3.092(In/Hr)
Area averaged loss rate (Fm) =    0.5783(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      103.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 67.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.578(In/Hr)
Initial subarea data:
Initial area flow distance =   296.000(Ft.)
Top (of initial area) elevation =    54.000(Ft.)
Bottom (of initial area) elevation =    26.000(Ft.)
Difference in elevation =    28.000(Ft.)
Slope =    0.09459  s(%)=       9.46
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.194 min.
Rainfall intensity =      4.062(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.772
Subarea runoff =      3.637(CFS)
Total initial stream area =        1.160(Ac.)
Pervious area fraction = 1.000
Initial area Fm value =    0.578(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      103.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      1.160(Ac.)
Runoff from this stream =      3.637(CFS)
Time of concentration =    8.19 min.
Rainfall intensity =     4.062(In/Hr)
Area averaged loss rate (Fm) =    0.5783(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Summary of stream data:

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


1      7.51     3.320     12.91    0.578      3.092
2      3.64     1.160      8.19    0.578      4.062
Qmax(1) =
```

```
         1.000 *    1.000 *     7.510) +
         0.722 *    1.000 *     3.637) + =      10.134
Qmax(2) =
         1.386 *    0.635 *     7.510) +
         1.000 *    1.000 *     3.637) + =      10.241

Total of 2 main streams to confluence:
Flow rates before confluence point:
       8.510       4.637
Maximum flow rates at confluence using above data:
       10.134      10.241
Area of streams before confluence:
        3.320       1.160
Effective area values after confluence:
        4.480       3.267


Results of confluence:
Total flow rate =     10.241(CFS)
Time of concentration =     8.194 min.
Effective stream area after confluence  =      3.267(Ac.)
Study area average Pervious fraction(Ap) =  1.000
Study area average soil loss rate(Fm) =    0.578(In/Hr)
Study area total =       4.48(Ac.)
End of computations, Total Study Area =            4.48 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number =  67.0
```

APPENDIX B: PROPOSED CONDITION RATIONAL METHOD CALCULATIONS

APPENDIX B.1: RATIONAL METHOD ANALYSIS, AREA A, 2-YEAR

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2014 Version 9.0
Rational Hydrology Study Date: 04/28/25

320.05 BUFFALO GROVE
POST-PROJECT RATIONAL METHOD
AREA A; 2-YEAR

Program License Serial Number 6279

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

Rational hydrology study storm event year is 2.0
Computed rainfall intensity:
Storm year = 2.00 1 hour rainfall = 0.630 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 1

++
Process from Point/Station 101.000 to Point/Station 102.000
**** INITIAL AREA EVALUATION ****

RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 32.00
Adjusted SCS curve number for AMC 1 = 16.60
Pervious ratio(Ap) = 0.2000 Max loss rate(Fm)= 0.200(In/Hr)
Initial subarea data:
Initial area flow distance = 161.000(Ft.)
Top (of initial area) elevation = 51.000(Ft.)
Bottom (of initial area) elevation = 46.000(Ft.)
Difference in elevation = 5.000(Ft.)
Slope = 0.03106 s(%)= 3.11
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 4.953 min.
Rainfall intensity = 2.814(In/Hr) for a 2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.836
Subarea runoff = 0.682(CFS)
Total initial stream area = 0.290(Ac.)
Pervious area fraction = 0.200
Initial area Fm value = 0.200(In/Hr)

++
Process from Point/Station 102.000 to Point/Station 105.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

```
Upstream point/station elevation =    41.000(Ft.)
Downstream point/station elevation =    36.000(Ft.)
Pipe length  =   105.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.682(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     0.682(CFS)
Normal flow depth in pipe =    3.20(In.)
Flow top width inside pipe =    5.99(In.)
Critical Depth =    5.01(In.)
Pipe flow velocity =      6.40(Ft/s)
Travel time through pipe =    0.27 min.
Time of concentration (TC) =     5.23 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      105.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      0.290(Ac.)
Runoff from this stream =      0.682(CFS)
Time of concentration =    5.23 min.
Rainfall intensity =     2.725(In/Hr)
Area averaged loss rate (Fm) =    0.2000(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      104.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Adjusted SCS curve number for AMC 1 = 16.60
Pervious ratio(Ap) = 0.2000     Max loss rate(Fm)=     0.200(In/Hr)
Initial subarea data:
Initial area flow distance =   239.000(Ft.)
Top (of initial area) elevation =    49.000(Ft.)
Bottom (of initial area) elevation =    41.000(Ft.)
Difference in elevation =     8.000(Ft.)
Slope =    0.03347  s(%)=       3.35
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.714 min.
Rainfall intensity =      2.583(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.830
Subarea runoff =      1.029(CFS)
Total initial stream area =        0.480(Ac.)
Pervious area fraction = 0.200
Initial area Fm value =    0.200(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      104.000 to Point/Station      105.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
```

```
Upstream point/station elevation =    36.000(Ft.)
Downstream point/station elevation =    35.000(Ft.)
Pipe length  =    23.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.029(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     1.029(CFS)
Normal flow depth in pipe =    4.37(In.)
Flow top width inside pipe =    5.34(In.)
Critical depth could not be calculated.
Pipe flow velocity =      6.72(Ft/s)
Travel time through pipe =    0.06 min.
Time of concentration (TC) =     5.77 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      104.000 to Point/Station      105.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.480(Ac.)
Runoff from this stream =      1.029(CFS)
Time of concentration =    5.77 min.
Rainfall intensity =     2.567(In/Hr)
Area averaged loss rate (Fm) =    0.2000(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Summary of stream data:

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


1      0.68     0.290      5.23    0.200      2.725
2      1.03     0.480      5.77    0.200      2.567
Qmax(1) =
         1.000 *    1.000 *     0.682) +
         1.067 *    0.906 *     1.029) + =       1.676
Qmax(2) =
         0.938 *    1.000 *     0.682) +
         1.000 *    1.000 *     1.029) + =       1.669

Total of 2 streams to confluence:
Flow rates before confluence point:
       0.682       1.029
Maximum flow rates at confluence using above data:
        1.676        1.669
Area of streams before confluence:
        0.290        0.480
Effective area values after confluence:
        0.725        0.770
Results of confluence:
Total flow rate =      1.676(CFS)
Time of concentration =     5.226 min.
Effective stream area after confluence =      0.725(Ac.)
Study area average Pervious fraction(Ap) =  0.200
Study area average soil loss rate(Fm) =    0.200(In/Hr)
Study area total (this main stream) =       0.77(Ac.)
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      105.000 to Point/Station      111.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =    35.000(Ft.)
Downstream point/station elevation =    31.000(Ft.)
Pipe length  =    43.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.676(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     1.676(CFS)
Normal flow depth in pipe =    4.81(In.)
Flow top width inside pipe =    4.78(In.)
Critical depth could not be calculated.
Pipe flow velocity =      9.93(Ft/s)
Travel time through pipe =    0.07 min.
Time of concentration (TC) =     5.30 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      105.000 to Point/Station      111.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      0.725(Ac.)
Runoff from this stream =      1.676(CFS)
Time of concentration =    5.30 min.
Rainfall intensity =     2.702(In/Hr)
Area averaged loss rate (Fm) =    0.2000(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      106.000 to Point/Station      107.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Adjusted SCS curve number for AMC 1 = 16.60
Pervious ratio(Ap) = 0.2000     Max loss rate(Fm)=     0.200(In/Hr)
Initial subarea data:
Initial area flow distance =   100.000(Ft.)
Top (of initial area) elevation =    46.000(Ft.)
Bottom (of initial area) elevation =    38.000(Ft.)
Difference in elevation =     8.000(Ft.)
Slope =    0.08000  s(%)=       8.00
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    3.388 min.
Rainfall intensity =      3.534(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.849
Subarea runoff =      0.210(CFS)
Total initial stream area =        0.070(Ac.)
Pervious area fraction = 0.200
Initial area Fm value =    0.200(In/Hr)
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      107.000 to Point/Station      110.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =    33.000(Ft.)
Downstream point/station elevation =    32.000(Ft.)
Pipe length  =    62.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.210(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     0.210(CFS)
Normal flow depth in pipe =    2.23(In.)
Flow top width inside pipe =    5.80(In.)
Critical Depth =    2.76(In.)
Pipe flow velocity =      3.16(Ft/s)
Travel time through pipe =    0.33 min.
Time of concentration (TC) =     3.72 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      107.000 to Point/Station      110.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 2 in normal stream number 1
Stream flow area =      0.070(Ac.)
Runoff from this stream =      0.210(CFS)
Time of concentration =    3.72 min.
Rainfall intensity =     3.344(In/Hr)
Area averaged loss rate (Fm) =    0.2000(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      108.000 to Point/Station      109.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Adjusted SCS curve number for AMC 1 = 16.60
Pervious ratio(Ap) = 0.2000     Max loss rate(Fm)=     0.200(In/Hr)
Initial subarea data:
Initial area flow distance =   188.000(Ft.)
Top (of initial area) elevation =    46.000(Ft.)
Bottom (of initial area) elevation =    39.000(Ft.)
Difference in elevation =     7.000(Ft.)
Slope =    0.03723  s(%)=       3.72
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.082 min.
Rainfall intensity =      2.771(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.835
Subarea runoff =      0.717(CFS)
Total initial stream area =        0.310(Ac.)
Pervious area fraction = 0.200
Initial area Fm value =    0.200(In/Hr)
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      109.000 to Point/Station      110.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =    34.000(Ft.)
Downstream point/station elevation =    32.000(Ft.)
Pipe length  =     4.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.717(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     0.717(CFS)
Normal flow depth in pipe =    1.73(In.)
Flow top width inside pipe =    5.43(In.)
Critical Depth =    5.11(In.)
Pipe flow velocity =     15.33(Ft/s)
Travel time through pipe =    0.00 min.
Time of concentration (TC) =     5.09 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      109.000 to Point/Station      110.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 2 in normal stream number 2
Stream flow area =      0.310(Ac.)
Runoff from this stream =      0.717(CFS)
Time of concentration =    5.09 min.
Rainfall intensity =     2.769(In/Hr)
Area averaged loss rate (Fm) =    0.2000(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Summary of stream data:

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


1      0.21     0.070      3.72    0.200      3.344
2      0.72     0.310      5.09    0.200      2.769
Qmax(1) =
         1.000 *    1.000 *     0.210) +
         1.224 *    0.730 *     0.717) + =       0.851
Qmax(2) =
         0.817 *    1.000 *     0.210) +
         1.000 *    1.000 *     0.717) + =       0.889

Total of 2 streams to confluence:
Flow rates before confluence point:
       0.210       0.717
Maximum flow rates at confluence using above data:
        0.851        0.889
Area of streams before confluence:
        0.070        0.310
Effective area values after confluence:
        0.296        0.380
Results of confluence:
Total flow rate =      0.889(CFS)
Time of concentration =     5.086 min.
Effective stream area after confluence =      0.380(Ac.)
```

```
Study area average Pervious fraction(Ap) =  0.200
Study area average soil loss rate(Fm) =    0.200(In/Hr)
Study area total (this main stream) =       0.38(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      110.000 to Point/Station      111.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =    32.000(Ft.)
Downstream point/station elevation =    31.000(Ft.)
Pipe length  =    22.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.889(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     0.889(CFS)
Normal flow depth in pipe =    3.85(In.)
Flow top width inside pipe =    5.75(In.)
Critical Depth =    5.51(In.)
Pipe flow velocity =      6.67(Ft/s)
Travel time through pipe =    0.05 min.
Time of concentration (TC) =     5.14 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      110.000 to Point/Station      111.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      0.380(Ac.)
Runoff from this stream =      0.889(CFS)
Time of concentration =    5.14 min.
Rainfall intensity =     2.752(In/Hr)
Area averaged loss rate (Fm) =    0.2000(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Summary of stream data:

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


1      1.68     0.725      5.30    0.200      2.702
2      0.89     0.380      5.14    0.200      2.752
Qmax(1) =
         1.000 *    1.000 *     1.676) +
         0.981 *    1.000 *     0.889) + =       2.548
Qmax(2) =
         1.020 *    0.970 *     1.676) +
         1.000 *    1.000 *     0.889) + =       2.548

Total of 2 main streams to confluence:
Flow rates before confluence point:
       2.676       1.889
Maximum flow rates at confluence using above data:
        2.548        2.548
Area of streams before confluence:
        0.725        0.380
Effective area values after confluence:
        1.105        1.083
```

```
Results of confluence:
Total flow rate =      2.548(CFS)
Time of concentration =     5.298 min.
Effective stream area after confluence  =      1.105(Ac.)
Study area average Pervious fraction(Ap) =  0.200
Study area average soil loss rate(Fm) =    0.200(In/Hr)
Study area total =       1.10(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      111.000 to Point/Station      119.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =    31.000(Ft.)
Downstream point/station elevation =    27.000(Ft.)
Pipe length  =    19.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.548(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     2.548(CFS)
Normal flow depth in pipe =    4.86(In.)
Flow top width inside pipe =    4.70(In.)
Critical depth could not be calculated.
Pipe flow velocity =     14.95(Ft/s)
Travel time through pipe =    0.02 min.
Time of concentration (TC) =     5.32 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      111.000 to Point/Station      119.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      1.105(Ac.)
Runoff from this stream =      2.548(CFS)
Time of concentration =    5.32 min.
Rainfall intensity =     2.696(In/Hr)
Area averaged loss rate (Fm) =    0.2000(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      112.000 to Point/Station      113.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Adjusted SCS curve number for AMC 1 = 16.60
Pervious ratio(Ap) = 0.2000     Max loss rate(Fm)=     0.200(In/Hr)
Initial subarea data:
Initial area flow distance =   216.000(Ft.)
Top (of initial area) elevation =    46.000(Ft.)
```

```
Bottom (of initial area) elevation =    33.000(Ft.)
Difference in elevation =    13.000(Ft.)
Slope =    0.06019  s(%)=       6.02
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    4.880 min.
Rainfall intensity =      2.839(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.837
Subarea runoff =      1.045(CFS)
Total initial stream area =        0.440(Ac.)
Pervious area fraction = 0.200
Initial area Fm value =    0.200(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      113.000 to Point/Station      119.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =    28.000(Ft.)
Downstream point/station elevation =    27.000(Ft.)
Pipe length  =    96.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.045(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     1.045(CFS)
Normal flow depth in pipe =    5.12(In.)
Flow top width inside pipe =    8.91(In.)
Critical Depth =    5.63(In.)
Pipe flow velocity =      4.02(Ft/s)
Travel time through pipe =    0.40 min.
Time of concentration (TC) =     5.28 min.


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Process from Point/Station      113.000 to Point/Station      119.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      0.440(Ac.)
Runoff from this stream =      1.045(CFS)
Time of concentration =    5.28 min.
Rainfall intensity =     2.709(In/Hr)
Area averaged loss rate (Fm) =    0.2000(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Program is now starting with Main Stream No. 3


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      114.000 to Point/Station      115.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Adjusted SCS curve number for AMC 1 = 16.60
Pervious ratio(Ap) = 0.2000     Max loss rate(Fm)=     0.200(In/Hr)
Initial subarea data:
```

```
Initial area flow distance =   283.000(Ft.)
Top (of initial area) elevation =    51.000(Ft.)
Bottom (of initial area) elevation =    39.000(Ft.)
Difference in elevation =    12.000(Ft.)
Slope =    0.04240  s(%)=       4.24
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.832 min.
Rainfall intensity =      2.551(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.829
Subarea runoff =      1.016(CFS)
Total initial stream area =        0.480(Ac.)
Pervious area fraction = 0.200
Initial area Fm value =    0.200(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      115.000 to Point/Station      118.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =    34.000(Ft.)
Downstream point/station elevation =    30.000(Ft.)
Pipe length  =    58.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.016(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     1.016(CFS)
Normal flow depth in pipe =    3.66(In.)
Flow top width inside pipe =    5.85(In.)
Critical Depth =    5.69(In.)
Pipe flow velocity =      8.09(Ft/s)
Travel time through pipe =    0.12 min.
Time of concentration (TC) =     5.95 min.


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Process from Point/Station      115.000 to Point/Station      118.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 3 in normal stream number 1
Stream flow area =      0.480(Ac.)
Runoff from this stream =      1.016(CFS)
Time of concentration =    5.95 min.
Rainfall intensity =     2.520(In/Hr)
Area averaged loss rate (Fm) =    0.2000(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      116.000 to Point/Station      117.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Adjusted SCS curve number for AMC 1 = 16.60
Pervious ratio(Ap) = 0.2000     Max loss rate(Fm)=     0.200(In/Hr)
Initial subarea data:
```

```
Initial area flow distance =   159.000(Ft.)
Top (of initial area) elevation =    41.000(Ft.)
Bottom (of initial area) elevation =    36.000(Ft.)
Difference in elevation =     5.000(Ft.)
Slope =    0.03145  s(%)=       3.14
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    4.916 min.
Rainfall intensity =      2.827(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.836
Subarea runoff =      0.591(CFS)
Total initial stream area =        0.250(Ac.)
Pervious area fraction = 0.200
Initial area Fm value =    0.200(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      117.000 to Point/Station      118.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =    31.000(Ft.)
Downstream point/station elevation =    30.000(Ft.)
Pipe length  =    30.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.591(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     0.591(CFS)
Normal flow depth in pipe =    3.27(In.)
Flow top width inside pipe =    5.98(In.)
Critical Depth =    4.69(In.)
Pipe flow velocity =      5.40(Ft/s)
Travel time through pipe =    0.09 min.
Time of concentration (TC) =     5.01 min.


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Process from Point/Station      117.000 to Point/Station      118.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 3 in normal stream number 2
Stream flow area =      0.250(Ac.)
Runoff from this stream =      0.591(CFS)
Time of concentration =    5.01 min.
Rainfall intensity =     2.795(In/Hr)
Area averaged loss rate (Fm) =    0.2000(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Summary of stream data:

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


1      1.02     0.480      5.95    0.200      2.520
2      0.59     0.250      5.01    0.200      2.795
Qmax(1) =
         1.000 *    1.000 *     1.016) +
         0.894 *    1.000 *     0.591) + =       1.544
Qmax(2) =
         1.118 *    0.842 *     1.016) +
         1.000 *    1.000 *     0.591) + =       1.547
```

```
Total of 2 streams to confluence:
Flow rates before confluence point:
       1.016       0.591
Maximum flow rates at confluence using above data:
        1.544        1.547
Area of streams before confluence:
        0.480        0.250
Effective area values after confluence:
        0.730        0.654
Results of confluence:
Total flow rate =      1.547(CFS)
Time of concentration =     5.008 min.
Effective stream area after confluence =      0.654(Ac.)
Study area average Pervious fraction(Ap) =  0.200
Study area average soil loss rate(Fm) =    0.200(In/Hr)
Study area total (this main stream) =       0.73(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      118.000 to Point/Station      119.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =    30.000(Ft.)
Downstream point/station elevation =    27.000(Ft.)
Pipe length  =    68.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.547(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     1.547(CFS)
Normal flow depth in pipe =    4.21(In.)
Flow top width inside pipe =    8.98(In.)
Critical Depth =    6.87(In.)
Pipe flow velocity =      7.64(Ft/s)
Travel time through pipe =    0.15 min.
Time of concentration (TC) =     5.16 min.


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Process from Point/Station      118.000 to Point/Station      119.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =      0.654(Ac.)
Runoff from this stream =      1.547(CFS)
Time of concentration =    5.16 min.
Rainfall intensity =     2.747(In/Hr)
Area averaged loss rate (Fm) =    0.2000(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Summary of stream data:

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


1      2.55     1.105      5.32    0.200      2.696
2      1.05     0.440      5.28    0.200      2.709
3      1.55     0.654      5.16    0.200      2.747
Qmax(1) =
         1.000 *    1.000 *     2.548) +
```

```
         0.995 *    1.000 *     1.045) +
         0.980 *    1.000 *     1.547) + =       5.104
Qmax(2) =
         1.005 *    0.992 *     2.548) +
         1.000 *    1.000 *     1.045) +
         0.985 *    1.000 *     1.547) + =       5.110
Qmax(3) =
         1.020 *    0.969 *     2.548) +
         1.015 *    0.977 *     1.045) +
         1.000 *    1.000 *     1.547) + =       5.104

Total of 3 main streams to confluence:
Flow rates before confluence point:
       3.548       2.045       2.547
Maximum flow rates at confluence using above data:
        5.104        5.110        5.104
Area of streams before confluence:
        1.105        0.440        0.654
Effective area values after confluence:
        2.199        2.190        2.155


Results of confluence:
Total flow rate =      5.110(CFS)
Time of concentration =     5.278 min.
Effective stream area after confluence  =      2.190(Ac.)
Study area average Pervious fraction(Ap) =  0.200
Study area average soil loss rate(Fm) =    0.200(In/Hr)
Study area total =       2.20(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      119.000 to Point/Station      119.000
**** SUBAREA FLOW ADDITION ****
________________________________________________________________________
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 67.00
Adjusted SCS curve number for AMC 1 = 47.40
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.840(In/Hr)
Time of concentration =     5.28 min.
Rainfall intensity =      2.709(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.819
Subarea runoff =      0.104(CFS) for    0.160(Ac.)
Total runoff =      5.214(CFS)
Effective area this stream =        2.35(Ac.)
Total Study Area (Main Stream No. 1) =        2.48(Ac.)
Area averaged Fm value =    0.244(In/Hr)
End of computations, Total Study Area =            2.48 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.252
```

```
Area averaged SCS curve number =  34.3
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APPENDIX B.2: RATIONAL METHOD ANALYSIS, AREA A, 10-YEAR

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2014 Version 9.0
Rational Hydrology Study Date: 04/28/25

320.05 BUFFALO GROVE
POST-PROJECT RATIONAL METHOD
AREA A; 10-YEAR

Program License Serial Number 6279

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

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 1.000 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 101.000 to Point/Station 102.000
**** INITIAL AREA EVALUATION ****

RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 32.00
Pervious ratio(Ap) = 0.2000 Max loss rate(Fm)= 0.196(In/Hr)
Initial subarea data:
Initial area flow distance = 161.000(Ft.)
Top (of initial area) elevation = 51.000(Ft.)
Bottom (of initial area) elevation = 46.000(Ft.)
Difference in elevation = 5.000(Ft.)
Slope = 0.03106 s(%)= 3.11
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 4.953 min.
Rainfall intensity = 4.467(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.861
Subarea runoff = 1.115(CFS)
Total initial stream area = 0.290(Ac.)
Pervious area fraction = 0.200
Initial area Fm value = 0.196(In/Hr)

++
Process from Point/Station 102.000 to Point/Station 105.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

```
Upstream point/station elevation =    41.000(Ft.)
Downstream point/station elevation =    36.000(Ft.)
Pipe length  =   105.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.115(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     1.115(CFS)
Normal flow depth in pipe =    4.49(In.)
Flow top width inside pipe =    5.20(In.)
Critical depth could not be calculated.
Pipe flow velocity =      7.07(Ft/s)
Travel time through pipe =    0.25 min.
Time of concentration (TC) =     5.20 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      105.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      0.290(Ac.)
Runoff from this stream =      1.115(CFS)
Time of concentration =    5.20 min.
Rainfall intensity =     4.338(In/Hr)
Area averaged loss rate (Fm) =    0.1956(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      104.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.2000     Max loss rate(Fm)=     0.196(In/Hr)
Initial subarea data:
Initial area flow distance =   239.000(Ft.)
Top (of initial area) elevation =    49.000(Ft.)
Bottom (of initial area) elevation =    41.000(Ft.)
Difference in elevation =     8.000(Ft.)
Slope =    0.03347  s(%)=       3.35
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.714 min.
Rainfall intensity =      4.099(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.857
Subarea runoff =      1.686(CFS)
Total initial stream area =        0.480(Ac.)
Pervious area fraction = 0.200
Initial area Fm value =    0.196(In/Hr)


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Process from Point/Station      104.000 to Point/Station      105.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =    36.000(Ft.)
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Downstream point/station elevation =    35.000(Ft.)
Pipe length  =    23.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.686(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     1.686(CFS)
Normal flow depth in pipe =    4.44(In.)
Flow top width inside pipe =    9.00(In.)
Critical Depth =    7.16(In.)
Pipe flow velocity =      7.76(Ft/s)
Travel time through pipe =    0.05 min.
Time of concentration (TC) =     5.76 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      104.000 to Point/Station      105.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.480(Ac.)
Runoff from this stream =      1.686(CFS)
Time of concentration =    5.76 min.
Rainfall intensity =     4.078(In/Hr)
Area averaged loss rate (Fm) =    0.1956(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Summary of stream data:

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


1      1.11     0.290      5.20    0.196      4.338
2      1.69     0.480      5.76    0.196      4.078
Qmax(1) =
         1.000 *    1.000 *     1.115) +
         1.067 *    0.902 *     1.686) + =       2.738
Qmax(2) =
         0.937 *    1.000 *     1.115) +
         1.000 *    1.000 *     1.686) + =       2.731

Total of 2 streams to confluence:
Flow rates before confluence point:
       1.115       1.686
Maximum flow rates at confluence using above data:
        2.738        2.731
Area of streams before confluence:
        0.290        0.480
Effective area values after confluence:
        0.723        0.770
Results of confluence:
Total flow rate =      2.738(CFS)
Time of concentration =     5.200 min.
Effective stream area after confluence =      0.723(Ac.)
Study area average Pervious fraction(Ap) =  0.200
Study area average soil loss rate(Fm) =    0.196(In/Hr)
Study area total (this main stream) =       0.77(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      105.000 to Point/Station      111.000
```

```
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
_____________________________________________________________________
Upstream point/station elevation =    35.000(Ft.)
Downstream point/station elevation =    31.000(Ft.)
Pipe length  =    43.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.738(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     2.738(CFS)
Normal flow depth in pipe =    4.72(In.)
Flow top width inside pipe =    8.99(In.)
Critical Depth =    8.49(In.)
Pipe flow velocity =     11.65(Ft/s)
Travel time through pipe =    0.06 min.
Time of concentration (TC) =     5.26 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      105.000 to Point/Station      111.000
**** CONFLUENCE OF MAIN STREAMS ****
_____________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      0.723(Ac.)
Runoff from this stream =      2.738(CFS)
Time of concentration =    5.26 min.
Rainfall intensity =     4.307(In/Hr)
Area averaged loss rate (Fm) =    0.1956(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      106.000 to Point/Station      107.000
**** INITIAL AREA EVALUATION ****
_____________________________________________________________________
RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.2000     Max loss rate(Fm)=     0.196(In/Hr)
Initial subarea data:
Initial area flow distance =   100.000(Ft.)
Top (of initial area) elevation =    46.000(Ft.)
Bottom (of initial area) elevation =    38.000(Ft.)
Difference in elevation =     8.000(Ft.)
Slope =    0.08000  s(%)=       8.00
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    3.388 min.
Rainfall intensity =      5.610(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.869
Subarea runoff =      0.341(CFS)
Total initial stream area =        0.070(Ac.)
Pervious area fraction = 0.200
Initial area Fm value =    0.196(In/Hr)


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Process from Point/Station      107.000 to Point/Station      110.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------
Upstream point/station elevation =    33.000(Ft.)
Downstream point/station elevation =    32.000(Ft.)
Pipe length  =    62.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.341(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     0.341(CFS)
Normal flow depth in pipe =    2.92(In.)
Flow top width inside pipe =    6.00(In.)
Critical Depth =    3.55(In.)
Pipe flow velocity =      3.59(Ft/s)
Travel time through pipe =    0.29 min.
Time of concentration (TC) =     3.68 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      107.000 to Point/Station      110.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------
Along Main Stream number: 2 in normal stream number 1
Stream flow area =      0.070(Ac.)
Runoff from this stream =      0.341(CFS)
Time of concentration =    3.68 min.
Rainfall intensity =     5.342(In/Hr)
Area averaged loss rate (Fm) =    0.1956(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      108.000 to Point/Station      109.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.2000     Max loss rate(Fm)=     0.196(In/Hr)
Initial subarea data:
Initial area flow distance =   188.000(Ft.)
Top (of initial area) elevation =    46.000(Ft.)
Bottom (of initial area) elevation =    39.000(Ft.)
Difference in elevation =     7.000(Ft.)
Slope =    0.03723  s(%)=       3.72
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.082 min.
Rainfall intensity =      4.398(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.860
Subarea runoff =      1.173(CFS)
Total initial stream area =        0.310(Ac.)
Pervious area fraction = 0.200
Initial area Fm value =    0.196(In/Hr)


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Process from Point/Station      109.000 to Point/Station      110.000
```

```
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
_____________________________________________________________________
Upstream point/station elevation =    34.000(Ft.)
Downstream point/station elevation =    32.000(Ft.)
Pipe length  =     4.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.173(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     1.173(CFS)
Normal flow depth in pipe =    2.23(In.)
Flow top width inside pipe =    5.80(In.)
Critical depth could not be calculated.
Pipe flow velocity =     17.59(Ft/s)
Travel time through pipe =    0.00 min.
Time of concentration (TC) =     5.09 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      109.000 to Point/Station      110.000
**** CONFLUENCE OF MINOR STREAMS ****
_____________________________________________________________________
Along Main Stream number: 2 in normal stream number 2
Stream flow area =      0.310(Ac.)
Runoff from this stream =      1.173(CFS)
Time of concentration =    5.09 min.
Rainfall intensity =     4.396(In/Hr)
Area averaged loss rate (Fm) =    0.1956(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Summary of stream data:

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


1      0.34     0.070      3.68    0.196      5.342
2      1.17     0.310      5.09    0.196      4.396
Qmax(1) =
         1.000 *    1.000 *     0.341) +
         1.225 *    0.723 *     1.173) + =       1.379
Qmax(2) =
         0.816 *    1.000 *     0.341) +
         1.000 *    1.000 *     1.173) + =       1.451

Total of 2 streams to confluence:
Flow rates before confluence point:
       0.341       1.173
Maximum flow rates at confluence using above data:
        1.379        1.451
Area of streams before confluence:
        0.070        0.310
Effective area values after confluence:
        0.294        0.380
Results of confluence:
Total flow rate =      1.451(CFS)
Time of concentration =     5.086 min.
Effective stream area after confluence =      0.380(Ac.)
Study area average Pervious fraction(Ap) =  0.200
Study area average soil loss rate(Fm) =    0.196(In/Hr)
Study area total (this main stream) =       0.38(Ac.)
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      110.000 to Point/Station      111.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =    32.000(Ft.)
Downstream point/station elevation =    31.000(Ft.)
Pipe length  =    22.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.451(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     1.451(CFS)
Normal flow depth in pipe =    4.02(In.)
Flow top width inside pipe =    8.95(In.)
Critical Depth =    6.66(In.)
Pipe flow velocity =      7.59(Ft/s)
Travel time through pipe =    0.05 min.
Time of concentration (TC) =     5.13 min.


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Process from Point/Station      110.000 to Point/Station      111.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      0.380(Ac.)
Runoff from this stream =      1.451(CFS)
Time of concentration =    5.13 min.
Rainfall intensity =     4.371(In/Hr)
Area averaged loss rate (Fm) =    0.1956(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Summary of stream data:

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


1      2.74     0.723      5.26    0.196      4.307
2      1.45     0.380      5.13    0.196      4.371
Qmax(1) =
         1.000 *    1.000 *     2.738) +
         0.985 *    1.000 *     1.451) + =       4.167
Qmax(2) =
         1.016 *    0.976 *     2.738) +
         1.000 *    1.000 *     1.451) + =       4.164

Total of 2 main streams to confluence:
Flow rates before confluence point:
       3.738       2.451
Maximum flow rates at confluence using above data:
        4.167        4.164
Area of streams before confluence:
        0.723        0.380
Effective area values after confluence:
        1.103        1.086


Results of confluence:
Total flow rate =      4.167(CFS)
```

```
Time of concentration =     5.262 min.
Effective stream area after confluence  =      1.103(Ac.)
Study area average Pervious fraction(Ap) =  0.200
Study area average soil loss rate(Fm) =    0.196(In/Hr)
Study area total =       1.10(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      111.000 to Point/Station      119.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =    31.000(Ft.)
Downstream point/station elevation =    27.000(Ft.)
Pipe length  =    19.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     4.167(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     4.167(CFS)
Normal flow depth in pipe =    4.76(In.)
Flow top width inside pipe =    8.99(In.)
Critical depth could not be calculated.
Pipe flow velocity =     17.58(Ft/s)
Travel time through pipe =    0.02 min.
Time of concentration (TC) =     5.28 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      111.000 to Point/Station      119.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      1.103(Ac.)
Runoff from this stream =      4.167(CFS)
Time of concentration =    5.28 min.
Rainfall intensity =     4.298(In/Hr)
Area averaged loss rate (Fm) =    0.1956(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      112.000 to Point/Station      113.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.2000     Max loss rate(Fm)=     0.196(In/Hr)
Initial subarea data:
Initial area flow distance =   216.000(Ft.)
Top (of initial area) elevation =    46.000(Ft.)
Bottom (of initial area) elevation =    33.000(Ft.)
Difference in elevation =    13.000(Ft.)
Slope =    0.06019  s(%)=       6.02
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    4.880 min.
```

```
Rainfall intensity =      4.506(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.861
Subarea runoff =      1.707(CFS)
Total initial stream area =        0.440(Ac.)
Pervious area fraction = 0.200
Initial area Fm value =    0.196(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      113.000 to Point/Station      119.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =    28.000(Ft.)
Downstream point/station elevation =    27.000(Ft.)
Pipe length  =    96.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.707(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     1.707(CFS)
Normal flow depth in pipe =    5.78(In.)
Flow top width inside pipe =   11.99(In.)
Critical Depth =    6.67(In.)
Pipe flow velocity =      4.56(Ft/s)
Travel time through pipe =    0.35 min.
Time of concentration (TC) =     5.23 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      113.000 to Point/Station      119.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      0.440(Ac.)
Runoff from this stream =      1.707(CFS)
Time of concentration =    5.23 min.
Rainfall intensity =     4.322(In/Hr)
Area averaged loss rate (Fm) =    0.1956(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Program is now starting with Main Stream No. 3


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      114.000 to Point/Station      115.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.2000     Max loss rate(Fm)=     0.196(In/Hr)
Initial subarea data:
Initial area flow distance =   283.000(Ft.)
Top (of initial area) elevation =    51.000(Ft.)
Bottom (of initial area) elevation =    39.000(Ft.)
Difference in elevation =    12.000(Ft.)
Slope =    0.04240  s(%)=       4.24
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
```

```
Initial area time of concentration =    5.832 min.
Rainfall intensity =      4.050(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.857
Subarea runoff =      1.665(CFS)
Total initial stream area =        0.480(Ac.)
Pervious area fraction = 0.200
Initial area Fm value =    0.196(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      115.000 to Point/Station      118.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =    34.000(Ft.)
Downstream point/station elevation =    30.000(Ft.)
Pipe length  =    58.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.665(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     1.665(CFS)
Normal flow depth in pipe =    3.86(In.)
Flow top width inside pipe =    8.91(In.)
Critical Depth =    7.12(In.)
Pipe flow velocity =      9.18(Ft/s)
Travel time through pipe =    0.11 min.
Time of concentration (TC) =     5.94 min.


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Process from Point/Station      115.000 to Point/Station      118.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 3 in normal stream number 1
Stream flow area =      0.480(Ac.)
Runoff from this stream =      1.665(CFS)
Time of concentration =    5.94 min.
Rainfall intensity =     4.006(In/Hr)
Area averaged loss rate (Fm) =    0.1956(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      116.000 to Point/Station      117.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.2000     Max loss rate(Fm)=     0.196(In/Hr)
Initial subarea data:
Initial area flow distance =   159.000(Ft.)
Top (of initial area) elevation =    41.000(Ft.)
Bottom (of initial area) elevation =    36.000(Ft.)
Difference in elevation =     5.000(Ft.)
Slope =    0.03145  s(%)=       3.14
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    4.916 min.
```

```
Rainfall intensity =      4.487(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.861
Subarea runoff =      0.966(CFS)
Total initial stream area =        0.250(Ac.)
Pervious area fraction = 0.200
Initial area Fm value =    0.196(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      117.000 to Point/Station      118.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =    31.000(Ft.)
Downstream point/station elevation =    30.000(Ft.)
Pipe length  =    30.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.966(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     0.966(CFS)
Normal flow depth in pipe =    4.63(In.)
Flow top width inside pipe =    5.03(In.)
Critical Depth =    5.63(In.)
Pipe flow velocity =      5.93(Ft/s)
Travel time through pipe =    0.08 min.
Time of concentration (TC) =     5.00 min.


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Process from Point/Station      117.000 to Point/Station      118.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 3 in normal stream number 2
Stream flow area =      0.250(Ac.)
Runoff from this stream =      0.966(CFS)
Time of concentration =    5.00 min.
Rainfall intensity =     4.441(In/Hr)
Area averaged loss rate (Fm) =    0.1956(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Summary of stream data:

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


1      1.66     0.480      5.94    0.196      4.006
2      0.97     0.250      5.00    0.196      4.441
Qmax(1) =
         1.000 *    1.000 *     1.665) +
         0.898 *    1.000 *     0.966) + =       2.532
Qmax(2) =
         1.114 *    0.842 *     1.665) +
         1.000 *    1.000 *     0.966) + =       2.528

Total of 2 streams to confluence:
Flow rates before confluence point:
       1.665       0.966
Maximum flow rates at confluence using above data:
        2.532        2.528
Area of streams before confluence:
        0.480        0.250
```

```
Effective area values after confluence:
        0.730        0.654
Results of confluence:
Total flow rate =      2.532(CFS)
Time of concentration =     5.937 min.
Effective stream area after confluence =      0.730(Ac.)
Study area average Pervious fraction(Ap) =  0.200
Study area average soil loss rate(Fm) =    0.196(In/Hr)
Study area total (this main stream) =       0.73(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      118.000 to Point/Station      119.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =    30.000(Ft.)
Downstream point/station elevation =    27.000(Ft.)
Pipe length  =    68.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.532(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     2.532(CFS)
Normal flow depth in pipe =    5.70(In.)
Flow top width inside pipe =    8.67(In.)
Critical Depth =    8.33(In.)
Pipe flow velocity =      8.58(Ft/s)
Travel time through pipe =    0.13 min.
Time of concentration (TC) =     6.07 min.


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Process from Point/Station      118.000 to Point/Station      119.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =      0.730(Ac.)
Runoff from this stream =      2.532(CFS)
Time of concentration =    6.07 min.
Rainfall intensity =     3.954(In/Hr)
Area averaged loss rate (Fm) =    0.1956(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Summary of stream data:

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


1      4.17     1.103      5.28    0.196      4.298
2      1.71     0.440      5.23    0.196      4.322
3      2.53     0.730      6.07    0.196      3.954
Qmax(1) =
         1.000 *    1.000 *     4.167) +
         0.994 *    1.000 *     1.707) +
         1.092 *    0.870 *     2.532) + =       8.268
Qmax(2) =
         1.006 *    0.991 *     4.167) +
         1.000 *    1.000 *     1.707) +
         1.098 *    0.862 *     2.532) + =       8.256
Qmax(3) =
```

```
         0.916 *    1.000 *     4.167) +
         0.911 *    1.000 *     1.707) +
         1.000 *    1.000 *     2.532) + =       7.903

Total of 3 main streams to confluence:
Flow rates before confluence point:
       5.167       2.707       3.532
Maximum flow rates at confluence using above data:
        8.268        8.256        7.903
Area of streams before confluence:
        1.103        0.440        0.730
Effective area values after confluence:
        2.178        2.162        2.273


Results of confluence:
Total flow rate =      8.268(CFS)
Time of concentration =     5.280 min.
Effective stream area after confluence  =      2.178(Ac.)
Study area average Pervious fraction(Ap) =  0.200
Study area average soil loss rate(Fm) =    0.196(In/Hr)
Study area total =       2.27(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      119.000 to Point/Station      119.000
**** SUBAREA FLOW ADDITION ****
________________________________________________________________________
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 67.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.578(In/Hr)
Time of concentration =     5.28 min.
Rainfall intensity =      4.298(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.854
Subarea runoff =      0.311(CFS) for    0.160(Ac.)
Total runoff =      8.579(CFS)
Effective area this stream =        2.34(Ac.)
Total Study Area (Main Stream No. 1) =        2.48(Ac.)
Area averaged Fm value =    0.222(In/Hr)
End of computations, Total Study Area =            2.48 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.252
Area averaged SCS curve number =  34.3
```

APPENDIX B.3: RATIONAL METHOD ANALYSIS, AREA A, 25-YEAR

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2014 Version 9.0
Rational Hydrology Study Date: 04/28/25

320.05 BUFFALO GROVE
POST-PROJECT RATIONAL METHOD
AREA A; 25-YEAR

Program License Serial Number 6279

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

Rational hydrology study storm event year is 25.0
Computed rainfall intensity:
Storm year = 25.00 1 hour rainfall = 1.230 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 101.000 to Point/Station 102.000
**** INITIAL AREA EVALUATION ****

RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 32.00
Pervious ratio(Ap) = 0.2000 Max loss rate(Fm)= 0.196(In/Hr)
Initial subarea data:
Initial area flow distance = 161.000(Ft.)
Top (of initial area) elevation = 51.000(Ft.)
Bottom (of initial area) elevation = 46.000(Ft.)
Difference in elevation = 5.000(Ft.)
Slope = 0.03106 s(%)= 3.11
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 4.953 min.
Rainfall intensity = 5.494(In/Hr) for a 25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.868
Subarea runoff = 1.383(CFS)
Total initial stream area = 0.290(Ac.)
Pervious area fraction = 0.200
Initial area Fm value = 0.196(In/Hr)

++
Process from Point/Station 102.000 to Point/Station 105.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

```
Upstream point/station elevation =    41.000(Ft.)
Downstream point/station elevation =    36.000(Ft.)
Pipe length  =   105.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.383(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     1.383(CFS)
Normal flow depth in pipe =    3.86(In.)
Flow top width inside pipe =    8.91(In.)
Critical Depth =    6.50(In.)
Pipe flow velocity =      7.63(Ft/s)
Travel time through pipe =    0.23 min.
Time of concentration (TC) =     5.18 min.


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Process from Point/Station      102.000 to Point/Station      105.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      0.290(Ac.)
Runoff from this stream =      1.383(CFS)
Time of concentration =    5.18 min.
Rainfall intensity =     5.347(In/Hr)
Area averaged loss rate (Fm) =    0.1956(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      104.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.2000     Max loss rate(Fm)=     0.196(In/Hr)
Initial subarea data:
Initial area flow distance =   239.000(Ft.)
Top (of initial area) elevation =    49.000(Ft.)
Bottom (of initial area) elevation =    41.000(Ft.)
Difference in elevation =     8.000(Ft.)
Slope =    0.03347  s(%)=       3.35
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.714 min.
Rainfall intensity =      5.042(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.865
Subarea runoff =      2.094(CFS)
Total initial stream area =        0.480(Ac.)
Pervious area fraction = 0.200
Initial area Fm value =    0.196(In/Hr)


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Process from Point/Station      104.000 to Point/Station      105.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =    36.000(Ft.)
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Downstream point/station elevation =    35.000(Ft.)
Pipe length  =    23.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.094(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     2.094(CFS)
Normal flow depth in pipe =    5.06(In.)
Flow top width inside pipe =    8.93(In.)
Critical Depth =    7.85(In.)
Pipe flow velocity =      8.18(Ft/s)
Travel time through pipe =    0.05 min.
Time of concentration (TC) =     5.76 min.


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Process from Point/Station      104.000 to Point/Station      105.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.480(Ac.)
Runoff from this stream =      2.094(CFS)
Time of concentration =    5.76 min.
Rainfall intensity =     5.018(In/Hr)
Area averaged loss rate (Fm) =    0.1956(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Summary of stream data:

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


1      1.38     0.290      5.18    0.196      5.347
2      2.09     0.480      5.76    0.196      5.018
Qmax(1) =
         1.000 *    1.000 *     1.383) +
         1.068 *    0.899 *     2.094) + =       3.395
Qmax(2) =
         0.936 *    1.000 *     1.383) +
         1.000 *    1.000 *     2.094) + =       3.388

Total of 2 streams to confluence:
Flow rates before confluence point:
       1.383       2.094
Maximum flow rates at confluence using above data:
        3.395        3.388
Area of streams before confluence:
        0.290        0.480
Effective area values after confluence:
        0.722        0.770
Results of confluence:
Total flow rate =      3.395(CFS)
Time of concentration =     5.182 min.
Effective stream area after confluence =      0.722(Ac.)
Study area average Pervious fraction(Ap) =  0.200
Study area average soil loss rate(Fm) =    0.196(In/Hr)
Study area total (this main stream) =       0.77(Ac.)


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Process from Point/Station      105.000 to Point/Station      111.000
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**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
_____________________________________________________________________
Upstream point/station elevation =    35.000(Ft.)
Downstream point/station elevation =    31.000(Ft.)
Pipe length  =    43.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     3.395(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     3.395(CFS)
Normal flow depth in pipe =    5.40(In.)
Flow top width inside pipe =    8.82(In.)
Critical depth could not be calculated.
Pipe flow velocity =     12.25(Ft/s)
Travel time through pipe =    0.06 min.
Time of concentration (TC) =     5.24 min.


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Process from Point/Station      105.000 to Point/Station      111.000
**** CONFLUENCE OF MAIN STREAMS ****
_____________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      0.722(Ac.)
Runoff from this stream =      3.395(CFS)
Time of concentration =    5.24 min.
Rainfall intensity =     5.311(In/Hr)
Area averaged loss rate (Fm) =    0.1956(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Program is now starting with Main Stream No. 2


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Process from Point/Station      106.000 to Point/Station      107.000
**** INITIAL AREA EVALUATION ****
_____________________________________________________________________
RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.2000     Max loss rate(Fm)=     0.196(In/Hr)
Initial subarea data:
Initial area flow distance =   100.000(Ft.)
Top (of initial area) elevation =    46.000(Ft.)
Bottom (of initial area) elevation =    38.000(Ft.)
Difference in elevation =     8.000(Ft.)
Slope =    0.08000  s(%)=       8.00
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    3.388 min.
Rainfall intensity =      6.900(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.874
Subarea runoff =      0.422(CFS)
Total initial stream area =        0.070(Ac.)
Pervious area fraction = 0.200
Initial area Fm value =    0.196(In/Hr)


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Process from Point/Station      107.000 to Point/Station      110.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------
Upstream point/station elevation =    33.000(Ft.)
Downstream point/station elevation =    32.000(Ft.)
Pipe length  =    62.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.422(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     0.422(CFS)
Normal flow depth in pipe =    3.33(In.)
Flow top width inside pipe =    5.96(In.)
Critical Depth =    3.97(In.)
Pipe flow velocity =      3.78(Ft/s)
Travel time through pipe =    0.27 min.
Time of concentration (TC) =     3.66 min.


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Process from Point/Station      107.000 to Point/Station      110.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------
Along Main Stream number: 2 in normal stream number 1
Stream flow area =      0.070(Ac.)
Runoff from this stream =      0.422(CFS)
Time of concentration =    3.66 min.
Rainfall intensity =     6.586(In/Hr)
Area averaged loss rate (Fm) =    0.1956(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000


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Process from Point/Station      108.000 to Point/Station      109.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.2000     Max loss rate(Fm)=     0.196(In/Hr)
Initial subarea data:
Initial area flow distance =   188.000(Ft.)
Top (of initial area) elevation =    46.000(Ft.)
Bottom (of initial area) elevation =    39.000(Ft.)
Difference in elevation =     7.000(Ft.)
Slope =    0.03723  s(%)=       3.72
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.082 min.
Rainfall intensity =      5.410(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.867
Subarea runoff =      1.455(CFS)
Total initial stream area =        0.310(Ac.)
Pervious area fraction = 0.200
Initial area Fm value =    0.196(In/Hr)


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Process from Point/Station      109.000 to Point/Station      110.000
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**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
_____________________________________________________________________
Upstream point/station elevation =    34.000(Ft.)
Downstream point/station elevation =    32.000(Ft.)
Pipe length  =     4.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.455(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     1.455(CFS)
Normal flow depth in pipe =    2.52(In.)
Flow top width inside pipe =    5.92(In.)
Critical depth could not be calculated.
Pipe flow velocity =     18.65(Ft/s)
Travel time through pipe =    0.00 min.
Time of concentration (TC) =     5.09 min.


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Process from Point/Station      109.000 to Point/Station      110.000
**** CONFLUENCE OF MINOR STREAMS ****
_____________________________________________________________________
Along Main Stream number: 2 in normal stream number 2
Stream flow area =      0.310(Ac.)
Runoff from this stream =      1.455(CFS)
Time of concentration =    5.09 min.
Rainfall intensity =     5.408(In/Hr)
Area averaged loss rate (Fm) =    0.1956(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Summary of stream data:

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


1      0.42     0.070      3.66    0.196      6.586
2      1.45     0.310      5.09    0.196      5.408
Qmax(1) =
         1.000 *    1.000 *     0.422) +
         1.226 *    0.720 *     1.455) + =       1.707
Qmax(2) =
         0.816 *    1.000 *     0.422) +
         1.000 *    1.000 *     1.455) + =       1.799

Total of 2 streams to confluence:
Flow rates before confluence point:
       0.422       1.455
Maximum flow rates at confluence using above data:
        1.707        1.799
Area of streams before confluence:
        0.070        0.310
Effective area values after confluence:
        0.293        0.380
Results of confluence:
Total flow rate =      1.799(CFS)
Time of concentration =     5.085 min.
Effective stream area after confluence =      0.380(Ac.)
Study area average Pervious fraction(Ap) =  0.200
Study area average soil loss rate(Fm) =    0.196(In/Hr)
Study area total (this main stream) =       0.38(Ac.)
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Process from Point/Station      110.000 to Point/Station      111.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =    32.000(Ft.)
Downstream point/station elevation =    31.000(Ft.)
Pipe length  =    22.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.799(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     1.799(CFS)
Normal flow depth in pipe =    4.55(In.)
Flow top width inside pipe =    9.00(In.)
Critical Depth =    7.37(In.)
Pipe flow velocity =      8.02(Ft/s)
Travel time through pipe =    0.05 min.
Time of concentration (TC) =     5.13 min.


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Process from Point/Station      110.000 to Point/Station      111.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      0.380(Ac.)
Runoff from this stream =      1.799(CFS)
Time of concentration =    5.13 min.
Rainfall intensity =     5.379(In/Hr)
Area averaged loss rate (Fm) =    0.1956(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Summary of stream data:

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


1      3.39     0.722      5.24    0.196      5.311
2      1.80     0.380      5.13    0.196      5.379
Qmax(1) =
         1.000 *    1.000 *     3.395) +
         0.987 *    1.000 *     1.799) + =       5.171
Qmax(2) =
         1.013 *    0.979 *     3.395) +
         1.000 *    1.000 *     1.799) + =       5.167

Total of 2 main streams to confluence:
Flow rates before confluence point:
       4.395       2.799
Maximum flow rates at confluence using above data:
        5.171        5.167
Area of streams before confluence:
        0.722        0.380
Effective area values after confluence:
        1.102        1.087


Results of confluence:
Total flow rate =      5.171(CFS)
```

```
Time of concentration =     5.241 min.
Effective stream area after confluence  =      1.102(Ac.)
Study area average Pervious fraction(Ap) =  0.200
Study area average soil loss rate(Fm) =    0.196(In/Hr)
Study area total =       1.10(Ac.)


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Process from Point/Station      111.000 to Point/Station      119.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =    31.000(Ft.)
Downstream point/station elevation =    27.000(Ft.)
Pipe length  =    19.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     5.171(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     5.171(CFS)
Normal flow depth in pipe =    5.45(In.)
Flow top width inside pipe =    8.80(In.)
Critical depth could not be calculated.
Pipe flow velocity =     18.48(Ft/s)
Travel time through pipe =    0.02 min.
Time of concentration (TC) =     5.26 min.


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Process from Point/Station      111.000 to Point/Station      119.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      1.102(Ac.)
Runoff from this stream =      5.171(CFS)
Time of concentration =    5.26 min.
Rainfall intensity =     5.300(In/Hr)
Area averaged loss rate (Fm) =    0.1956(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Program is now starting with Main Stream No. 2


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Process from Point/Station      112.000 to Point/Station      113.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.2000     Max loss rate(Fm)=     0.196(In/Hr)
Initial subarea data:
Initial area flow distance =   216.000(Ft.)
Top (of initial area) elevation =    46.000(Ft.)
Bottom (of initial area) elevation =    33.000(Ft.)
Difference in elevation =    13.000(Ft.)
Slope =    0.06019  s(%)=       6.02
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    4.880 min.
```

```
Rainfall intensity =      5.543(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.868
Subarea runoff =      2.118(CFS)
Total initial stream area =        0.440(Ac.)
Pervious area fraction = 0.200
Initial area Fm value =    0.196(In/Hr)


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Process from Point/Station      113.000 to Point/Station      119.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =    28.000(Ft.)
Downstream point/station elevation =    27.000(Ft.)
Pipe length  =    96.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.118(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     2.118(CFS)
Normal flow depth in pipe =    6.57(In.)
Flow top width inside pipe =   11.94(In.)
Critical Depth =    7.45(In.)
Pipe flow velocity =      4.80(Ft/s)
Travel time through pipe =    0.33 min.
Time of concentration (TC) =     5.21 min.


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Process from Point/Station      113.000 to Point/Station      119.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      0.440(Ac.)
Runoff from this stream =      2.118(CFS)
Time of concentration =    5.21 min.
Rainfall intensity =     5.328(In/Hr)
Area averaged loss rate (Fm) =    0.1956(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Program is now starting with Main Stream No. 3


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Process from Point/Station      114.000 to Point/Station      115.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.2000     Max loss rate(Fm)=     0.196(In/Hr)
Initial subarea data:
Initial area flow distance =   283.000(Ft.)
Top (of initial area) elevation =    51.000(Ft.)
Bottom (of initial area) elevation =    39.000(Ft.)
Difference in elevation =    12.000(Ft.)
Slope =    0.04240  s(%)=       4.24
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
```

```
Initial area time of concentration =    5.832 min.
Rainfall intensity =      4.981(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.865
Subarea runoff =      2.067(CFS)
Total initial stream area =        0.480(Ac.)
Pervious area fraction = 0.200
Initial area Fm value =    0.196(In/Hr)


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Process from Point/Station      115.000 to Point/Station      118.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =    34.000(Ft.)
Downstream point/station elevation =    30.000(Ft.)
Pipe length  =    58.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.067(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     2.067(CFS)
Normal flow depth in pipe =    4.37(In.)
Flow top width inside pipe =    9.00(In.)
Critical Depth =    7.81(In.)
Pipe flow velocity =      9.71(Ft/s)
Travel time through pipe =    0.10 min.
Time of concentration (TC) =     5.93 min.


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Process from Point/Station      115.000 to Point/Station      118.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 3 in normal stream number 1
Stream flow area =      0.480(Ac.)
Runoff from this stream =      2.067(CFS)
Time of concentration =    5.93 min.
Rainfall intensity =     4.931(In/Hr)
Area averaged loss rate (Fm) =    0.1956(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000


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Process from Point/Station      116.000 to Point/Station      117.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.2000     Max loss rate(Fm)=     0.196(In/Hr)
Initial subarea data:
Initial area flow distance =   159.000(Ft.)
Top (of initial area) elevation =    41.000(Ft.)
Bottom (of initial area) elevation =    36.000(Ft.)
Difference in elevation =     5.000(Ft.)
Slope =    0.03145  s(%)=       3.14
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    4.916 min.
```

```
Rainfall intensity =      5.519(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.868
Subarea runoff =      1.198(CFS)
Total initial stream area =        0.250(Ac.)
Pervious area fraction = 0.200
Initial area Fm value =    0.196(In/Hr)


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Process from Point/Station      117.000 to Point/Station      118.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =    31.000(Ft.)
Downstream point/station elevation =    30.000(Ft.)
Pipe length  =    30.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.198(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     1.198(CFS)
Normal flow depth in pipe =    3.94(In.)
Flow top width inside pipe =    8.93(In.)
Critical Depth =    6.04(In.)
Pipe flow velocity =      6.44(Ft/s)
Travel time through pipe =    0.08 min.
Time of concentration (TC) =     4.99 min.


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Process from Point/Station      117.000 to Point/Station      118.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 3 in normal stream number 2
Stream flow area =      0.250(Ac.)
Runoff from this stream =      1.198(CFS)
Time of concentration =    4.99 min.
Rainfall intensity =     5.467(In/Hr)
Area averaged loss rate (Fm) =    0.1956(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Summary of stream data:

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


1      2.07     0.480      5.93    0.196      4.931
2      1.20     0.250      4.99    0.196      5.467
Qmax(1) =
         1.000 *    1.000 *     2.067) +
         0.898 *    1.000 *     1.198) + =       3.143
Qmax(2) =
         1.113 *    0.842 *     2.067) +
         1.000 *    1.000 *     1.198) + =       3.135

Total of 2 streams to confluence:
Flow rates before confluence point:
       2.067       1.198
Maximum flow rates at confluence using above data:
        3.143        3.135
Area of streams before confluence:
        0.480        0.250
```

```
Effective area values after confluence:
        0.730        0.654
Results of confluence:
Total flow rate =      3.143(CFS)
Time of concentration =     5.931 min.
Effective stream area after confluence =      0.730(Ac.)
Study area average Pervious fraction(Ap) =  0.200
Study area average soil loss rate(Fm) =    0.196(In/Hr)
Study area total (this main stream) =       0.73(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      118.000 to Point/Station      119.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =    30.000(Ft.)
Downstream point/station elevation =    27.000(Ft.)
Pipe length  =    68.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     3.143(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     3.143(CFS)
Normal flow depth in pipe =    6.70(In.)
Flow top width inside pipe =    7.85(In.)
Critical depth could not be calculated.
Pipe flow velocity =      8.91(Ft/s)
Travel time through pipe =    0.13 min.
Time of concentration (TC) =     6.06 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      118.000 to Point/Station      119.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =      0.730(Ac.)
Runoff from this stream =      3.143(CFS)
Time of concentration =    6.06 min.
Rainfall intensity =     4.868(In/Hr)
Area averaged loss rate (Fm) =    0.1956(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Summary of stream data:

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


1      5.17     1.102      5.26    0.196      5.300
2      2.12     0.440      5.21    0.196      5.328
3      3.14     0.730      6.06    0.196      4.868
Qmax(1) =
         1.000 *    1.000 *     5.171) +
         0.995 *    1.000 *     2.118) +
         1.092 *    0.868 *     3.143) + =      10.257
Qmax(2) =
         1.005 *    0.992 *     5.171) +
         1.000 *    1.000 *     2.118) +
         1.098 *    0.860 *     3.143) + =      10.242
Qmax(3) =
```

```
         0.915 *    1.000 *     5.171) +
         0.911 *    1.000 *     2.118) +
         1.000 *    1.000 *     3.143) + =       9.804

Total of 3 main streams to confluence:
Flow rates before confluence point:
       6.171       3.118       4.143
Maximum flow rates at confluence using above data:
      10.257       10.242        9.804
Area of streams before confluence:
        1.102        0.440        0.730
Effective area values after confluence:
        2.175        2.161        2.272


Results of confluence:
Total flow rate =     10.257(CFS)
Time of concentration =     5.258 min.
Effective stream area after confluence  =      2.175(Ac.)
Study area average Pervious fraction(Ap) =  0.200
Study area average soil loss rate(Fm) =    0.196(In/Hr)
Study area total =       2.27(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      119.000 to Point/Station      119.000
**** SUBAREA FLOW ADDITION ****
________________________________________________________________________
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 67.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.578(In/Hr)
Time of concentration =     5.26 min.
Rainfall intensity =      5.300(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.862
Subarea runoff =      0.417(CFS) for    0.160(Ac.)
Total runoff =     10.674(CFS)
Effective area this stream =        2.34(Ac.)
Total Study Area (Main Stream No. 1) =        2.48(Ac.)
Area averaged Fm value =    0.222(In/Hr)
End of computations, Total Study Area =            2.48 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.252
Area averaged SCS curve number =  34.3
```

APPENDIX B.4: RATIONAL METHOD ANALYSIS, AREA A, 100-YEAR

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2014 Version 9.0
Rational Hydrology Study Date: 04/28/25

320.05 BUFFALO GROVE
POST-PROJECT RATIONAL METHOD
AREA A; 100-YEAR

Program License Serial Number 6279

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

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.610 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 3

++
Process from Point/Station 101.000 to Point/Station 102.000
**** INITIAL AREA EVALUATION ****

RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 32.00
Adjusted SCS curve number for AMC 3 = 52.00
Pervious ratio(Ap) = 0.2000 Max loss rate(Fm)= 0.157(In/Hr)
Initial subarea data:
Initial area flow distance = 161.000(Ft.)
Top (of initial area) elevation = 51.000(Ft.)
Bottom (of initial area) elevation = 46.000(Ft.)
Difference in elevation = 5.000(Ft.)
Slope = 0.03106 s(%)= 3.11
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 4.953 min.
Rainfall intensity = 7.191(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.880
Subarea runoff = 1.836(CFS)
Total initial stream area = 0.290(Ac.)
Pervious area fraction = 0.200
Initial area Fm value = 0.157(In/Hr)

++
Process from Point/Station 102.000 to Point/Station 105.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

```
Upstream point/station elevation =    41.000(Ft.)
Downstream point/station elevation =    36.000(Ft.)
Pipe length  =   105.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.836(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     1.836(CFS)
Normal flow depth in pipe =    4.55(In.)
Flow top width inside pipe =    9.00(In.)
Critical Depth =    7.43(In.)
Pipe flow velocity =      8.21(Ft/s)
Travel time through pipe =    0.21 min.
Time of concentration (TC) =     5.17 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      105.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      0.290(Ac.)
Runoff from this stream =      1.836(CFS)
Time of concentration =    5.17 min.
Rainfall intensity =     7.012(In/Hr)
Area averaged loss rate (Fm) =    0.1570(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      104.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Adjusted SCS curve number for AMC 3 = 52.00
Pervious ratio(Ap) = 0.2000     Max loss rate(Fm)=     0.157(In/Hr)
Initial subarea data:
Initial area flow distance =   239.000(Ft.)
Top (of initial area) elevation =    49.000(Ft.)
Bottom (of initial area) elevation =    41.000(Ft.)
Difference in elevation =     8.000(Ft.)
Slope =    0.03347  s(%)=       3.35
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.714 min.
Rainfall intensity =      6.600(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.879
Subarea runoff =      2.783(CFS)
Total initial stream area =        0.480(Ac.)
Pervious area fraction = 0.200
Initial area Fm value =    0.157(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      104.000 to Point/Station      105.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
```

```
Upstream point/station elevation =    36.000(Ft.)
Downstream point/station elevation =    35.000(Ft.)
Pipe length  =    23.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.783(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     2.783(CFS)
Normal flow depth in pipe =    6.13(In.)
Flow top width inside pipe =    8.39(In.)
Critical Depth =    8.51(In.)
Pipe flow velocity =      8.69(Ft/s)
Travel time through pipe =    0.04 min.
Time of concentration (TC) =     5.76 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      104.000 to Point/Station      105.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.480(Ac.)
Runoff from this stream =      2.783(CFS)
Time of concentration =    5.76 min.
Rainfall intensity =     6.570(In/Hr)
Area averaged loss rate (Fm) =    0.1570(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Summary of stream data:

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


1      1.84     0.290      5.17    0.157      7.012
2      2.78     0.480      5.76    0.157      6.570
Qmax(1) =
         1.000 *    1.000 *     1.836) +
         1.069 *    0.897 *     2.783) + =       4.505
Qmax(2) =
         0.935 *    1.000 *     1.836) +
         1.000 *    1.000 *     2.783) + =       4.501

Total of 2 streams to confluence:
Flow rates before confluence point:
       1.836       2.783
Maximum flow rates at confluence using above data:
        4.505        4.501
Area of streams before confluence:
        0.290        0.480
Effective area values after confluence:
        0.721        0.770
Results of confluence:
Total flow rate =      4.505(CFS)
Time of concentration =     5.166 min.
Effective stream area after confluence =      0.721(Ac.)
Study area average Pervious fraction(Ap) =  0.200
Study area average soil loss rate(Fm) =    0.157(In/Hr)
Study area total (this main stream) =       0.77(Ac.)
```

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++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      105.000 to Point/Station      111.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =    35.000(Ft.)
Downstream point/station elevation =    31.000(Ft.)
Pipe length  =    43.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     4.505(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     4.505(CFS)
Normal flow depth in pipe =    6.63(In.)
Flow top width inside pipe =    7.92(In.)
Critical depth could not be calculated.
Pipe flow velocity =     12.91(Ft/s)
Travel time through pipe =    0.06 min.
Time of concentration (TC) =     5.22 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      105.000 to Point/Station      111.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      0.721(Ac.)
Runoff from this stream =      4.505(CFS)
Time of concentration =    5.22 min.
Rainfall intensity =     6.967(In/Hr)
Area averaged loss rate (Fm) =    0.1570(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      106.000 to Point/Station      107.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Adjusted SCS curve number for AMC 3 = 52.00
Pervious ratio(Ap) = 0.2000     Max loss rate(Fm)=     0.157(In/Hr)
Initial subarea data:
Initial area flow distance =   100.000(Ft.)
Top (of initial area) elevation =    46.000(Ft.)
Bottom (of initial area) elevation =    38.000(Ft.)
Difference in elevation =     8.000(Ft.)
Slope =    0.08000  s(%)=       8.00
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    3.388 min.
Rainfall intensity =      9.032(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.884
Subarea runoff =      0.559(CFS)
Total initial stream area =        0.070(Ac.)
Pervious area fraction = 0.200
Initial area Fm value =    0.157(In/Hr)
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      107.000 to Point/Station      110.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =    33.000(Ft.)
Downstream point/station elevation =    32.000(Ft.)
Pipe length  =    62.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.559(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     0.559(CFS)
Normal flow depth in pipe =    4.00(In.)
Flow top width inside pipe =    5.66(In.)
Critical Depth =    4.57(In.)
Pipe flow velocity =      4.02(Ft/s)
Travel time through pipe =    0.26 min.
Time of concentration (TC) =     3.65 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      107.000 to Point/Station      110.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 2 in normal stream number 1
Stream flow area =      0.070(Ac.)
Runoff from this stream =      0.559(CFS)
Time of concentration =    3.65 min.
Rainfall intensity =     8.644(In/Hr)
Area averaged loss rate (Fm) =    0.1570(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      108.000 to Point/Station      109.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Adjusted SCS curve number for AMC 3 = 52.00
Pervious ratio(Ap) = 0.2000     Max loss rate(Fm)=     0.157(In/Hr)
Initial subarea data:
Initial area flow distance =   188.000(Ft.)
Top (of initial area) elevation =    46.000(Ft.)
Bottom (of initial area) elevation =    39.000(Ft.)
Difference in elevation =     7.000(Ft.)
Slope =    0.03723  s(%)=       3.72
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.082 min.
Rainfall intensity =      7.081(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.880
Subarea runoff =      1.932(CFS)
Total initial stream area =        0.310(Ac.)
Pervious area fraction = 0.200
Initial area Fm value =    0.157(In/Hr)
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      109.000 to Point/Station      110.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =    34.000(Ft.)
Downstream point/station elevation =    32.000(Ft.)
Pipe length  =     4.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.932(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     1.932(CFS)
Normal flow depth in pipe =    2.95(In.)
Flow top width inside pipe =    6.00(In.)
Critical depth could not be calculated.
Pipe flow velocity =     20.07(Ft/s)
Travel time through pipe =    0.00 min.
Time of concentration (TC) =     5.09 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      109.000 to Point/Station      110.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 2 in normal stream number 2
Stream flow area =      0.310(Ac.)
Runoff from this stream =      1.932(CFS)
Time of concentration =    5.09 min.
Rainfall intensity =     7.078(In/Hr)
Area averaged loss rate (Fm) =    0.1570(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Summary of stream data:

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


1      0.56     0.070      3.65    0.157      8.644
2      1.93     0.310      5.09    0.157      7.078
Qmax(1) =
         1.000 *    1.000 *     0.559) +
         1.226 *    0.717 *     1.932) + =       2.257
Qmax(2) =
         0.816 *    1.000 *     0.559) +
         1.000 *    1.000 *     1.932) + =       2.388

Total of 2 streams to confluence:
Flow rates before confluence point:
       0.559       1.932
Maximum flow rates at confluence using above data:
        2.257        2.388
Area of streams before confluence:
        0.070        0.310
Effective area values after confluence:
        0.292        0.380
Results of confluence:
Total flow rate =      2.388(CFS)
Time of concentration =     5.085 min.
Effective stream area after confluence =      0.380(Ac.)
```

```
Study area average Pervious fraction(Ap) =  0.200
Study area average soil loss rate(Fm) =    0.157(In/Hr)
Study area total (this main stream) =       0.38(Ac.)


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Process from Point/Station      110.000 to Point/Station      111.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =    32.000(Ft.)
Downstream point/station elevation =    31.000(Ft.)
Pipe length  =    22.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.388(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     2.388(CFS)
Normal flow depth in pipe =    5.43(In.)
Flow top width inside pipe =    8.81(In.)
Critical Depth =    8.21(In.)
Pipe flow velocity =      8.58(Ft/s)
Travel time through pipe =    0.04 min.
Time of concentration (TC) =     5.13 min.


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Process from Point/Station      110.000 to Point/Station      111.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      0.380(Ac.)
Runoff from this stream =      2.388(CFS)
Time of concentration =    5.13 min.
Rainfall intensity =     7.043(In/Hr)
Area averaged loss rate (Fm) =    0.1570(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Summary of stream data:

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


1      4.51     0.721      5.22    0.157      6.967
2      2.39     0.380      5.13    0.157      7.043
Qmax(1) =
         1.000 *    1.000 *     4.505) +
         0.989 *    1.000 *     2.388) + =       6.867
Qmax(2) =
         1.011 *    0.982 *     4.505) +
         1.000 *    1.000 *     2.388) + =       6.862

Total of 2 main streams to confluence:
Flow rates before confluence point:
       5.505       3.388
Maximum flow rates at confluence using above data:
        6.867        6.862
Area of streams before confluence:
        0.721        0.380
Effective area values after confluence:
        1.101        1.088
```

```
Results of confluence:
Total flow rate =      6.867(CFS)
Time of concentration =     5.221 min.
Effective stream area after confluence  =      1.101(Ac.)
Study area average Pervious fraction(Ap) =  0.200
Study area average soil loss rate(Fm) =    0.157(In/Hr)
Study area total =       1.10(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      111.000 to Point/Station      119.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =    31.000(Ft.)
Downstream point/station elevation =    27.000(Ft.)
Pipe length  =    19.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     6.867(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     6.867(CFS)
Normal flow depth in pipe =    6.70(In.)
Flow top width inside pipe =    7.85(In.)
Critical depth could not be calculated.
Pipe flow velocity =     19.46(Ft/s)
Travel time through pipe =    0.02 min.
Time of concentration (TC) =     5.24 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      111.000 to Point/Station      119.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      1.101(Ac.)
Runoff from this stream =      6.867(CFS)
Time of concentration =    5.24 min.
Rainfall intensity =     6.954(In/Hr)
Area averaged loss rate (Fm) =    0.1570(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      112.000 to Point/Station      113.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Adjusted SCS curve number for AMC 3 = 52.00
Pervious ratio(Ap) = 0.2000     Max loss rate(Fm)=     0.157(In/Hr)
Initial subarea data:
Initial area flow distance =   216.000(Ft.)
Top (of initial area) elevation =    46.000(Ft.)
```

```
Bottom (of initial area) elevation =    33.000(Ft.)
Difference in elevation =    13.000(Ft.)
Slope =    0.06019  s(%)=       6.02
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    4.880 min.
Rainfall intensity =      7.255(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.881
Subarea runoff =      2.811(CFS)
Total initial stream area =        0.440(Ac.)
Pervious area fraction = 0.200
Initial area Fm value =    0.157(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      113.000 to Point/Station      119.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =    28.000(Ft.)
Downstream point/station elevation =    27.000(Ft.)
Pipe length  =    96.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.811(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     2.811(CFS)
Normal flow depth in pipe =    7.92(In.)
Flow top width inside pipe =   11.37(In.)
Critical Depth =    8.63(In.)
Pipe flow velocity =      5.11(Ft/s)
Travel time through pipe =    0.31 min.
Time of concentration (TC) =     5.19 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      113.000 to Point/Station      119.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      0.440(Ac.)
Runoff from this stream =      2.811(CFS)
Time of concentration =    5.19 min.
Rainfall intensity =     6.990(In/Hr)
Area averaged loss rate (Fm) =    0.1570(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Program is now starting with Main Stream No. 3


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      114.000 to Point/Station      115.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Adjusted SCS curve number for AMC 3 = 52.00
Pervious ratio(Ap) = 0.2000     Max loss rate(Fm)=     0.157(In/Hr)
Initial subarea data:
```

```
Initial area flow distance =   283.000(Ft.)
Top (of initial area) elevation =    51.000(Ft.)
Bottom (of initial area) elevation =    39.000(Ft.)
Difference in elevation =    12.000(Ft.)
Slope =    0.04240  s(%)=       4.24
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.832 min.
Rainfall intensity =      6.520(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.878
Subarea runoff =      2.749(CFS)
Total initial stream area =        0.480(Ac.)
Pervious area fraction = 0.200
Initial area Fm value =    0.157(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      115.000 to Point/Station      118.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =    34.000(Ft.)
Downstream point/station elevation =    30.000(Ft.)
Pipe length  =    58.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.749(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     2.749(CFS)
Normal flow depth in pipe =    5.20(In.)
Flow top width inside pipe =    8.89(In.)
Critical Depth =    8.50(In.)
Pipe flow velocity =     10.41(Ft/s)
Travel time through pipe =    0.09 min.
Time of concentration (TC) =     5.92 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      115.000 to Point/Station      118.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 3 in normal stream number 1
Stream flow area =      0.480(Ac.)
Runoff from this stream =      2.749(CFS)
Time of concentration =    5.92 min.
Rainfall intensity =     6.458(In/Hr)
Area averaged loss rate (Fm) =    0.1570(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      116.000 to Point/Station      117.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Adjusted SCS curve number for AMC 3 = 52.00
Pervious ratio(Ap) = 0.2000     Max loss rate(Fm)=     0.157(In/Hr)
Initial subarea data:
```

```
Initial area flow distance =   159.000(Ft.)
Top (of initial area) elevation =    41.000(Ft.)
Bottom (of initial area) elevation =    36.000(Ft.)
Difference in elevation =     5.000(Ft.)
Slope =    0.03145  s(%)=       3.14
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    4.916 min.
Rainfall intensity =      7.224(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.880
Subarea runoff =      1.590(CFS)
Total initial stream area =        0.250(Ac.)
Pervious area fraction = 0.200
Initial area Fm value =    0.157(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      117.000 to Point/Station      118.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =    31.000(Ft.)
Downstream point/station elevation =    30.000(Ft.)
Pipe length  =    30.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.590(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     1.590(CFS)
Normal flow depth in pipe =    4.64(In.)
Flow top width inside pipe =    9.00(In.)
Critical Depth =    6.96(In.)
Pipe flow velocity =      6.93(Ft/s)
Travel time through pipe =    0.07 min.
Time of concentration (TC) =     4.99 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      117.000 to Point/Station      118.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 3 in normal stream number 2
Stream flow area =      0.250(Ac.)
Runoff from this stream =      1.590(CFS)
Time of concentration =    4.99 min.
Rainfall intensity =     7.161(In/Hr)
Area averaged loss rate (Fm) =    0.1570(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Summary of stream data:

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


1      2.75     0.480      5.92    0.157      6.458
2      1.59     0.250      4.99    0.157      7.161
Qmax(1) =
         1.000 *    1.000 *     2.749) +
         0.900 *    1.000 *     1.590) + =       4.179
Qmax(2) =
         1.111 *    0.842 *     2.749) +
         1.000 *    1.000 *     1.590) + =       4.162
```

```
Total of 2 streams to confluence:
Flow rates before confluence point:
       2.749       1.590
Maximum flow rates at confluence using above data:
        4.179        4.162
Area of streams before confluence:
        0.480        0.250
Effective area values after confluence:
        0.730        0.654
Results of confluence:
Total flow rate =      4.179(CFS)
Time of concentration =     5.924 min.
Effective stream area after confluence =      0.730(Ac.)
Study area average Pervious fraction(Ap) =  0.200
Study area average soil loss rate(Fm) =    0.157(In/Hr)
Study area total (this main stream) =       0.73(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      118.000 to Point/Station      119.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =    30.000(Ft.)
Downstream point/station elevation =    27.000(Ft.)
Pipe length  =    68.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     4.179(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     4.179(CFS)
Normal flow depth in pipe =    6.41(In.)
Flow top width inside pipe =   11.97(In.)
Critical Depth =   10.35(In.)
Pipe flow velocity =      9.79(Ft/s)
Travel time through pipe =    0.12 min.
Time of concentration (TC) =     6.04 min.


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Process from Point/Station      118.000 to Point/Station      119.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =      0.730(Ac.)
Runoff from this stream =      4.179(CFS)
Time of concentration =    6.04 min.
Rainfall intensity =     6.384(In/Hr)
Area averaged loss rate (Fm) =    0.1570(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Summary of stream data:

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


1      6.87     1.101      5.24    0.157      6.954
2      2.81     0.440      5.19    0.157      6.990
3      4.18     0.730      6.04    0.157      6.384
Qmax(1) =
         1.000 *    1.000 *     6.867) +
```

```
         0.995 *    1.000 *     2.811) +
         1.092 *    0.867 *     4.179) + =      13.619
Qmax(2) =
         1.005 *    0.991 *     6.867) +
         1.000 *    1.000 *     2.811) +
         1.097 *    0.860 *     4.179) + =      13.598
Qmax(3) =
         0.916 *    1.000 *     6.867) +
         0.911 *    1.000 *     2.811) +
         1.000 *    1.000 *     4.179) + =      13.032

Total of 3 main streams to confluence:
Flow rates before confluence point:
       7.867       3.811       5.179
Maximum flow rates at confluence using above data:
      13.619       13.598      13.032
Area of streams before confluence:
        1.101       0.440       0.730
Effective area values after confluence:
        2.174       2.159       2.271


Results of confluence:
Total flow rate =     13.619(CFS)
Time of concentration =     5.238 min.
Effective stream area after confluence  =      2.174(Ac.)
Study area average Pervious fraction(Ap) =  0.200
Study area average soil loss rate(Fm) =    0.157(In/Hr)
Study area total =       2.27(Ac.)


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Process from Point/Station      119.000 to Point/Station      119.000
**** SUBAREA FLOW ADDITION ****
________________________________________________________________________
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 67.00
Adjusted SCS curve number for AMC 3 = 84.60
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.290(In/Hr)
Time of concentration =     5.24 min.
Rainfall intensity =      6.954(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.878
Subarea runoff =      0.637(CFS) for    0.160(Ac.)
Total runoff =     14.256(CFS)
Effective area this stream =        2.33(Ac.)
Total Study Area (Main Stream No. 1) =        2.48(Ac.)
Area averaged Fm value =    0.166(In/Hr)
End of computations, Total Study Area =            2.48 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.252
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Area averaged SCS curve number =  34.3
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APPENDIX B.5: RATIONAL METHOD ANALYSIS, AREA B, 2-YEAR

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2014 Version 9.0
Rational Hydrology Study Date: 04/28/25

320.05 BUFFALO GROVE
POST-PROJECT RATIONAL METHOD
AREA B; 2-YEAR

Program License Serial Number 6279

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

Rational hydrology study storm event year is 2.0
Computed rainfall intensity:
Storm year = 2.00 1 hour rainfall = 0.630 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 3

++
Process from Point/Station 201.000 to Point/Station 202.000
**** INITIAL AREA EVALUATION ****

RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 32.00
Adjusted SCS curve number for AMC 3 = 52.00
Pervious ratio(Ap) = 0.2000 Max loss rate(Fm)= 0.157(In/Hr)
Initial subarea data:
Initial area flow distance = 178.000(Ft.)
Top (of initial area) elevation = 37.000(Ft.)
Bottom (of initial area) elevation = 31.000(Ft.)
Difference in elevation = 6.000(Ft.)
Slope = 0.03371 s(%)= 3.37
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 5.072 min.
Rainfall intensity = 2.774(In/Hr) for a 2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.849
Subarea runoff = 0.824(CFS)
Total initial stream area = 0.350(Ac.)
Pervious area fraction = 0.200
Initial area Fm value = 0.157(In/Hr)

++
Process from Point/Station 202.000 to Point/Station 204.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

```
Upstream point/station elevation =    26.000(Ft.)
Downstream point/station elevation =    22.000(Ft.)
Pipe length  =    93.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.824(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     0.824(CFS)
Normal flow depth in pipe =    3.73(In.)
Flow top width inside pipe =    5.82(In.)
Critical Depth =    5.39(In.)
Pipe flow velocity =      6.43(Ft/s)
Travel time through pipe =    0.24 min.
Time of concentration (TC) =     5.31 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      202.000 to Point/Station      204.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      0.350(Ac.)
Runoff from this stream =      0.824(CFS)
Time of concentration =    5.31 min.
Rainfall intensity =     2.698(In/Hr)
Area averaged loss rate (Fm) =    0.1570(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      203.000 to Point/Station      204.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Adjusted SCS curve number for AMC 3 = 52.00
Pervious ratio(Ap) = 0.2000     Max loss rate(Fm)=     0.157(In/Hr)
Initial subarea data:
Initial area flow distance =   187.000(Ft.)
Top (of initial area) elevation =    34.000(Ft.)
Bottom (of initial area) elevation =    27.000(Ft.)
Difference in elevation =     7.000(Ft.)
Slope =    0.03743  s(%)=       3.74
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.066 min.
Rainfall intensity =      2.776(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.849
Subarea runoff =      0.613(CFS)
Total initial stream area =        0.260(Ac.)
Pervious area fraction = 0.200
Initial area Fm value =    0.157(In/Hr)


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Process from Point/Station      203.000 to Point/Station      204.000
**** CONFLUENCE OF MINOR STREAMS ****
```

```
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.260(Ac.)
Runoff from this stream =      0.613(CFS)
Time of concentration =    5.07 min.
Rainfall intensity =     2.776(In/Hr)
Area averaged loss rate (Fm) =    0.1570(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Summary of stream data:

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


1      0.82     0.350      5.31    0.157      2.698
2      0.61     0.260      5.07    0.157      2.776
Qmax(1) =
         1.000 *    1.000 *     0.824) +
         0.970 *    1.000 *     0.613) + =       1.419
Qmax(2) =
         1.031 *    0.953 *     0.824) +
         1.000 *    1.000 *     0.613) + =       1.423

Total of 2 streams to confluence:
Flow rates before confluence point:
       0.824       0.613
Maximum flow rates at confluence using above data:
        1.419        1.423
Area of streams before confluence:
        0.350        0.260
Effective area values after confluence:
        0.610        0.594
Results of confluence:
Total flow rate =      1.423(CFS)
Time of concentration =     5.066 min.
Effective stream area after confluence =      0.594(Ac.)
Study area average Pervious fraction(Ap) =  0.200
Study area average soil loss rate(Fm) =    0.157(In/Hr)
Study area total (this main stream) =       0.61(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      204.000 to Point/Station      211.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------
Upstream point/station elevation =    27.000(Ft.)
Downstream point/station elevation =    16.000(Ft.)
Pipe length  =    31.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.423(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     1.423(CFS)
Normal flow depth in pipe =    2.74(In.)
Flow top width inside pipe =    5.98(In.)
Critical depth could not be calculated.
Pipe flow velocity =     16.34(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =     5.10 min.
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Process from Point/Station      204.000 to Point/Station      211.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      0.594(Ac.)
Runoff from this stream =      1.423(CFS)
Time of concentration =    5.10 min.
Rainfall intensity =     2.766(In/Hr)
Area averaged loss rate (Fm) =    0.1570(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      205.000 to Point/Station      206.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Adjusted SCS curve number for AMC 3 = 52.00
Pervious ratio(Ap) = 0.2000     Max loss rate(Fm)=     0.157(In/Hr)
Initial subarea data:
Initial area flow distance =   136.000(Ft.)
Top (of initial area) elevation =    32.000(Ft.)
Bottom (of initial area) elevation =    26.000(Ft.)
Difference in elevation =     6.000(Ft.)
Slope =    0.04412  s(%)=       4.41
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    4.316 min.
Rainfall intensity =      3.056(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.854
Subarea runoff =      0.939(CFS)
Total initial stream area =        0.360(Ac.)
Pervious area fraction = 0.200
Initial area Fm value =    0.157(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      206.000 to Point/Station      211.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =    21.000(Ft.)
Downstream point/station elevation =    16.000(Ft.)
Pipe length  =    11.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.939(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     0.939(CFS)
Normal flow depth in pipe =    2.04(In.)
Flow top width inside pipe =    5.68(In.)
Critical Depth =    5.59(In.)
Pipe flow velocity =     15.99(Ft/s)
Travel time through pipe =    0.01 min.
Time of concentration (TC) =     4.33 min.
```

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++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      206.000 to Point/Station      211.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      0.360(Ac.)
Runoff from this stream =      0.939(CFS)
Time of concentration =    4.33 min.
Rainfall intensity =     3.052(In/Hr)
Area averaged loss rate (Fm) =    0.1570(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Program is now starting with Main Stream No. 3


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      207.000 to Point/Station      208.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Adjusted SCS curve number for AMC 3 = 52.00
Pervious ratio(Ap) = 0.2000     Max loss rate(Fm)=     0.157(In/Hr)
Initial subarea data:
Initial area flow distance =   173.000(Ft.)
Top (of initial area) elevation =    33.000(Ft.)
Bottom (of initial area) elevation =    27.000(Ft.)
Difference in elevation =     6.000(Ft.)
Slope =    0.03468  s(%)=       3.47
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    4.986 min.
Rainfall intensity =      2.803(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.850
Subarea runoff =      0.976(CFS)
Total initial stream area =        0.410(Ac.)
Pervious area fraction = 0.200
Initial area Fm value =    0.157(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      208.000 to Point/Station      211.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =    22.000(Ft.)
Downstream point/station elevation =    16.000(Ft.)
Pipe length  =     7.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.976(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     0.976(CFS)
Normal flow depth in pipe =    1.76(In.)
Flow top width inside pipe =    5.47(In.)
Critical Depth =    5.64(In.)
Pipe flow velocity =     20.30(Ft/s)
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Travel time through pipe =    0.01 min.
Time of concentration (TC) =     4.99 min.


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Process from Point/Station      208.000 to Point/Station      211.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =      0.410(Ac.)
Runoff from this stream =      0.976(CFS)
Time of concentration =    4.99 min.
Rainfall intensity =     2.801(In/Hr)
Area averaged loss rate (Fm) =    0.1570(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Program is now starting with Main Stream No. 4


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      209.000 to Point/Station      210.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Adjusted SCS curve number for AMC 3 = 52.00
Pervious ratio(Ap) = 0.2000     Max loss rate(Fm)=     0.157(In/Hr)
Initial subarea data:
Initial area flow distance =   277.000(Ft.)
Top (of initial area) elevation =    38.000(Ft.)
Bottom (of initial area) elevation =    28.000(Ft.)
Difference in elevation =    10.000(Ft.)
Slope =    0.03610  s(%)=       3.61
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.971 min.
Rainfall intensity =      2.515(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.844
Subarea runoff =      0.976(CFS)
Total initial stream area =        0.460(Ac.)
Pervious area fraction = 0.200
Initial area Fm value =    0.157(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      210.000 to Point/Station      211.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =    23.000(Ft.)
Downstream point/station elevation =    16.000(Ft.)
Pipe length  =    68.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.976(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     0.976(CFS)
Normal flow depth in pipe =    3.15(In.)
Flow top width inside pipe =    5.99(In.)
```

```
Critical Depth =    5.64(In.)
Pipe flow velocity =      9.36(Ft/s)
Travel time through pipe =    0.12 min.
Time of concentration (TC) =     6.09 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      210.000 to Point/Station      211.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 4
Stream flow area =      0.460(Ac.)
Runoff from this stream =      0.976(CFS)
Time of concentration =    6.09 min.
Rainfall intensity =     2.485(In/Hr)
Area averaged loss rate (Fm) =    0.1570(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Summary of stream data:

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


1      1.42     0.594      5.10    0.157      2.766
2      0.94     0.360      4.33    0.157      3.052
3      0.98     0.410      4.99    0.157      2.801
4      0.98     0.460      6.09    0.157      2.485
Qmax(1) =
         1.000 *    1.000 *     1.423) +
         0.901 *    1.000 *     0.939) +
         0.987 *    1.000 *     0.976) +
         1.121 *    0.837 *     0.976) + =       4.149
Qmax(2) =
         1.109 *    0.849 *     1.423) +
         1.000 *    1.000 *     0.939) +
         1.095 *    0.867 *     0.976) +
         1.243 *    0.710 *     0.976) + =       4.068
Qmax(3) =
         1.013 *    0.979 *     1.423) +
         0.913 *    1.000 *     0.939) +
         1.000 *    1.000 *     0.976) +
         1.136 *    0.819 *     0.976) + =       4.155
Qmax(4) =
         0.892 *    1.000 *     1.423) +
         0.804 *    1.000 *     0.939) +
         0.881 *    1.000 *     0.976) +
         1.000 *    1.000 *     0.976) + =       3.862

Total of 4 main streams to confluence:
Flow rates before confluence point:
       2.423       1.939       1.976       1.976
Maximum flow rates at confluence using above data:
        4.149        4.068        4.155        3.862
Area of streams before confluence:
        0.594        0.360        0.410        0.460
Effective area values after confluence:
        1.749        1.546        1.728        1.824
```

Results of confluence:
Total flow rate = 4.155(CFS)
Time of concentration = 4.992 min.
Effective stream area after confluence = 1.728(Ac.)
Study area average Pervious fraction(Ap) = 0.200
Study area average soil loss rate(Fm) = 0.157(In/Hr)
Study area total = 1.82(Ac.)
End of computations, Total Study Area = 1.84 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.200
Area averaged SCS curve number = 32.0

APPENDIX B.6: RATIONAL METHOD ANALYSIS, AREA B, 10-YEAR

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2014 Version 9.0
Rational Hydrology Study Date: 04/28/25

320.05 BUFFALO GROVE
POST-PROJECT RATIONAL METHOD
AREA B; 10-YEAR

Program License Serial Number 6279

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

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 1.000 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 201.000 to Point/Station 202.000
**** INITIAL AREA EVALUATION ****

RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 32.00
Pervious ratio(Ap) = 0.2000 Max loss rate(Fm)= 0.196(In/Hr)
Initial subarea data:
Initial area flow distance = 178.000(Ft.)
Top (of initial area) elevation = 37.000(Ft.)
Bottom (of initial area) elevation = 31.000(Ft.)
Difference in elevation = 6.000(Ft.)
Slope = 0.03371 s(%)= 3.37
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 5.072 min.
Rainfall intensity = 4.403(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.860
Subarea runoff = 1.325(CFS)
Total initial stream area = 0.350(Ac.)
Pervious area fraction = 0.200
Initial area Fm value = 0.196(In/Hr)

++
Process from Point/Station 202.000 to Point/Station 204.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

```
Upstream point/station elevation =    26.000(Ft.)
Downstream point/station elevation =    22.000(Ft.)
Pipe length  =    93.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.325(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     1.325(CFS)
Normal flow depth in pipe =    3.88(In.)
Flow top width inside pipe =    8.91(In.)
Critical Depth =    6.36(In.)
Pipe flow velocity =      7.27(Ft/s)
Travel time through pipe =    0.21 min.
Time of concentration (TC) =     5.29 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      202.000 to Point/Station      204.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      0.350(Ac.)
Runoff from this stream =      1.325(CFS)
Time of concentration =    5.29 min.
Rainfall intensity =     4.296(In/Hr)
Area averaged loss rate (Fm) =    0.1956(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      203.000 to Point/Station      204.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.2000     Max loss rate(Fm)=     0.196(In/Hr)
Initial subarea data:
Initial area flow distance =   187.000(Ft.)
Top (of initial area) elevation =    34.000(Ft.)
Bottom (of initial area) elevation =    27.000(Ft.)
Difference in elevation =     7.000(Ft.)
Slope =    0.03743  s(%)=       3.74
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.066 min.
Rainfall intensity =      4.407(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.860
Subarea runoff =      0.985(CFS)
Total initial stream area =        0.260(Ac.)
Pervious area fraction = 0.200
Initial area Fm value =    0.196(In/Hr)


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Process from Point/Station      203.000 to Point/Station      204.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
```

```
Stream flow area =      0.260(Ac.)
Runoff from this stream =      0.985(CFS)
Time of concentration =    5.07 min.
Rainfall intensity =     4.407(In/Hr)
Area averaged loss rate (Fm) =    0.1956(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Summary of stream data:

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


1      1.33     0.350      5.29    0.196      4.296
2      0.99     0.260      5.07    0.196      4.407
Qmax(1) =
         1.000 *    1.000 *     1.325) +
         0.974 *    1.000 *     0.985) + =       2.285
Qmax(2) =
         1.027 *    0.958 *     1.325) +
         1.000 *    1.000 *     0.985) + =       2.290

Total of 2 streams to confluence:
Flow rates before confluence point:
       1.325       0.985
Maximum flow rates at confluence using above data:
        2.285        2.290
Area of streams before confluence:
        0.350        0.260
Effective area values after confluence:
        0.610        0.595
Results of confluence:
Total flow rate =      2.290(CFS)
Time of concentration =     5.066 min.
Effective stream area after confluence =      0.595(Ac.)
Study area average Pervious fraction(Ap) =  0.200
Study area average soil loss rate(Fm) =    0.196(In/Hr)
Study area total (this main stream) =       0.61(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      204.000 to Point/Station      211.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =    27.000(Ft.)
Downstream point/station elevation =    16.000(Ft.)
Pipe length  =    31.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.290(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     2.290(CFS)
Normal flow depth in pipe =    3.64(In.)
Flow top width inside pipe =    5.86(In.)
Critical depth could not be calculated.
Pipe flow velocity =     18.33(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =     5.09 min.


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Process from Point/Station      204.000 to Point/Station      211.000
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**** CONFLUENCE OF MAIN STREAMS ****
_____________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      0.595(Ac.)
Runoff from this stream =      2.290(CFS)
Time of concentration =    5.09 min.
Rainfall intensity =     4.392(In/Hr)
Area averaged loss rate (Fm) =    0.1956(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      205.000 to Point/Station      206.000
**** INITIAL AREA EVALUATION ****
_____________________________________________________________________________
RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.2000     Max loss rate(Fm)=     0.196(In/Hr)
Initial subarea data:
Initial area flow distance =   136.000(Ft.)
Top (of initial area) elevation =    32.000(Ft.)
Bottom (of initial area) elevation =    26.000(Ft.)
Difference in elevation =     6.000(Ft.)
Slope =    0.04412  s(%)=       4.41
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    4.316 min.
Rainfall intensity =      4.851(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.864
Subarea runoff =      1.508(CFS)
Total initial stream area =        0.360(Ac.)
Pervious area fraction = 0.200
Initial area Fm value =    0.196(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      206.000 to Point/Station      211.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
_____________________________________________________________________________
Upstream point/station elevation =    21.000(Ft.)
Downstream point/station elevation =    16.000(Ft.)
Pipe length  =    11.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.508(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     1.508(CFS)
Normal flow depth in pipe =    2.64(In.)
Flow top width inside pipe =    5.96(In.)
Critical depth could not be calculated.
Pipe flow velocity =     18.18(Ft/s)
Travel time through pipe =    0.01 min.
Time of concentration (TC) =     4.33 min.


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Process from Point/Station      206.000 to Point/Station      211.000
**** CONFLUENCE OF MAIN STREAMS ****
____________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      0.360(Ac.)
Runoff from this stream =      1.508(CFS)
Time of concentration =    4.33 min.
Rainfall intensity =     4.845(In/Hr)
Area averaged loss rate (Fm) =    0.1956(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Program is now starting with Main Stream No. 3


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      207.000 to Point/Station      208.000
**** INITIAL AREA EVALUATION ****
____________________________________________________________________________
RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.2000     Max loss rate(Fm)=     0.196(In/Hr)
Initial subarea data:
Initial area flow distance =   173.000(Ft.)
Top (of initial area) elevation =    33.000(Ft.)
Bottom (of initial area) elevation =    27.000(Ft.)
Difference in elevation =     6.000(Ft.)
Slope =    0.03468  s(%)=       3.47
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    4.986 min.
Rainfall intensity =      4.449(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.860
Subarea runoff =      1.569(CFS)
Total initial stream area =        0.410(Ac.)
Pervious area fraction = 0.200
Initial area Fm value =    0.196(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      208.000 to Point/Station      211.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
____________________________________________________________________________
Upstream point/station elevation =    22.000(Ft.)
Downstream point/station elevation =    16.000(Ft.)
Pipe length  =     7.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.569(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     1.569(CFS)
Normal flow depth in pipe =    2.26(In.)
Flow top width inside pipe =    5.82(In.)
Critical depth could not be calculated.
Pipe flow velocity =     23.17(Ft/s)
Travel time through pipe =    0.01 min.
Time of concentration (TC) =     4.99 min.
```

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++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      208.000 to Point/Station      211.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =      0.410(Ac.)
Runoff from this stream =      1.569(CFS)
Time of concentration =    4.99 min.
Rainfall intensity =     4.446(In/Hr)
Area averaged loss rate (Fm) =    0.1956(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Program is now starting with Main Stream No. 4


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      209.000 to Point/Station      210.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.2000     Max loss rate(Fm)=     0.196(In/Hr)
Initial subarea data:
Initial area flow distance =   277.000(Ft.)
Top (of initial area) elevation =    38.000(Ft.)
Bottom (of initial area) elevation =    28.000(Ft.)
Difference in elevation =    10.000(Ft.)
Slope =    0.03610  s(%)=       3.61
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.971 min.
Rainfall intensity =      3.993(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.856
Subarea runoff =      1.572(CFS)
Total initial stream area =        0.460(Ac.)
Pervious area fraction = 0.200
Initial area Fm value =    0.196(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      210.000 to Point/Station      211.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =    23.000(Ft.)
Downstream point/station elevation =    16.000(Ft.)
Pipe length  =    68.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.572(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     1.572(CFS)
Normal flow depth in pipe =    4.34(In.)
Flow top width inside pipe =    5.37(In.)
Critical depth could not be calculated.
Pipe flow velocity =     10.33(Ft/s)
Travel time through pipe =    0.11 min.
Time of concentration (TC) =     6.08 min.
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      210.000 to Point/Station      211.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 4
Stream flow area =      0.460(Ac.)
Runoff from this stream =      1.572(CFS)
Time of concentration =    6.08 min.
Rainfall intensity =     3.949(In/Hr)
Area averaged loss rate (Fm) =    0.1956(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Summary of stream data:

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


1      2.29     0.595      5.09    0.196      4.392
2      1.51     0.360      4.33    0.196      4.845
3      1.57     0.410      4.99    0.196      4.446
4      1.57     0.460      6.08    0.196      3.949
Qmax(1) =
          1.000 *    1.000 *     2.290) +
          0.903 *    1.000 *     1.508) +
          0.987 *    1.000 *     1.569) +
          1.118 *    0.838 *     1.572) + =       6.673
Qmax(2) =
          1.108 *    0.849 *     2.290) +
          1.000 *    1.000 *     1.508) +
          1.094 *    0.867 *     1.569) +
          1.238 *    0.711 *     1.572) + =       6.536
Qmax(3) =
          1.013 *    0.980 *     2.290) +
          0.914 *    1.000 *     1.508) +
          1.000 *    1.000 *     1.569) +
          1.132 *    0.821 *     1.572) + =       6.683
Qmax(4) =
          0.895 *    1.000 *     2.290) +
          0.807 *    1.000 *     1.508) +
          0.883 *    1.000 *     1.569) +
          1.000 *    1.000 *     1.572) + =       6.225

Total of 4 main streams to confluence:
Flow rates before confluence point:
       3.290       2.508       2.569       2.572
Maximum flow rates at confluence using above data:
        6.673       6.536       6.683       6.225
Area of streams before confluence:
        0.595       0.360       0.410       0.460
Effective area values after confluence:
        1.751       1.548       1.731       1.825


Results of confluence:
Total flow rate =      6.683(CFS)
Time of concentration =     4.991 min.
Effective stream area after confluence  =      1.731(Ac.)
```

```
Study area average Pervious fraction(Ap) =  0.200
Study area average soil loss rate(Fm) =    0.196(In/Hr)
Study area total =       1.83(Ac.)
End of computations, Total Study Area =            1.84 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.200
Area averaged SCS curve number =  32.0
```

APPENDIX B.7: RATIONAL METHOD ANALYSIS, AREA B, 25-YEAR

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2014 Version 9.0
Rational Hydrology Study Date: 04/28/25

320.05 BUFFALO GROVE
POST-PROJECT RATIONAL METHOD
AREA B; 25-YEAR

Program License Serial Number 6279

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

Rational hydrology study storm event year is 25.0
Computed rainfall intensity:
Storm year = 25.00 1 hour rainfall = 1.230 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 201.000 to Point/Station 202.000
**** INITIAL AREA EVALUATION ****

RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 32.00
Pervious ratio(Ap) = 0.2000 Max loss rate(Fm)= 0.196(In/Hr)
Initial subarea data:
Initial area flow distance = 178.000(Ft.)
Top (of initial area) elevation = 37.000(Ft.)
Bottom (of initial area) elevation = 31.000(Ft.)
Difference in elevation = 6.000(Ft.)
Slope = 0.03371 s(%)= 3.37
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 5.072 min.
Rainfall intensity = 5.416(In/Hr) for a 25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.868
Subarea runoff = 1.645(CFS)
Total initial stream area = 0.350(Ac.)
Pervious area fraction = 0.200
Initial area Fm value = 0.196(In/Hr)

++
Process from Point/Station 202.000 to Point/Station 204.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

```
Upstream point/station elevation =    26.000(Ft.)
Downstream point/station elevation =    22.000(Ft.)
Pipe length  =    93.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.645(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     1.645(CFS)
Normal flow depth in pipe =    4.39(In.)
Flow top width inside pipe =    9.00(In.)
Critical Depth =    7.07(In.)
Pipe flow velocity =      7.68(Ft/s)
Travel time through pipe =    0.20 min.
Time of concentration (TC) =     5.27 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      202.000 to Point/Station      204.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      0.350(Ac.)
Runoff from this stream =      1.645(CFS)
Time of concentration =    5.27 min.
Rainfall intensity =     5.291(In/Hr)
Area averaged loss rate (Fm) =    0.1956(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      203.000 to Point/Station      204.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.2000     Max loss rate(Fm)=     0.196(In/Hr)
Initial subarea data:
Initial area flow distance =   187.000(Ft.)
Top (of initial area) elevation =    34.000(Ft.)
Bottom (of initial area) elevation =    27.000(Ft.)
Difference in elevation =     7.000(Ft.)
Slope =    0.03743  s(%)=       3.74
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.066 min.
Rainfall intensity =      5.420(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.868
Subarea runoff =      1.223(CFS)
Total initial stream area =        0.260(Ac.)
Pervious area fraction = 0.200
Initial area Fm value =    0.196(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      203.000 to Point/Station      204.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
```

```
Stream flow area =      0.260(Ac.)
Runoff from this stream =      1.223(CFS)
Time of concentration =    5.07 min.
Rainfall intensity =     5.420(In/Hr)
Area averaged loss rate (Fm) =    0.1956(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Summary of stream data:

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


1      1.64     0.350      5.27    0.196      5.291
2      1.22     0.260      5.07    0.196      5.420
Qmax(1) =
         1.000 *    1.000 *     1.645) +
         0.975 *    1.000 *     1.223) + =       2.837
Qmax(2) =
         1.025 *    0.961 *     1.645) +
         1.000 *    1.000 *     1.223) + =       2.842

Total of 2 streams to confluence:
Flow rates before confluence point:
       1.645       1.223
Maximum flow rates at confluence using above data:
        2.837        2.842
Area of streams before confluence:
        0.350        0.260
Effective area values after confluence:
        0.610        0.596
Results of confluence:
Total flow rate =      2.842(CFS)
Time of concentration =     5.066 min.
Effective stream area after confluence =      0.596(Ac.)
Study area average Pervious fraction(Ap) =  0.200
Study area average soil loss rate(Fm) =    0.196(In/Hr)
Study area total (this main stream) =       0.61(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      204.000 to Point/Station      211.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =    27.000(Ft.)
Downstream point/station elevation =    16.000(Ft.)
Pipe length  =    31.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.842(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     2.842(CFS)
Normal flow depth in pipe =    4.25(In.)
Flow top width inside pipe =    5.45(In.)
Critical depth could not be calculated.
Pipe flow velocity =     19.11(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =     5.09 min.


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Process from Point/Station      204.000 to Point/Station      211.000
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**** CONFLUENCE OF MAIN STREAMS ****
_____________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      0.596(Ac.)
Runoff from this stream =      2.842(CFS)
Time of concentration =    5.09 min.
Rainfall intensity =     5.403(In/Hr)
Area averaged loss rate (Fm) =    0.1956(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      205.000 to Point/Station      206.000
**** INITIAL AREA EVALUATION ****
_____________________________________________________________________________
RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.2000     Max loss rate(Fm)=     0.196(In/Hr)
Initial subarea data:
Initial area flow distance =   136.000(Ft.)
Top (of initial area) elevation =    32.000(Ft.)
Bottom (of initial area) elevation =    26.000(Ft.)
Difference in elevation =     6.000(Ft.)
Slope =    0.04412  s(%)=       4.41
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    4.316 min.
Rainfall intensity =      5.967(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.871
Subarea runoff =      1.870(CFS)
Total initial stream area =        0.360(Ac.)
Pervious area fraction = 0.200
Initial area Fm value =    0.196(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      206.000 to Point/Station      211.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
_____________________________________________________________________________
Upstream point/station elevation =    21.000(Ft.)
Downstream point/station elevation =    16.000(Ft.)
Pipe length  =    11.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.870(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     1.870(CFS)
Normal flow depth in pipe =    2.98(In.)
Flow top width inside pipe =    6.00(In.)
Critical depth could not be calculated.
Pipe flow velocity =     19.22(Ft/s)
Travel time through pipe =    0.01 min.
Time of concentration (TC) =     4.33 min.


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Process from Point/Station      206.000 to Point/Station      211.000
**** CONFLUENCE OF MAIN STREAMS ****
____________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      0.360(Ac.)
Runoff from this stream =      1.870(CFS)
Time of concentration =    4.33 min.
Rainfall intensity =     5.959(In/Hr)
Area averaged loss rate (Fm) =    0.1956(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Program is now starting with Main Stream No. 3


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      207.000 to Point/Station      208.000
**** INITIAL AREA EVALUATION ****
____________________________________________________________________________
RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.2000     Max loss rate(Fm)=     0.196(In/Hr)
Initial subarea data:
Initial area flow distance =   173.000(Ft.)
Top (of initial area) elevation =    33.000(Ft.)
Bottom (of initial area) elevation =    27.000(Ft.)
Difference in elevation =     6.000(Ft.)
Slope =    0.03468  s(%)=       3.47
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    4.986 min.
Rainfall intensity =      5.472(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.868
Subarea runoff =      1.947(CFS)
Total initial stream area =        0.410(Ac.)
Pervious area fraction = 0.200
Initial area Fm value =    0.196(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      208.000 to Point/Station      211.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
____________________________________________________________________________
Upstream point/station elevation =    22.000(Ft.)
Downstream point/station elevation =    16.000(Ft.)
Pipe length  =     7.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.947(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     1.947(CFS)
Normal flow depth in pipe =    2.54(In.)
Flow top width inside pipe =    5.93(In.)
Critical depth could not be calculated.
Pipe flow velocity =     24.56(Ft/s)
Travel time through pipe =    0.00 min.
Time of concentration (TC) =     4.99 min.
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Process from Point/Station      208.000 to Point/Station      211.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =      0.410(Ac.)
Runoff from this stream =      1.947(CFS)
Time of concentration =    4.99 min.
Rainfall intensity =     5.469(In/Hr)
Area averaged loss rate (Fm) =    0.1956(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Program is now starting with Main Stream No. 4


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      209.000 to Point/Station      210.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.2000     Max loss rate(Fm)=     0.196(In/Hr)
Initial subarea data:
Initial area flow distance =   277.000(Ft.)
Top (of initial area) elevation =    38.000(Ft.)
Bottom (of initial area) elevation =    28.000(Ft.)
Difference in elevation =    10.000(Ft.)
Slope =    0.03610  s(%)=       3.61
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.971 min.
Rainfall intensity =      4.911(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.864
Subarea runoff =      1.952(CFS)
Total initial stream area =        0.460(Ac.)
Pervious area fraction = 0.200
Initial area Fm value =    0.196(In/Hr)


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Process from Point/Station      210.000 to Point/Station      211.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =    23.000(Ft.)
Downstream point/station elevation =    16.000(Ft.)
Pipe length  =    68.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.952(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     1.952(CFS)
Normal flow depth in pipe =    3.78(In.)
Flow top width inside pipe =    8.88(In.)
Critical Depth =    7.63(In.)
Pipe flow velocity =     11.10(Ft/s)
Travel time through pipe =    0.10 min.
Time of concentration (TC) =     6.07 min.
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Process from Point/Station      210.000 to Point/Station      211.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 4
Stream flow area =      0.460(Ac.)
Runoff from this stream =      1.952(CFS)
Time of concentration =    6.07 min.
Rainfall intensity =     4.861(In/Hr)
Area averaged loss rate (Fm) =    0.1956(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Summary of stream data:

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


1      2.84     0.596      5.09    0.196      5.403
2      1.87     0.360      4.33    0.196      5.959
3      1.95     0.410      4.99    0.196      5.469
4      1.95     0.460      6.07    0.196      4.861
Qmax(1) =
          1.000 *    1.000 *     2.842) +
          0.903 *    1.000 *     1.870) +
          0.987 *    1.000 *     1.947) +
          1.116 *    0.839 *     1.952) + =       8.282
Qmax(2) =
          1.107 *    0.849 *     2.842) +
          1.000 *    1.000 *     1.870) +
          1.093 *    0.867 *     1.947) +
          1.235 *    0.712 *     1.952) + =       8.104
Qmax(3) =
          1.013 *    0.980 *     2.842) +
          0.915 *    1.000 *     1.870) +
          1.000 *    1.000 *     1.947) +
          1.130 *    0.822 *     1.952) + =       8.292
Qmax(4) =
          0.896 *    1.000 *     2.842) +
          0.810 *    1.000 *     1.870) +
          0.885 *    1.000 *     1.947) +
          1.000 *    1.000 *     1.952) + =       7.735

Total of 4 main streams to confluence:
Flow rates before confluence point:
       3.842       2.870       2.947       2.952
Maximum flow rates at confluence using above data:
        8.282        8.104        8.292        7.735
Area of streams before confluence:
        0.596        0.360        0.410        0.460
Effective area values after confluence:
        1.752        1.549        1.732        1.826


Results of confluence:
Total flow rate =      8.292(CFS)
Time of concentration =     4.991 min.
Effective stream area after confluence  =      1.732(Ac.)
```

```
Study area average Pervious fraction(Ap) =  0.200
Study area average soil loss rate(Fm) =    0.196(In/Hr)
Study area total =       1.83(Ac.)
End of computations, Total Study Area =            1.84 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.200
Area averaged SCS curve number =  32.0
```

APPENDIX B.8: RATIONAL METHOD ANALYSIS, AREA B, 100-YEAR

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2014 Version 9.0
Rational Hydrology Study Date: 04/28/25

320.05 BUFFALO GROVE
POST-PROJECT RATIONAL METHOD
AREA B; 100-YEAR

Program License Serial Number 6279

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

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.610 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 3

++
Process from Point/Station 201.000 to Point/Station 202.000
**** INITIAL AREA EVALUATION ****

RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 32.00
Adjusted SCS curve number for AMC 3 = 52.00
Pervious ratio(Ap) = 0.2000 Max loss rate(Fm)= 0.157(In/Hr)
Initial subarea data:
Initial area flow distance = 178.000(Ft.)
Top (of initial area) elevation = 37.000(Ft.)
Bottom (of initial area) elevation = 31.000(Ft.)
Difference in elevation = 6.000(Ft.)
Slope = 0.03371 s(%)= 3.37
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 5.072 min.
Rainfall intensity = 7.090(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.880
Subarea runoff = 2.184(CFS)
Total initial stream area = 0.350(Ac.)
Pervious area fraction = 0.200
Initial area Fm value = 0.157(In/Hr)

++
Process from Point/Station 202.000 to Point/Station 204.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

```
Upstream point/station elevation =    26.000(Ft.)
Downstream point/station elevation =    22.000(Ft.)
Pipe length  =    93.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.184(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     2.184(CFS)
Normal flow depth in pipe =    5.21(In.)
Flow top width inside pipe =    8.89(In.)
Critical Depth =    7.97(In.)
Pipe flow velocity =      8.23(Ft/s)
Travel time through pipe =    0.19 min.
Time of concentration (TC) =     5.26 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      202.000 to Point/Station      204.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      0.350(Ac.)
Runoff from this stream =      2.184(CFS)
Time of concentration =    5.26 min.
Rainfall intensity =     6.936(In/Hr)
Area averaged loss rate (Fm) =    0.1570(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      203.000 to Point/Station      204.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Adjusted SCS curve number for AMC 3 = 52.00
Pervious ratio(Ap) = 0.2000     Max loss rate(Fm)=     0.157(In/Hr)
Initial subarea data:
Initial area flow distance =   187.000(Ft.)
Top (of initial area) elevation =    34.000(Ft.)
Bottom (of initial area) elevation =    27.000(Ft.)
Difference in elevation =     7.000(Ft.)
Slope =    0.03743  s(%)=       3.74
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.066 min.
Rainfall intensity =      7.095(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.880
Subarea runoff =      1.623(CFS)
Total initial stream area =        0.260(Ac.)
Pervious area fraction = 0.200
Initial area Fm value =    0.157(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      203.000 to Point/Station      204.000
**** CONFLUENCE OF MINOR STREAMS ****
```

```
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.260(Ac.)
Runoff from this stream =      1.623(CFS)
Time of concentration =    5.07 min.
Rainfall intensity =     7.095(In/Hr)
Area averaged loss rate (Fm) =    0.1570(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Summary of stream data:

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


1      2.18     0.350      5.26    0.157      6.936
2      1.62     0.260      5.07    0.157      7.095
Qmax(1) =
         1.000 *    1.000 *     2.184) +
         0.977 *    1.000 *     1.623) + =       3.770
Qmax(2) =
         1.023 *    0.963 *     2.184) +
         1.000 *    1.000 *     1.623) + =       3.776

Total of 2 streams to confluence:
Flow rates before confluence point:
       2.184       1.623
Maximum flow rates at confluence using above data:
        3.770        3.776
Area of streams before confluence:
        0.350        0.260
Effective area values after confluence:
        0.610        0.597
Results of confluence:
Total flow rate =      3.776(CFS)
Time of concentration =     5.066 min.
Effective stream area after confluence =      0.597(Ac.)
Study area average Pervious fraction(Ap) =  0.200
Study area average soil loss rate(Fm) =    0.157(In/Hr)
Study area total (this main stream) =       0.61(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      204.000 to Point/Station      211.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------
Upstream point/station elevation =    27.000(Ft.)
Downstream point/station elevation =    16.000(Ft.)
Pipe length  =    31.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     3.776(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     3.776(CFS)
Normal flow depth in pipe =    3.86(In.)
Flow top width inside pipe =    8.91(In.)
Critical depth could not be calculated.
Pipe flow velocity =     20.83(Ft/s)
Travel time through pipe =    0.02 min.
Time of concentration (TC) =     5.09 min.
```

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++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      204.000 to Point/Station      211.000
**** CONFLUENCE OF MAIN STREAMS ****
_____________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      0.597(Ac.)
Runoff from this stream =      3.776(CFS)
Time of concentration =    5.09 min.
Rainfall intensity =     7.074(In/Hr)
Area averaged loss rate (Fm) =    0.1570(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      205.000 to Point/Station      206.000
**** INITIAL AREA EVALUATION ****
_____________________________________________________________________________
RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Adjusted SCS curve number for AMC 3 = 52.00
Pervious ratio(Ap) = 0.2000     Max loss rate(Fm)=     0.157(In/Hr)
Initial subarea data:
Initial area flow distance =   136.000(Ft.)
Top (of initial area) elevation =    32.000(Ft.)
Bottom (of initial area) elevation =    26.000(Ft.)
Difference in elevation =     6.000(Ft.)
Slope =    0.04412  s(%)=       4.41
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    4.316 min.
Rainfall intensity =      7.811(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.882
Subarea runoff =      2.480(CFS)
Total initial stream area =        0.360(Ac.)
Pervious area fraction = 0.200
Initial area Fm value =    0.157(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      206.000 to Point/Station      211.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
_____________________________________________________________________________
Upstream point/station elevation =    21.000(Ft.)
Downstream point/station elevation =    16.000(Ft.)
Pipe length  =    11.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.480(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     2.480(CFS)
Normal flow depth in pipe =    3.54(In.)
Flow top width inside pipe =    5.90(In.)
Critical depth could not be calculated.
Pipe flow velocity =     20.55(Ft/s)
Travel time through pipe =    0.01 min.
Time of concentration (TC) =     4.32 min.
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      206.000 to Point/Station      211.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      0.360(Ac.)
Runoff from this stream =      2.480(CFS)
Time of concentration =    4.32 min.
Rainfall intensity =     7.801(In/Hr)
Area averaged loss rate (Fm) =    0.1570(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Program is now starting with Main Stream No. 3


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      207.000 to Point/Station      208.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Adjusted SCS curve number for AMC 3 = 52.00
Pervious ratio(Ap) = 0.2000     Max loss rate(Fm)=     0.157(In/Hr)
Initial subarea data:
Initial area flow distance =   173.000(Ft.)
Top (of initial area) elevation =    33.000(Ft.)
Bottom (of initial area) elevation =    27.000(Ft.)
Difference in elevation =     6.000(Ft.)
Slope =    0.03468  s(%)=       3.47
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    4.986 min.
Rainfall intensity =      7.163(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.880
Subarea runoff =      2.585(CFS)
Total initial stream area =        0.410(Ac.)
Pervious area fraction = 0.200
Initial area Fm value =    0.157(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      208.000 to Point/Station      211.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =    22.000(Ft.)
Downstream point/station elevation =    16.000(Ft.)
Pipe length  =     7.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.585(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     2.585(CFS)
Normal flow depth in pipe =    2.99(In.)
Flow top width inside pipe =    6.00(In.)
Critical depth could not be calculated.
Pipe flow velocity =     26.43(Ft/s)
```

```
Travel time through pipe =    0.00 min.
Time of concentration (TC) =     4.99 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      208.000 to Point/Station      211.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =      0.410(Ac.)
Runoff from this stream =      2.585(CFS)
Time of concentration =    4.99 min.
Rainfall intensity =     7.159(In/Hr)
Area averaged loss rate (Fm) =    0.1570(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Program is now starting with Main Stream No. 4


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      209.000 to Point/Station      210.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
RESIDENTIAL(11+ dwl/acre)
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Adjusted SCS curve number for AMC 3 = 52.00
Pervious ratio(Ap) = 0.2000     Max loss rate(Fm)=     0.157(In/Hr)
Initial subarea data:
Initial area flow distance =   277.000(Ft.)
Top (of initial area) elevation =    38.000(Ft.)
Bottom (of initial area) elevation =    28.000(Ft.)
Difference in elevation =    10.000(Ft.)
Slope =    0.03610  s(%)=       3.61
TC = k(0.324)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.971 min.
Rainfall intensity =      6.428(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.878
Subarea runoff =      2.596(CFS)
Total initial stream area =        0.460(Ac.)
Pervious area fraction = 0.200
Initial area Fm value =    0.157(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      210.000 to Point/Station      211.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =    23.000(Ft.)
Downstream point/station elevation =    16.000(Ft.)
Pipe length  =    68.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.596(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     2.596(CFS)
Normal flow depth in pipe =    4.44(In.)
Flow top width inside pipe =    9.00(In.)
```

```
Critical Depth =    8.39(In.)
Pipe flow velocity =     11.95(Ft/s)
Travel time through pipe =    0.09 min.
Time of concentration (TC) =     6.07 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      210.000 to Point/Station      211.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 4
Stream flow area =      0.460(Ac.)
Runoff from this stream =      2.596(CFS)
Time of concentration =    6.07 min.
Rainfall intensity =     6.368(In/Hr)
Area averaged loss rate (Fm) =    0.1570(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2000
Summary of stream data:

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


1      3.78     0.597      5.09    0.157      7.074
2      2.48     0.360      4.32    0.157      7.801
3      2.59     0.410      4.99    0.157      7.159
4      2.60     0.460      6.07    0.157      6.368
Qmax(1) =
         1.000 *    1.000 *     3.776) +
         0.905 *    1.000 *     2.480) +
         0.988 *    1.000 *     2.585) +
         1.114 *    0.839 *     2.596) + =      11.000
Qmax(2) =
         1.105 *    0.850 *     3.776) +
         1.000 *    1.000 *     2.480) +
         1.092 *    0.867 *     2.585) +
         1.231 *    0.713 *     2.596) + =      10.748
Qmax(3) =
         1.012 *    0.980 *     3.776) +
         0.916 *    1.000 *     2.480) +
         1.000 *    1.000 *     2.585) +
         1.127 *    0.823 *     2.596) + =      11.011
Qmax(4) =
         0.898 *    1.000 *     3.776) +
         0.812 *    1.000 *     2.480) +
         0.887 *    1.000 *     2.585) +
         1.000 *    1.000 *     2.596) + =      10.294

Total of 4 main streams to confluence:
Flow rates before confluence point:
       4.776       3.480       3.585       3.596
Maximum flow rates at confluence using above data:
       11.000      10.748      11.011      10.294
Area of streams before confluence:
        0.597       0.360       0.410       0.460
Effective area values after confluence:
        1.753       1.550       1.734       1.827
```

```
Results of confluence:
Total flow rate =     11.011(CFS)
Time of concentration =     4.990 min.
Effective stream area after confluence  =      1.734(Ac.)
Study area average Pervious fraction(Ap) =  0.200
Study area average soil loss rate(Fm) =    0.157(In/Hr)
Study area total =       1.83(Ac.)
End of computations, Total Study Area =            1.84 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.200
Area averaged SCS curve number =  32.0
```

APPENDIX C: PROPOSED CONDITION UNIT HYDROGRAPH CALCULATIONS

APPENDIX C.1: UNIT HYDROGRAPH ANALYSIS, AREA A, 2-YEAR

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2014, Version 9.0

Study date 04/28/25

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San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6279

320.05 BUFFALO GROVE
UNIT HYDROGRAPH; AREA A
POST-PROJECT
2-YR, 24-HR

Storm Event Year = 2

Antecedent Moisture Condition = 1

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 2		
2.48	1	0.63
Rainfall data for year 2		
2.48	6	1.71
Rainfall data for year 2		
2.48	24	3.23

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 1)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
34.3	18.4	2.48	1.000	1.000	0.250	0.250

Area-averaged adjusted loss rate Fm (In/Hr) = 0.250

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC1)	S	Pervious Yield Fr
0.62	0.250	34.3	18.4	16.15	0.000
1.86	0.750	98.0	98.0	0.20	0.928

Area-averaged catchment yield fraction, Y = 0.696
Area-averaged low loss fraction, Yb = 0.304
User entry of time of concentration = 0.088 (hours)
++
Watershed area = 2.48(Ac.)
Catchment Lag time = 0.070 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 118.3712
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.250(In/Hr)
Average low loss rate fraction (Yb) = 0.304 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.233(In)
Computed peak 30-minute rainfall = 0.477(In)
Specified peak 1-hour rainfall = 0.630(In)
Computed peak 3-hour rainfall = 1.162(In)
Specified peak 6-hour rainfall = 1.710(In)
Specified peak 24-hour rainfall = 3.230(In)

Rainfall depth area reduction factors:
Using a total area of 2.48(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.233(In)
30-minute factor = 1.000 Adjusted rainfall = 0.477(In)
1-hour factor = 1.000 Adjusted rainfall = 0.630(In)
3-hour factor = 1.000 Adjusted rainfall = 1.162(In)
6-hour factor = 1.000 Adjusted rainfall = 1.710(In)
24-hour factor = 1.000 Adjusted rainfall = 3.230(In)

U n i t H y d r o g r a p h
++

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 29.99 (CFS))	
1	23.492	7.046
2	88.061	19.366
3	100.000	3.581

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2331	0.2331
2	0.3076	0.0745
3	0.3618	0.0542
4	0.4059	0.0441
5	0.4438	0.0379
6	0.4774	0.0336
7	0.5078	0.0304

8	0.5356	0.0279
9	0.5615	0.0258
10	0.5856	0.0242
11	0.6084	0.0228
12	0.6299	0.0215
13	0.6587	0.0287
14	0.6864	0.0278
15	0.7134	0.0269
16	0.7395	0.0261
17	0.7649	0.0254
18	0.7897	0.0248
19	0.8138	0.0242
20	0.8374	0.0236
21	0.8605	0.0231
22	0.8831	0.0226
23	0.9053	0.0222
24	0.9270	0.0217
25	0.9483	0.0213
26	0.9693	0.0210
27	0.9899	0.0206
28	1.0102	0.0203
29	1.0301	0.0200
30	1.0498	0.0197
31	1.0691	0.0194
32	1.0882	0.0191
33	1.1070	0.0188
34	1.1256	0.0186
35	1.1440	0.0183
36	1.1621	0.0181
37	1.1799	0.0179
38	1.1976	0.0177
39	1.2151	0.0175
40	1.2323	0.0173
41	1.2494	0.0171
42	1.2663	0.0169
43	1.2830	0.0167
44	1.2996	0.0165
45	1.3159	0.0164
46	1.3322	0.0162
47	1.3482	0.0161
48	1.3641	0.0159
49	1.3799	0.0158
50	1.3955	0.0156
51	1.4110	0.0155
52	1.4264	0.0154
53	1.4416	0.0152
54	1.4567	0.0151
55	1.4717	0.0150
56	1.4865	0.0149
57	1.5012	0.0147
58	1.5159	0.0146
59	1.5304	0.0145
60	1.5448	0.0144
61	1.5591	0.0143
62	1.5733	0.0142
63	1.5874	0.0141
64	1.6013	0.0140
65	1.6152	0.0139
66	1.6290	0.0138

67	1.6428	0.0137
68	1.6564	0.0136
69	1.6699	0.0135
70	1.6834	0.0134
71	1.6967	0.0134
72	1.7100	0.0133
73	1.7208	0.0109
74	1.7316	0.0108
75	1.7423	0.0107
76	1.7529	0.0106
77	1.7635	0.0105
78	1.7739	0.0105
79	1.7843	0.0104
80	1.7947	0.0103
81	1.8049	0.0103
82	1.8151	0.0102
83	1.8252	0.0101
84	1.8353	0.0101
85	1.8453	0.0100
86	1.8552	0.0099
87	1.8651	0.0099
88	1.8749	0.0098
89	1.8846	0.0097
90	1.8943	0.0097
91	1.9039	0.0096
92	1.9135	0.0096
93	1.9230	0.0095
94	1.9325	0.0095
95	1.9419	0.0094
96	1.9512	0.0094
97	1.9605	0.0093
98	1.9698	0.0092
99	1.9790	0.0092
100	1.9881	0.0091
101	1.9972	0.0091
102	2.0063	0.0090
103	2.0153	0.0090
104	2.0242	0.0090
105	2.0331	0.0089
106	2.0420	0.0089
107	2.0508	0.0088
108	2.0596	0.0088
109	2.0683	0.0087
110	2.0770	0.0087
111	2.0856	0.0086
112	2.0942	0.0086
113	2.1028	0.0086
114	2.1113	0.0085
115	2.1198	0.0085
116	2.1282	0.0084
117	2.1366	0.0084
118	2.1450	0.0084
119	2.1533	0.0083
120	2.1616	0.0083
121	2.1698	0.0082
122	2.1780	0.0082
123	2.1862	0.0082
124	2.1943	0.0081
125	2.2024	0.0081

126	2.2105	0.0081
127	2.2185	0.0080
128	2.2265	0.0080
129	2.2345	0.0080
130	2.2424	0.0079
131	2.2503	0.0079
132	2.2582	0.0079
133	2.2660	0.0078
134	2.2738	0.0078
135	2.2816	0.0078
136	2.2893	0.0077
137	2.2970	0.0077
138	2.3047	0.0077
139	2.3124	0.0076
140	2.3200	0.0076
141	2.3276	0.0076
142	2.3351	0.0076
143	2.3427	0.0075
144	2.3502	0.0075
145	2.3576	0.0075
146	2.3651	0.0074
147	2.3725	0.0074
148	2.3799	0.0074
149	2.3872	0.0074
150	2.3946	0.0073
151	2.4019	0.0073
152	2.4092	0.0073
153	2.4164	0.0073
154	2.4237	0.0072
155	2.4309	0.0072
156	2.4381	0.0072
157	2.4452	0.0072
158	2.4524	0.0071
159	2.4595	0.0071
160	2.4665	0.0071
161	2.4736	0.0071
162	2.4806	0.0070
163	2.4877	0.0070
164	2.4946	0.0070
165	2.5016	0.0070
166	2.5086	0.0069
167	2.5155	0.0069
168	2.5224	0.0069
169	2.5293	0.0069
170	2.5361	0.0069
171	2.5429	0.0068
172	2.5498	0.0068
173	2.5565	0.0068
174	2.5633	0.0068
175	2.5701	0.0067
176	2.5768	0.0067
177	2.5835	0.0067
178	2.5902	0.0067
179	2.5968	0.0067
180	2.6035	0.0066
181	2.6101	0.0066
182	2.6167	0.0066
183	2.6233	0.0066
184	2.6299	0.0066

185	2.6364	0.0065
186	2.6430	0.0065
187	2.6495	0.0065
188	2.6560	0.0065
189	2.6624	0.0065
190	2.6689	0.0065
191	2.6753	0.0064
192	2.6817	0.0064
193	2.6881	0.0064
194	2.6945	0.0064
195	2.7009	0.0064
196	2.7072	0.0063
197	2.7135	0.0063
198	2.7199	0.0063
199	2.7262	0.0063
200	2.7324	0.0063
201	2.7387	0.0063
202	2.7449	0.0062
203	2.7512	0.0062
204	2.7574	0.0062
205	2.7636	0.0062
206	2.7697	0.0062
207	2.7759	0.0062
208	2.7820	0.0061
209	2.7882	0.0061
210	2.7943	0.0061
211	2.8004	0.0061
212	2.8065	0.0061
213	2.8125	0.0061
214	2.8186	0.0061
215	2.8246	0.0060
216	2.8306	0.0060
217	2.8366	0.0060
218	2.8426	0.0060
219	2.8486	0.0060
220	2.8546	0.0060
221	2.8605	0.0059
222	2.8664	0.0059
223	2.8723	0.0059
224	2.8783	0.0059
225	2.8841	0.0059
226	2.8900	0.0059
227	2.8959	0.0059
228	2.9017	0.0058
229	2.9075	0.0058
230	2.9134	0.0058
231	2.9192	0.0058
232	2.9250	0.0058
233	2.9307	0.0058
234	2.9365	0.0058
235	2.9423	0.0058
236	2.9480	0.0057
237	2.9537	0.0057
238	2.9594	0.0057
239	2.9651	0.0057
240	2.9708	0.0057
241	2.9765	0.0057
242	2.9821	0.0057
243	2.9878	0.0056

244	2.9934	0.0056
245	2.9990	0.0056
246	3.0047	0.0056
247	3.0103	0.0056
248	3.0158	0.0056
249	3.0214	0.0056
250	3.0270	0.0056
251	3.0325	0.0055
252	3.0381	0.0055
253	3.0436	0.0055
254	3.0491	0.0055
255	3.0546	0.0055
256	3.0601	0.0055
257	3.0656	0.0055
258	3.0710	0.0055
259	3.0765	0.0055
260	3.0819	0.0054
261	3.0874	0.0054
262	3.0928	0.0054
263	3.0982	0.0054
264	3.1036	0.0054
265	3.1090	0.0054
266	3.1144	0.0054
267	3.1197	0.0054
268	3.1251	0.0054
269	3.1304	0.0053
270	3.1358	0.0053
271	3.1411	0.0053
272	3.1464	0.0053
273	3.1517	0.0053
274	3.1570	0.0053
275	3.1623	0.0053
276	3.1675	0.0053
277	3.1728	0.0053
278	3.1780	0.0052
279	3.1833	0.0052
280	3.1885	0.0052
281	3.1937	0.0052
282	3.1989	0.0052
283	3.2041	0.0052
284	3.2093	0.0052
285	3.2145	0.0052
286	3.2197	0.0052
287	3.2248	0.0052
288	3.2300	0.0052

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0052	0.0016	0.0036
2	0.0052	0.0016	0.0036
3	0.0052	0.0016	0.0036
4	0.0052	0.0016	0.0036
5	0.0052	0.0016	0.0036
6	0.0052	0.0016	0.0036
7	0.0052	0.0016	0.0036
8	0.0052	0.0016	0.0037
9	0.0053	0.0016	0.0037

10	0.0053	0.0016	0.0037
11	0.0053	0.0016	0.0037
12	0.0053	0.0016	0.0037
13	0.0053	0.0016	0.0037
14	0.0053	0.0016	0.0037
15	0.0054	0.0016	0.0037
16	0.0054	0.0016	0.0037
17	0.0054	0.0016	0.0038
18	0.0054	0.0016	0.0038
19	0.0054	0.0017	0.0038
20	0.0054	0.0017	0.0038
21	0.0055	0.0017	0.0038
22	0.0055	0.0017	0.0038
23	0.0055	0.0017	0.0038
24	0.0055	0.0017	0.0038
25	0.0055	0.0017	0.0039
26	0.0055	0.0017	0.0039
27	0.0056	0.0017	0.0039
28	0.0056	0.0017	0.0039
29	0.0056	0.0017	0.0039
30	0.0056	0.0017	0.0039
31	0.0056	0.0017	0.0039
32	0.0057	0.0017	0.0039
33	0.0057	0.0017	0.0040
34	0.0057	0.0017	0.0040
35	0.0057	0.0017	0.0040
36	0.0057	0.0017	0.0040
37	0.0058	0.0018	0.0040
38	0.0058	0.0018	0.0040
39	0.0058	0.0018	0.0040
40	0.0058	0.0018	0.0040
41	0.0058	0.0018	0.0041
42	0.0059	0.0018	0.0041
43	0.0059	0.0018	0.0041
44	0.0059	0.0018	0.0041
45	0.0059	0.0018	0.0041
46	0.0059	0.0018	0.0041
47	0.0060	0.0018	0.0042
48	0.0060	0.0018	0.0042
49	0.0060	0.0018	0.0042
50	0.0060	0.0018	0.0042
51	0.0061	0.0018	0.0042
52	0.0061	0.0018	0.0042
53	0.0061	0.0019	0.0043
54	0.0061	0.0019	0.0043
55	0.0062	0.0019	0.0043
56	0.0062	0.0019	0.0043
57	0.0062	0.0019	0.0043
58	0.0062	0.0019	0.0043
59	0.0063	0.0019	0.0044
60	0.0063	0.0019	0.0044
61	0.0063	0.0019	0.0044
62	0.0063	0.0019	0.0044
63	0.0064	0.0019	0.0044
64	0.0064	0.0019	0.0044
65	0.0064	0.0020	0.0045
66	0.0064	0.0020	0.0045
67	0.0065	0.0020	0.0045
68	0.0065	0.0020	0.0045

69	0.0065	0.0020	0.0045
70	0.0065	0.0020	0.0046
71	0.0066	0.0020	0.0046
72	0.0066	0.0020	0.0046
73	0.0066	0.0020	0.0046
74	0.0067	0.0020	0.0046
75	0.0067	0.0020	0.0047
76	0.0067	0.0020	0.0047
77	0.0068	0.0021	0.0047
78	0.0068	0.0021	0.0047
79	0.0068	0.0021	0.0048
80	0.0069	0.0021	0.0048
81	0.0069	0.0021	0.0048
82	0.0069	0.0021	0.0048
83	0.0070	0.0021	0.0048
84	0.0070	0.0021	0.0049
85	0.0070	0.0021	0.0049
86	0.0071	0.0021	0.0049
87	0.0071	0.0022	0.0049
88	0.0071	0.0022	0.0050
89	0.0072	0.0022	0.0050
90	0.0072	0.0022	0.0050
91	0.0073	0.0022	0.0051
92	0.0073	0.0022	0.0051
93	0.0073	0.0022	0.0051
94	0.0074	0.0022	0.0051
95	0.0074	0.0023	0.0052
96	0.0074	0.0023	0.0052
97	0.0075	0.0023	0.0052
98	0.0075	0.0023	0.0052
99	0.0076	0.0023	0.0053
100	0.0076	0.0023	0.0053
101	0.0077	0.0023	0.0053
102	0.0077	0.0023	0.0054
103	0.0078	0.0024	0.0054
104	0.0078	0.0024	0.0054
105	0.0079	0.0024	0.0055
106	0.0079	0.0024	0.0055
107	0.0080	0.0024	0.0055
108	0.0080	0.0024	0.0056
109	0.0081	0.0025	0.0056
110	0.0081	0.0025	0.0056
111	0.0082	0.0025	0.0057
112	0.0082	0.0025	0.0057
113	0.0083	0.0025	0.0058
114	0.0083	0.0025	0.0058
115	0.0084	0.0026	0.0058
116	0.0084	0.0026	0.0059
117	0.0085	0.0026	0.0059
118	0.0086	0.0026	0.0060
119	0.0086	0.0026	0.0060
120	0.0087	0.0026	0.0060
121	0.0088	0.0027	0.0061
122	0.0088	0.0027	0.0061
123	0.0089	0.0027	0.0062
124	0.0090	0.0027	0.0062
125	0.0090	0.0028	0.0063
126	0.0091	0.0028	0.0063
127	0.0092	0.0028	0.0064

128	0.0092	0.0028	0.0064
129	0.0094	0.0028	0.0065
130	0.0094	0.0029	0.0065
131	0.0095	0.0029	0.0066
132	0.0096	0.0029	0.0067
133	0.0097	0.0029	0.0067
134	0.0097	0.0030	0.0068
135	0.0099	0.0030	0.0069
136	0.0099	0.0030	0.0069
137	0.0101	0.0031	0.0070
138	0.0101	0.0031	0.0070
139	0.0103	0.0031	0.0071
140	0.0103	0.0031	0.0072
141	0.0105	0.0032	0.0073
142	0.0105	0.0032	0.0073
143	0.0107	0.0033	0.0074
144	0.0108	0.0033	0.0075
145	0.0133	0.0040	0.0092
146	0.0134	0.0041	0.0093
147	0.0135	0.0041	0.0094
148	0.0136	0.0041	0.0095
149	0.0138	0.0042	0.0096
150	0.0139	0.0042	0.0097
151	0.0141	0.0043	0.0098
152	0.0142	0.0043	0.0099
153	0.0144	0.0044	0.0100
154	0.0145	0.0044	0.0101
155	0.0147	0.0045	0.0103
156	0.0149	0.0045	0.0103
157	0.0151	0.0046	0.0105
158	0.0152	0.0046	0.0106
159	0.0155	0.0047	0.0108
160	0.0156	0.0047	0.0109
161	0.0159	0.0048	0.0111
162	0.0161	0.0049	0.0112
163	0.0164	0.0050	0.0114
164	0.0165	0.0050	0.0115
165	0.0169	0.0051	0.0118
166	0.0171	0.0052	0.0119
167	0.0175	0.0053	0.0122
168	0.0177	0.0054	0.0123
169	0.0181	0.0055	0.0126
170	0.0183	0.0056	0.0128
171	0.0188	0.0057	0.0131
172	0.0191	0.0058	0.0133
173	0.0197	0.0060	0.0137
174	0.0200	0.0061	0.0139
175	0.0206	0.0063	0.0143
176	0.0210	0.0064	0.0146
177	0.0217	0.0066	0.0151
178	0.0222	0.0067	0.0154
179	0.0231	0.0070	0.0161
180	0.0236	0.0072	0.0164
181	0.0248	0.0075	0.0172
182	0.0254	0.0077	0.0177
183	0.0269	0.0082	0.0187
184	0.0278	0.0084	0.0193
185	0.0215	0.0066	0.0150
186	0.0228	0.0069	0.0158

187	0.0258	0.0079	0.0180
188	0.0279	0.0085	0.0194
189	0.0336	0.0102	0.0234
190	0.0379	0.0115	0.0264
191	0.0542	0.0165	0.0377
192	0.0745	0.0208	0.0537
193	0.2331	0.0208	0.2123
194	0.0441	0.0134	0.0307
195	0.0304	0.0092	0.0211
196	0.0242	0.0073	0.0168
197	0.0287	0.0087	0.0200
198	0.0261	0.0079	0.0182
199	0.0242	0.0073	0.0168
200	0.0226	0.0069	0.0157
201	0.0213	0.0065	0.0148
202	0.0203	0.0062	0.0141
203	0.0194	0.0059	0.0135
204	0.0186	0.0056	0.0129
205	0.0179	0.0054	0.0124
206	0.0173	0.0052	0.0120
207	0.0167	0.0051	0.0116
208	0.0162	0.0049	0.0113
209	0.0158	0.0048	0.0110
210	0.0154	0.0047	0.0107
211	0.0150	0.0046	0.0104
212	0.0146	0.0044	0.0102
213	0.0143	0.0043	0.0099
214	0.0140	0.0043	0.0097
215	0.0137	0.0042	0.0095
216	0.0134	0.0041	0.0094
217	0.0109	0.0033	0.0076
218	0.0106	0.0032	0.0074
219	0.0104	0.0032	0.0072
220	0.0102	0.0031	0.0071
221	0.0100	0.0030	0.0070
222	0.0098	0.0030	0.0068
223	0.0096	0.0029	0.0067
224	0.0095	0.0029	0.0066
225	0.0093	0.0028	0.0065
226	0.0091	0.0028	0.0064
227	0.0090	0.0027	0.0063
228	0.0089	0.0027	0.0062
229	0.0087	0.0027	0.0061
230	0.0086	0.0026	0.0060
231	0.0085	0.0026	0.0059
232	0.0084	0.0025	0.0058
233	0.0082	0.0025	0.0057
234	0.0081	0.0025	0.0057
235	0.0080	0.0024	0.0056
236	0.0079	0.0024	0.0055
237	0.0078	0.0024	0.0055
238	0.0077	0.0024	0.0054
239	0.0076	0.0023	0.0053
240	0.0076	0.0023	0.0053
241	0.0075	0.0023	0.0052
242	0.0074	0.0022	0.0051
243	0.0073	0.0022	0.0051
244	0.0072	0.0022	0.0050
245	0.0072	0.0022	0.0050

246	0.0071	0.0022	0.0049
247	0.0070	0.0021	0.0049
248	0.0069	0.0021	0.0048
249	0.0069	0.0021	0.0048
250	0.0068	0.0021	0.0047
251	0.0067	0.0021	0.0047
252	0.0067	0.0020	0.0047
253	0.0066	0.0020	0.0046
254	0.0066	0.0020	0.0046
255	0.0065	0.0020	0.0045
256	0.0065	0.0020	0.0045
257	0.0064	0.0019	0.0045
258	0.0063	0.0019	0.0044
259	0.0063	0.0019	0.0044
260	0.0062	0.0019	0.0043
261	0.0062	0.0019	0.0043
262	0.0061	0.0019	0.0043
263	0.0061	0.0019	0.0042
264	0.0061	0.0018	0.0042
265	0.0060	0.0018	0.0042
266	0.0060	0.0018	0.0041
267	0.0059	0.0018	0.0041
268	0.0059	0.0018	0.0041
269	0.0058	0.0018	0.0041
270	0.0058	0.0018	0.0040
271	0.0058	0.0017	0.0040
272	0.0057	0.0017	0.0040
273	0.0057	0.0017	0.0039
274	0.0056	0.0017	0.0039
275	0.0056	0.0017	0.0039
276	0.0056	0.0017	0.0039
277	0.0055	0.0017	0.0038
278	0.0055	0.0017	0.0038
279	0.0055	0.0017	0.0038
280	0.0054	0.0016	0.0038
281	0.0054	0.0016	0.0037
282	0.0054	0.0016	0.0037
283	0.0053	0.0016	0.0037
284	0.0053	0.0016	0.0037
285	0.0053	0.0016	0.0037
286	0.0052	0.0016	0.0036
287	0.0052	0.0016	0.0036
288	0.0052	0.0016	0.0036

Total soil rain loss = 0.93(In)
Total effective rainfall = 2.30(In)
Peak flow rate in flood hydrograph = 4.52(CFS)

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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0002	0.03	Q	|	|	|	|

0+10	0.0008	0.09	Q	|	|	|	|
0+15	0.0016	0.11	Q	|	|	|	|
0+20	0.0023	0.11	Q	|	|	|	|
0+25	0.0031	0.11	Q	|	|	|	|
0+30	0.0038	0.11	Q	|	|	|	|
0+35	0.0046	0.11	Q	|	|	|	|
0+40	0.0053	0.11	Q	|	|	|	|
0+45	0.0061	0.11	Q	|	|	|	|
0+50	0.0068	0.11	Q	|	|	|	|
0+55	0.0076	0.11	Q	|	|	|	|
1+ 0	0.0083	0.11	Q	|	|	|	|
1+ 5	0.0091	0.11	Q	|	|	|	|
1+10	0.0099	0.11	Q	|	|	|	|
1+15	0.0106	0.11	Q	|	|	|	|
1+20	0.0114	0.11	Q	|	|	|	|
1+25	0.0122	0.11	QV	|	|	|	|
1+30	0.0130	0.11	QV	|	|	|	|
1+35	0.0137	0.11	QV	|	|	|	|
1+40	0.0145	0.11	QV	|	|	|	|
1+45	0.0153	0.11	QV	|	|	|	|
1+50	0.0161	0.11	QV	|	|	|	|
1+55	0.0169	0.11	QV	|	|	|	|
2+ 0	0.0177	0.11	QV	|	|	|	|
2+ 5	0.0185	0.12	QV	|	|	|	|
2+10	0.0193	0.12	QV	|	|	|	|
2+15	0.0201	0.12	QV	|	|	|	|
2+20	0.0209	0.12	QV	|	|	|	|
2+25	0.0217	0.12	QV	|	|	|	|
2+30	0.0225	0.12	QV	|	|	|	|
2+35	0.0233	0.12	QV	|	|	|	|
2+40	0.0241	0.12	Q V	|	|	|	|
2+45	0.0249	0.12	Q V	|	|	|	|
2+50	0.0257	0.12	Q V	|	|	|	|
2+55	0.0265	0.12	Q V	|	|	|	|
3+ 0	0.0274	0.12	Q V	|	|	|	|
3+ 5	0.0282	0.12	Q V	|	|	|	|
3+10	0.0290	0.12	Q V	|	|	|	|
3+15	0.0299	0.12	Q V	|	|	|	|
3+20	0.0307	0.12	Q V	|	|	|	|
3+25	0.0315	0.12	Q V	|	|	|	|
3+30	0.0324	0.12	Q V	|	|	|	|
3+35	0.0332	0.12	Q V	|	|	|	|
3+40	0.0341	0.12	Q V	|	|	|	|
3+45	0.0349	0.12	Q V	|	|	|	|
3+50	0.0358	0.12	Q V	|	|	|	|
3+55	0.0366	0.12	Q V	|	|	|	|
4+ 0	0.0375	0.12	Q V	|	|	|	|
4+ 5	0.0383	0.13	Q V	|	|	|	|
4+10	0.0392	0.13	Q V	|	|	|	|
4+15	0.0401	0.13	Q V	|	|	|	|
4+20	0.0409	0.13	Q V	|	|	|	|
4+25	0.0418	0.13	Q V	|	|	|	|
4+30	0.0427	0.13	Q V	|	|	|	|
4+35	0.0436	0.13	Q V	|	|	|	|
4+40	0.0445	0.13	Q V	|	|	|	|
4+45	0.0454	0.13	Q V	|	|	|	|
4+50	0.0462	0.13	Q V	|	|	|	|
4+55	0.0471	0.13	Q V	|	|	|	|
5+ 0	0.0480	0.13	Q V	|	|	|	|

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5+ 5       0.0489      0.13  Q   V     |          |          |          |
5+10       0.0498      0.13  Q   V     |          |          |          |
5+15       0.0508      0.13  Q   V     |          |          |          |
5+20       0.0517      0.13  Q   V     |          |          |          |
5+25       0.0526      0.13  Q   V     |          |          |          |
5+30       0.0535      0.13  Q   V     |          |          |          |
5+35       0.0544      0.13  Q   V     |          |          |          |
5+40       0.0554      0.14  Q   V     |          |          |          |
5+45       0.0563      0.14  Q   V     |          |          |          |
5+50       0.0572      0.14  Q   V     |          |          |          |
5+55       0.0582      0.14  Q   V     |          |          |          |
6+ 0       0.0591      0.14  Q   V     |          |          |          |
6+ 5       0.0601      0.14  Q    V    |          |          |          |
6+10       0.0610      0.14  Q    V    |          |          |          |
6+15       0.0620      0.14  Q    V    |          |          |          |
6+20       0.0630      0.14  Q    V    |          |          |          |
6+25       0.0639      0.14  Q    V    |          |          |          |
6+30       0.0649      0.14  Q    V    |          |          |          |
6+35       0.0659      0.14  Q    V    |          |          |          |
6+40       0.0669      0.14  Q    V    |          |          |          |
6+45       0.0679      0.14  Q    V    |          |          |          |
6+50       0.0688      0.14  Q    V    |          |          |          |
6+55       0.0698      0.14  Q    V    |          |          |          |
7+ 0       0.0708      0.15  Q    V    |          |          |          |
7+ 5       0.0718      0.15  Q     V   |          |          |          |
7+10       0.0729      0.15  Q     V   |          |          |          |
7+15       0.0739      0.15  Q     V   |          |          |          |
7+20       0.0749      0.15  Q     V   |          |          |          |
7+25       0.0759      0.15  Q     V   |          |          |          |
7+30       0.0770      0.15  Q     V   |          |          |          |
7+35       0.0780      0.15  Q     V   |          |          |          |
7+40       0.0790      0.15  Q     V   |          |          |          |
7+45       0.0801      0.15  Q     V   |          |          |          |
7+50       0.0811      0.15  Q     V   |          |          |          |
7+55       0.0822      0.15  Q     V   |          |          |          |
8+ 0       0.0833      0.15  Q      V  |          |          |          |
8+ 5       0.0843      0.16  Q      V  |          |          |          |
8+10       0.0854      0.16  Q      V  |          |          |          |
8+15       0.0865      0.16  Q      V  |          |          |          |
8+20       0.0876      0.16  Q      V  |          |          |          |
8+25       0.0887      0.16  Q      V  |          |          |          |
8+30       0.0898      0.16  Q      V  |          |          |          |
8+35       0.0909      0.16  Q      V  |          |          |          |
8+40       0.0920      0.16  Q      V  |          |          |          |
8+45       0.0931      0.16  Q      V  |          |          |          |
8+50       0.0943      0.16  Q      V  |          |          |          |
8+55       0.0954      0.17  Q       V |          |          |          |
9+ 0       0.0966      0.17  Q       V |          |          |          |
9+ 5       0.0977      0.17  Q       V |          |          |          |
9+10       0.0989      0.17  Q       V |          |          |          |
9+15       0.1000      0.17  Q       V |          |          |          |
9+20       0.1012      0.17  Q       V |          |          |          |
9+25       0.1024      0.17  Q       V |          |          |          |
9+30       0.1036      0.17  Q       V |          |          |          |
9+35       0.1048      0.17  Q       V |          |          |          |
9+40       0.1060      0.18  Q       V |          |          |          |
9+45       0.1072      0.18  Q        V|          |          |          |
9+50       0.1084      0.18  Q        V|          |          |          |
9+55       0.1097      0.18  Q        V|          |          |          |
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10+ 0       0.1109      0.18  Q        V|          |          |          |
10+ 5       0.1121      0.18  Q        V|          |          |          |
10+10       0.1134      0.18  Q        V|          |          |          |
10+15       0.1147      0.18  Q        V|          |          |          |
10+20       0.1160      0.19  Q        V|          |          |          |
10+25       0.1172      0.19  Q        V|          |          |          |
10+30       0.1185      0.19  Q        V|          |          |          |
10+35       0.1199      0.19  Q         V          |          |          |
10+40       0.1212      0.19  Q         V          |          |          |
10+45       0.1225      0.19  Q         V          |          |          |
10+50       0.1239      0.20  Q         V          |          |          |
10+55       0.1252      0.20  Q         V          |          |          |
11+ 0       0.1266      0.20  Q         V          |          |          |
11+ 5       0.1280      0.20  Q         V          |          |          |
11+10       0.1294      0.20  Q         V          |          |          |
11+15       0.1308      0.20  Q         |V         |          |          |
11+20       0.1322      0.21  Q         |V         |          |          |
11+25       0.1336      0.21  Q         |V         |          |          |
11+30       0.1351      0.21  Q         |V         |          |          |
11+35       0.1365      0.21  Q         |V         |          |          |
11+40       0.1380      0.21  Q         |V         |          |          |
11+45       0.1395      0.22  Q         |V         |          |          |
11+50       0.1410      0.22  Q         |V         |          |          |
11+55       0.1425      0.22  Q         |V         |          |          |
12+ 0       0.1440      0.22  Q         | V        |          |          |
12+ 5       0.1457      0.24  Q         | V        |          |          |
12+10       0.1475      0.27  |Q        | V        |          |          |
12+15       0.1495      0.28  |Q        | V        |          |          |
12+20       0.1514      0.28  |Q        | V        |          |          |
12+25       0.1534      0.28  |Q        | V        |          |          |
12+30       0.1554      0.29  |Q        |  V       |          |          |
12+35       0.1574      0.29  |Q        |  V       |          |          |
12+40       0.1594      0.29  |Q        |  V       |          |          |
12+45       0.1614      0.30  |Q        |  V       |          |          |
12+50       0.1635      0.30  |Q        |  V       |          |          |
12+55       0.1656      0.30  |Q        |  V       |          |          |
13+ 0       0.1677      0.31  |Q        |   V      |          |          |
13+ 5       0.1698      0.31  |Q        |   V      |          |          |
13+10       0.1720      0.32  |Q        |   V      |          |          |
13+15       0.1742      0.32  |Q        |   V      |          |          |
13+20       0.1764      0.32  |Q        |   V      |          |          |
13+25       0.1787      0.33  |Q        |    V     |          |          |
13+30       0.1810      0.33  |Q        |    V     |          |          |
13+35       0.1833      0.34  |Q        |    V     |          |          |
13+40       0.1857      0.34  |Q        |    V     |          |          |
13+45       0.1880      0.35  |Q        |    V     |          |          |
13+50       0.1905      0.35  |Q        |     V    |          |          |
13+55       0.1929      0.36  |Q        |     V    |          |          |
14+ 0       0.1954      0.36  |Q        |     V    |          |          |
14+ 5       0.1980      0.37  |Q        |     V    |          |          |
14+10       0.2006      0.38  |Q        |     V    |          |          |
14+15       0.2032      0.38  |Q        |      V   |          |          |
14+20       0.2060      0.39  |Q        |      V   |          |          |
14+25       0.2087      0.40  |Q        |      V   |          |          |
14+30       0.2115      0.41  |Q        |      V   |          |          |
14+35       0.2144      0.42  |Q        |       V  |          |          |
14+40       0.2174      0.43  |Q        |       V  |          |          |
14+45       0.2204      0.44  |Q        |       V  |          |          |
14+50       0.2235      0.45  |Q        |       V  |          |          |
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14+55       0.2268      0.47  |Q         |         V|          |          |
15+ 0       0.2301      0.48  |Q         |         V|          |          |
15+ 5       0.2335      0.50  |Q         |         V|          |          |
15+10       0.2371      0.52  | Q        |         V|          |          |
15+15       0.2408      0.54  | Q        |          V          |          |
15+20       0.2446      0.56  | Q        |          V          |          |
15+25       0.2484      0.55  | Q        |          V          |          |
15+30       0.2516      0.47  |Q         |          |V         |          |
15+35       0.2550      0.49  |Q         |          |V         |          |
15+40       0.2587      0.54  | Q        |          |V         |          |
15+45       0.2629      0.60  | Q        |          | V        |          |
15+50       0.2678      0.71  | Q        |          | V        |          |
15+55       0.2737      0.86  |  Q       |          |  V       |          |
16+ 0       0.2820      1.20  |   Q      |          |  V       |          |
16+ 5       0.3004      2.67  |          Q          |    V     |          |
16+10       0.3315      4.52  |          |        Q |       V  |          |
16+15       0.3418      1.50  |     Q    |          |        V |          |
16+20       0.3462      0.64  | Q        |          |         V|          |
16+25       0.3500      0.54  | Q        |          |         V|          |
16+30       0.3539      0.58  | Q        |          |         V|          |
16+35       0.3577      0.54  | Q        |          |          V          |
16+40       0.3611      0.50  | Q        |          |          V          |
16+45       0.3644      0.47  |Q         |          |          V          |
16+50       0.3674      0.44  |Q         |          |          V          |
16+55       0.3703      0.42  |Q         |          |          |V         |
17+ 0       0.3731      0.40  |Q         |          |          |V         |
17+ 5       0.3757      0.39  |Q         |          |          |V         |
17+10       0.3783      0.37  |Q         |          |          |V         |
17+15       0.3808      0.36  |Q         |          |          | V        |
17+20       0.3832      0.35  |Q         |          |          | V        |
17+25       0.3855      0.34  |Q         |          |          | V        |
17+30       0.3878      0.33  |Q         |          |          | V        |
17+35       0.3900      0.32  |Q         |          |          | V        |
17+40       0.3921      0.31  |Q         |          |          |  V       |
17+45       0.3942      0.30  |Q         |          |          |  V       |
17+50       0.3963      0.30  |Q         |          |          |  V       |
17+55       0.3983      0.29  |Q         |          |          |  V       |
18+ 0       0.4002      0.29  |Q         |          |          |  V       |
18+ 5       0.4021      0.27  |Q         |          |          |  V       |
18+10       0.4037      0.23  Q          |          |          |  V       |
18+15       0.4052      0.22  Q          |          |          |   V      |
18+20       0.4067      0.22  Q          |          |          |   V      |
18+25       0.4082      0.21  Q          |          |          |   V      |
18+30       0.4096      0.21  Q          |          |          |   V      |
18+35       0.4110      0.20  Q          |          |          |   V      |
18+40       0.4124      0.20  Q          |          |          |   V      |
18+45       0.4137      0.20  Q          |          |          |   V      |
18+50       0.4151      0.19  Q          |          |          |   V      |
18+55       0.4164      0.19  Q          |          |          |    V     |
19+ 0       0.4177      0.19  Q          |          |          |    V     |
19+ 5       0.4189      0.18  Q          |          |          |    V     |
19+10       0.4202      0.18  Q          |          |          |    V     |
19+15       0.4214      0.18  Q          |          |          |    V     |
19+20       0.4226      0.18  Q          |          |          |    V     |
19+25       0.4238      0.17  Q          |          |          |    V     |
19+30       0.4250      0.17  Q          |          |          |    V     |
19+35       0.4262      0.17  Q          |          |          |    V     |
19+40       0.4274      0.17  Q          |          |          |    V     |
19+45       0.4285      0.17  Q          |          |          |     V    |
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  19+50       0.4296      0.16  Q          |          |          |      V   |
  19+55       0.4307      0.16  Q          |          |          |      V   |
  20+ 0       0.4318      0.16  Q          |          |          |      V   |
  20+ 5       0.4329      0.16  Q          |          |          |      V   |
  20+10       0.4340      0.16  Q          |          |          |      V   |
  20+15       0.4350      0.15  Q          |          |          |      V   |
  20+20       0.4361      0.15  Q          |          |          |      V   |
  20+25       0.4371      0.15  Q          |          |          |      V   |
  20+30       0.4382      0.15  Q          |          |          |      V   |
  20+35       0.4392      0.15  Q          |          |          |      V   |
  20+40       0.4402      0.15  Q          |          |          |       V  |
  20+45       0.4412      0.14  Q          |          |          |       V  |
  20+50       0.4422      0.14  Q          |          |          |       V  |
  20+55       0.4431      0.14  Q          |          |          |       V  |
  21+ 0       0.4441      0.14  Q          |          |          |       V  |
  21+ 5       0.4451      0.14  Q          |          |          |       V  |
  21+10       0.4460      0.14  Q          |          |          |       V  |
  21+15       0.4470      0.14  Q          |          |          |       V  |
  21+20       0.4479      0.14  Q          |          |          |       V  |
  21+25       0.4488      0.13  Q          |          |          |       V  |
  21+30       0.4498      0.13  Q          |          |          |       V  |
  21+35       0.4507      0.13  Q          |          |          |       V  |
  21+40       0.4516      0.13  Q          |          |          |        V |
  21+45       0.4525      0.13  Q          |          |          |        V |
  21+50       0.4534      0.13  Q          |          |          |        V |
  21+55       0.4542      0.13  Q          |          |          |        V |
  22+ 0       0.4551      0.13  Q          |          |          |        V |
  22+ 5       0.4560      0.13  Q          |          |          |        V |
  22+10       0.4568      0.13  Q          |          |          |        V |
  22+15       0.4577      0.12  Q          |          |          |        V |
  22+20       0.4586      0.12  Q          |          |          |        V |
  22+25       0.4594      0.12  Q          |          |          |        V |
  22+30       0.4602      0.12  Q          |          |          |        V |
  22+35       0.4611      0.12  Q          |          |          |        V |
  22+40       0.4619      0.12  Q          |          |          |        V |
  22+45       0.4627      0.12  Q          |          |          |        V |
  22+50       0.4635      0.12  Q          |          |          |         V|
  22+55       0.4643      0.12  Q          |          |          |         V|
  23+ 0       0.4651      0.12  Q          |          |          |         V|
  23+ 5       0.4659      0.12  Q          |          |          |         V|
  23+10       0.4667      0.12  Q          |          |          |         V|
  23+15       0.4675      0.11  Q          |          |          |         V|
  23+20       0.4683      0.11  Q          |          |          |         V|
  23+25       0.4691      0.11  Q          |          |          |         V|
  23+30       0.4699      0.11  Q          |          |          |         V|
  23+35       0.4706      0.11  Q          |          |          |         V|
  23+40       0.4714      0.11  Q          |          |          |         V|
  23+45       0.4722      0.11  Q          |          |          |         V|
  23+50       0.4729      0.11  Q          |          |          |         V|
  23+55       0.4737      0.11  Q          |          |          |         V|
  24+ 0       0.4744      0.11  Q          |          |          |         V|
  24+ 5       0.4750      0.08  Q          |          |          |         V|
  24+10       0.4751      0.01  Q          |          |          |          V
-------------------------------------------------------------------------
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APPENDIX C.2: UNIT HYDROGRAPH ANALYSIS, AREA A, 10-YEAR

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2014, Version 9.0

Study date 04/28/25

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San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6279

320.05 BUFFALO GROVE
UNIT HYDROGRAPH; AREA A
POST-PROJECT
10-YR, 24-HR

Storm Event Year = 10

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
2.48	1	1.00
Rainfall data for year 10		
2.48	6	2.64
Rainfall data for year 10		
2.48	24	5.13

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
34.3	34.3	2.48	1.000	0.963	0.250	0.241

Area-averaged adjusted loss rate Fm (In/Hr) = 0.241

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
0.62	0.250	34.3	34.3	19.15	0.016
1.86	0.750	98.0	98.0	0.20	0.954

Area-averaged catchment yield fraction, Y = 0.719
Area-averaged low loss fraction, Yb = 0.281
User entry of time of concentration = 0.088 (hours)
++
Watershed area = 2.48(Ac.)
Catchment Lag time = 0.070 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 118.3712
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.241(In/Hr)
Average low loss rate fraction (Yb) = 0.281 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.370(In)
Computed peak 30-minute rainfall = 0.758(In)
Specified peak 1-hour rainfall = 1.000(In)
Computed peak 3-hour rainfall = 1.813(In)
Specified peak 6-hour rainfall = 2.640(In)
Specified peak 24-hour rainfall = 5.130(In)

Rainfall depth area reduction factors:
Using a total area of 2.48(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.370(In)
30-minute factor = 1.000 Adjusted rainfall = 0.758(In)
1-hour factor = 1.000 Adjusted rainfall = 1.000(In)
3-hour factor = 1.000 Adjusted rainfall = 1.813(In)
6-hour factor = 1.000 Adjusted rainfall = 2.640(In)
24-hour factor = 1.000 Adjusted rainfall = 5.130(In)

U n i t H y d r o g r a p h
++

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 29.99 (CFS))	
1	23.492	7.046
2	88.061	19.366
3	100.000	3.581

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.3701	0.3701
2	0.4883	0.1182
3	0.5743	0.0860
4	0.6443	0.0700
5	0.7045	0.0602
6	0.7578	0.0533
7	0.8060	0.0482

8	0.8502	0.0442
9	0.8912	0.0410
10	0.9296	0.0384
11	0.9657	0.0361
12	0.9999	0.0342
13	1.0442	0.0443
14	1.0870	0.0428
15	1.1284	0.0414
16	1.1686	0.0402
17	1.2076	0.0390
18	1.2456	0.0380
19	1.2826	0.0370
20	1.3188	0.0362
21	1.3541	0.0353
22	1.3887	0.0346
23	1.4225	0.0339
24	1.4557	0.0332
25	1.4883	0.0326
26	1.5202	0.0320
27	1.5517	0.0314
28	1.5825	0.0309
29	1.6129	0.0304
30	1.6428	0.0299
31	1.6723	0.0295
32	1.7013	0.0290
33	1.7299	0.0286
34	1.7581	0.0282
35	1.7859	0.0278
36	1.8134	0.0275
37	1.8405	0.0271
38	1.8673	0.0268
39	1.8938	0.0265
40	1.9200	0.0262
41	1.9458	0.0259
42	1.9714	0.0256
43	1.9967	0.0253
44	2.0217	0.0250
45	2.0465	0.0248
46	2.0710	0.0245
47	2.0953	0.0243
48	2.1193	0.0240
49	2.1431	0.0238
50	2.1667	0.0236
51	2.1901	0.0234
52	2.2132	0.0232
53	2.2362	0.0230
54	2.2590	0.0228
55	2.2815	0.0226
56	2.3039	0.0224
57	2.3261	0.0222
58	2.3481	0.0220
59	2.3700	0.0218
60	2.3917	0.0217
61	2.4132	0.0215
62	2.4345	0.0214
63	2.4557	0.0212
64	2.4768	0.0210
65	2.4977	0.0209
66	2.5184	0.0207

67	2.5390	0.0206
68	2.5595	0.0205
69	2.5798	0.0203
70	2.6000	0.0202
71	2.6200	0.0201
72	2.6400	0.0199
73	2.6575	0.0175
74	2.6749	0.0174
75	2.6921	0.0173
76	2.7093	0.0171
77	2.7263	0.0170
78	2.7432	0.0169
79	2.7600	0.0168
80	2.7767	0.0167
81	2.7933	0.0166
82	2.8097	0.0165
83	2.8261	0.0164
84	2.8424	0.0163
85	2.8585	0.0162
86	2.8746	0.0161
87	2.8906	0.0160
88	2.9065	0.0159
89	2.9222	0.0158
90	2.9379	0.0157
91	2.9535	0.0156
92	2.9690	0.0155
93	2.9845	0.0154
94	2.9998	0.0153
95	3.0150	0.0153
96	3.0302	0.0152
97	3.0453	0.0151
98	3.0603	0.0150
99	3.0752	0.0149
100	3.0901	0.0148
101	3.1048	0.0148
102	3.1195	0.0147
103	3.1342	0.0146
104	3.1487	0.0145
105	3.1632	0.0145
106	3.1776	0.0144
107	3.1919	0.0143
108	3.2062	0.0143
109	3.2204	0.0142
110	3.2345	0.0141
111	3.2485	0.0141
112	3.2625	0.0140
113	3.2765	0.0139
114	3.2903	0.0139
115	3.3041	0.0138
116	3.3179	0.0137
117	3.3315	0.0137
118	3.3452	0.0136
119	3.3587	0.0136
120	3.3722	0.0135
121	3.3856	0.0134
122	3.3990	0.0134
123	3.4123	0.0133
124	3.4256	0.0133
125	3.4388	0.0132

126	3.4520	0.0132
127	3.4651	0.0131
128	3.4781	0.0130
129	3.4911	0.0130
130	3.5041	0.0129
131	3.5170	0.0129
132	3.5298	0.0128
133	3.5426	0.0128
134	3.5553	0.0127
135	3.5680	0.0127
136	3.5807	0.0126
137	3.5932	0.0126
138	3.6058	0.0125
139	3.6183	0.0125
140	3.6307	0.0125
141	3.6431	0.0124
142	3.6555	0.0124
143	3.6678	0.0123
144	3.6801	0.0123
145	3.6923	0.0122
146	3.7045	0.0122
147	3.7166	0.0121
148	3.7287	0.0121
149	3.7408	0.0121
150	3.7528	0.0120
151	3.7648	0.0120
152	3.7767	0.0119
153	3.7886	0.0119
154	3.8004	0.0118
155	3.8122	0.0118
156	3.8240	0.0118
157	3.8357	0.0117
158	3.8474	0.0117
159	3.8591	0.0117
160	3.8707	0.0116
161	3.8822	0.0116
162	3.8938	0.0115
163	3.9053	0.0115
164	3.9167	0.0115
165	3.9282	0.0114
166	3.9396	0.0114
167	3.9509	0.0114
168	3.9622	0.0113
169	3.9735	0.0113
170	3.9848	0.0112
171	3.9960	0.0112
172	4.0072	0.0112
173	4.0183	0.0111
174	4.0294	0.0111
175	4.0405	0.0111
176	4.0516	0.0110
177	4.0626	0.0110
178	4.0736	0.0110
179	4.0845	0.0110
180	4.0954	0.0109
181	4.1063	0.0109
182	4.1172	0.0109
183	4.1280	0.0108
184	4.1388	0.0108

185	4.1496	0.0108
186	4.1603	0.0107
187	4.1710	0.0107
188	4.1817	0.0107
189	4.1923	0.0106
190	4.2029	0.0106
191	4.2135	0.0106
192	4.2241	0.0106
193	4.2346	0.0105
194	4.2451	0.0105
195	4.2556	0.0105
196	4.2660	0.0104
197	4.2764	0.0104
198	4.2868	0.0104
199	4.2972	0.0104
200	4.3075	0.0103
201	4.3178	0.0103
202	4.3281	0.0103
203	4.3384	0.0103
204	4.3486	0.0102
205	4.3588	0.0102
206	4.3690	0.0102
207	4.3791	0.0102
208	4.3892	0.0101
209	4.3993	0.0101
210	4.4094	0.0101
211	4.4195	0.0100
212	4.4295	0.0100
213	4.4395	0.0100
214	4.4495	0.0100
215	4.4594	0.0100
216	4.4693	0.0099
217	4.4792	0.0099
218	4.4891	0.0099
219	4.4990	0.0099
220	4.5088	0.0098
221	4.5186	0.0098
222	4.5284	0.0098
223	4.5382	0.0098
224	4.5479	0.0097
225	4.5576	0.0097
226	4.5673	0.0097
227	4.5770	0.0097
228	4.5867	0.0097
229	4.5963	0.0096
230	4.6059	0.0096
231	4.6155	0.0096
232	4.6250	0.0096
233	4.6346	0.0095
234	4.6441	0.0095
235	4.6536	0.0095
236	4.6631	0.0095
237	4.6725	0.0095
238	4.6820	0.0094
239	4.6914	0.0094
240	4.7008	0.0094
241	4.7102	0.0094
242	4.7195	0.0094
243	4.7289	0.0093

244	4.7382	0.0093
245	4.7475	0.0093
246	4.7567	0.0093
247	4.7660	0.0093
248	4.7752	0.0092
249	4.7845	0.0092
250	4.7937	0.0092
251	4.8028	0.0092
252	4.8120	0.0092
253	4.8211	0.0091
254	4.8303	0.0091
255	4.8394	0.0091
256	4.8485	0.0091
257	4.8575	0.0091
258	4.8666	0.0090
259	4.8756	0.0090
260	4.8846	0.0090
261	4.8936	0.0090
262	4.9026	0.0090
263	4.9115	0.0090
264	4.9205	0.0089
265	4.9294	0.0089
266	4.9383	0.0089
267	4.9472	0.0089
268	4.9561	0.0089
269	4.9649	0.0089
270	4.9738	0.0088
271	4.9826	0.0088
272	4.9914	0.0088
273	5.0002	0.0088
274	5.0089	0.0088
275	5.0177	0.0088
276	5.0264	0.0087
277	5.0351	0.0087
278	5.0438	0.0087
279	5.0525	0.0087
280	5.0612	0.0087
281	5.0698	0.0087
282	5.0785	0.0086
283	5.0871	0.0086
284	5.0957	0.0086
285	5.1043	0.0086
286	5.1129	0.0086
287	5.1214	0.0086
288	5.1300	0.0085

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0085	0.0024	0.0061
2	0.0086	0.0024	0.0062
3	0.0086	0.0024	0.0062
4	0.0086	0.0024	0.0062
5	0.0086	0.0024	0.0062
6	0.0087	0.0024	0.0062
7	0.0087	0.0024	0.0062
8	0.0087	0.0024	0.0063
9	0.0087	0.0025	0.0063

10	0.0088	0.0025	0.0063
11	0.0088	0.0025	0.0063
12	0.0088	0.0025	0.0063
13	0.0088	0.0025	0.0064
14	0.0089	0.0025	0.0064
15	0.0089	0.0025	0.0064
16	0.0089	0.0025	0.0064
17	0.0089	0.0025	0.0064
18	0.0090	0.0025	0.0064
19	0.0090	0.0025	0.0065
20	0.0090	0.0025	0.0065
21	0.0090	0.0025	0.0065
22	0.0091	0.0025	0.0065
23	0.0091	0.0026	0.0065
24	0.0091	0.0026	0.0066
25	0.0092	0.0026	0.0066
26	0.0092	0.0026	0.0066
27	0.0092	0.0026	0.0066
28	0.0092	0.0026	0.0066
29	0.0093	0.0026	0.0067
30	0.0093	0.0026	0.0067
31	0.0093	0.0026	0.0067
32	0.0094	0.0026	0.0067
33	0.0094	0.0026	0.0068
34	0.0094	0.0026	0.0068
35	0.0095	0.0027	0.0068
36	0.0095	0.0027	0.0068
37	0.0095	0.0027	0.0068
38	0.0095	0.0027	0.0069
39	0.0096	0.0027	0.0069
40	0.0096	0.0027	0.0069
41	0.0097	0.0027	0.0069
42	0.0097	0.0027	0.0070
43	0.0097	0.0027	0.0070
44	0.0097	0.0027	0.0070
45	0.0098	0.0027	0.0070
46	0.0098	0.0028	0.0071
47	0.0099	0.0028	0.0071
48	0.0099	0.0028	0.0071
49	0.0099	0.0028	0.0071
50	0.0100	0.0028	0.0072
51	0.0100	0.0028	0.0072
52	0.0100	0.0028	0.0072
53	0.0101	0.0028	0.0072
54	0.0101	0.0028	0.0073
55	0.0102	0.0028	0.0073
56	0.0102	0.0029	0.0073
57	0.0102	0.0029	0.0074
58	0.0103	0.0029	0.0074
59	0.0103	0.0029	0.0074
60	0.0103	0.0029	0.0074
61	0.0104	0.0029	0.0075
62	0.0104	0.0029	0.0075
63	0.0105	0.0029	0.0075
64	0.0105	0.0029	0.0076
65	0.0106	0.0030	0.0076
66	0.0106	0.0030	0.0076
67	0.0106	0.0030	0.0077
68	0.0107	0.0030	0.0077

69	0.0107	0.0030	0.0077
70	0.0108	0.0030	0.0077
71	0.0108	0.0030	0.0078
72	0.0109	0.0030	0.0078
73	0.0109	0.0031	0.0079
74	0.0110	0.0031	0.0079
75	0.0110	0.0031	0.0079
76	0.0110	0.0031	0.0079
77	0.0111	0.0031	0.0080
78	0.0111	0.0031	0.0080
79	0.0112	0.0031	0.0081
80	0.0112	0.0032	0.0081
81	0.0113	0.0032	0.0081
82	0.0114	0.0032	0.0082
83	0.0114	0.0032	0.0082
84	0.0115	0.0032	0.0082
85	0.0115	0.0032	0.0083
86	0.0116	0.0032	0.0083
87	0.0117	0.0033	0.0084
88	0.0117	0.0033	0.0084
89	0.0118	0.0033	0.0085
90	0.0118	0.0033	0.0085
91	0.0119	0.0033	0.0086
92	0.0119	0.0033	0.0086
93	0.0120	0.0034	0.0086
94	0.0121	0.0034	0.0087
95	0.0121	0.0034	0.0087
96	0.0122	0.0034	0.0088
97	0.0123	0.0034	0.0088
98	0.0123	0.0035	0.0089
99	0.0124	0.0035	0.0089
100	0.0125	0.0035	0.0090
101	0.0125	0.0035	0.0090
102	0.0126	0.0035	0.0091
103	0.0127	0.0036	0.0091
104	0.0127	0.0036	0.0092
105	0.0128	0.0036	0.0092
106	0.0129	0.0036	0.0093
107	0.0130	0.0036	0.0093
108	0.0130	0.0037	0.0094
109	0.0132	0.0037	0.0095
110	0.0132	0.0037	0.0095
111	0.0133	0.0037	0.0096
112	0.0134	0.0038	0.0096
113	0.0135	0.0038	0.0097
114	0.0136	0.0038	0.0098
115	0.0137	0.0038	0.0098
116	0.0137	0.0039	0.0099
117	0.0139	0.0039	0.0100
118	0.0139	0.0039	0.0100
119	0.0141	0.0039	0.0101
120	0.0141	0.0040	0.0102
121	0.0143	0.0040	0.0103
122	0.0143	0.0040	0.0103
123	0.0145	0.0041	0.0104
124	0.0145	0.0041	0.0105
125	0.0147	0.0041	0.0106
126	0.0148	0.0041	0.0106
127	0.0149	0.0042	0.0107

128	0.0150	0.0042	0.0108
129	0.0152	0.0043	0.0109
130	0.0153	0.0043	0.0110
131	0.0154	0.0043	0.0111
132	0.0155	0.0044	0.0112
133	0.0157	0.0044	0.0113
134	0.0158	0.0044	0.0114
135	0.0160	0.0045	0.0115
136	0.0161	0.0045	0.0116
137	0.0163	0.0046	0.0117
138	0.0164	0.0046	0.0118
139	0.0166	0.0047	0.0119
140	0.0167	0.0047	0.0120
141	0.0169	0.0047	0.0122
142	0.0170	0.0048	0.0122
143	0.0173	0.0048	0.0124
144	0.0174	0.0049	0.0125
145	0.0199	0.0056	0.0143
146	0.0201	0.0056	0.0144
147	0.0203	0.0057	0.0146
148	0.0205	0.0057	0.0147
149	0.0207	0.0058	0.0149
150	0.0209	0.0059	0.0150
151	0.0212	0.0059	0.0152
152	0.0214	0.0060	0.0154
153	0.0217	0.0061	0.0156
154	0.0218	0.0061	0.0157
155	0.0222	0.0062	0.0160
156	0.0224	0.0063	0.0161
157	0.0228	0.0064	0.0164
158	0.0230	0.0064	0.0165
159	0.0234	0.0066	0.0168
160	0.0236	0.0066	0.0170
161	0.0240	0.0067	0.0173
162	0.0243	0.0068	0.0175
163	0.0248	0.0070	0.0178
164	0.0250	0.0070	0.0180
165	0.0256	0.0072	0.0184
166	0.0259	0.0073	0.0186
167	0.0265	0.0074	0.0190
168	0.0268	0.0075	0.0193
169	0.0275	0.0077	0.0198
170	0.0278	0.0078	0.0200
171	0.0286	0.0080	0.0206
172	0.0290	0.0081	0.0209
173	0.0299	0.0084	0.0215
174	0.0304	0.0085	0.0219
175	0.0314	0.0088	0.0226
176	0.0320	0.0090	0.0230
177	0.0332	0.0093	0.0239
178	0.0339	0.0095	0.0244
179	0.0353	0.0099	0.0254
180	0.0362	0.0101	0.0260
181	0.0380	0.0107	0.0273
182	0.0390	0.0110	0.0281
183	0.0414	0.0116	0.0298
184	0.0428	0.0120	0.0308
185	0.0342	0.0096	0.0246
186	0.0361	0.0101	0.0260

187	0.0410	0.0115	0.0295
188	0.0442	0.0124	0.0318
189	0.0533	0.0150	0.0383
190	0.0602	0.0169	0.0433
191	0.0860	0.0201	0.0659
192	0.1182	0.0201	0.0982
193	0.3701	0.0201	0.3500
194	0.0700	0.0197	0.0504
195	0.0482	0.0135	0.0347
196	0.0384	0.0108	0.0276
197	0.0443	0.0124	0.0319
198	0.0402	0.0113	0.0289
199	0.0370	0.0104	0.0266
200	0.0346	0.0097	0.0249
201	0.0326	0.0091	0.0234
202	0.0309	0.0087	0.0222
203	0.0295	0.0083	0.0212
204	0.0282	0.0079	0.0203
205	0.0271	0.0076	0.0195
206	0.0262	0.0073	0.0188
207	0.0253	0.0071	0.0182
208	0.0245	0.0069	0.0176
209	0.0238	0.0067	0.0171
210	0.0232	0.0065	0.0167
211	0.0226	0.0063	0.0162
212	0.0220	0.0062	0.0158
213	0.0215	0.0060	0.0155
214	0.0210	0.0059	0.0151
215	0.0206	0.0058	0.0148
216	0.0202	0.0057	0.0145
217	0.0175	0.0049	0.0126
218	0.0171	0.0048	0.0123
219	0.0168	0.0047	0.0121
220	0.0165	0.0046	0.0119
221	0.0162	0.0045	0.0116
222	0.0159	0.0045	0.0114
223	0.0156	0.0044	0.0112
224	0.0153	0.0043	0.0110
225	0.0151	0.0042	0.0109
226	0.0148	0.0042	0.0107
227	0.0146	0.0041	0.0105
228	0.0144	0.0040	0.0104
229	0.0142	0.0040	0.0102
230	0.0140	0.0039	0.0101
231	0.0138	0.0039	0.0099
232	0.0136	0.0038	0.0098
233	0.0134	0.0038	0.0097
234	0.0133	0.0037	0.0095
235	0.0131	0.0037	0.0094
236	0.0129	0.0036	0.0093
237	0.0128	0.0036	0.0092
238	0.0126	0.0035	0.0091
239	0.0125	0.0035	0.0090
240	0.0124	0.0035	0.0089
241	0.0122	0.0034	0.0088
242	0.0121	0.0034	0.0087
243	0.0120	0.0034	0.0086
244	0.0118	0.0033	0.0085
245	0.0117	0.0033	0.0084

246	0.0116	0.0033	0.0084
247	0.0115	0.0032	0.0083
248	0.0114	0.0032	0.0082
249	0.0113	0.0032	0.0081
250	0.0112	0.0031	0.0080
251	0.0111	0.0031	0.0080
252	0.0110	0.0031	0.0079
253	0.0109	0.0031	0.0078
254	0.0108	0.0030	0.0078
255	0.0107	0.0030	0.0077
256	0.0106	0.0030	0.0076
257	0.0105	0.0030	0.0076
258	0.0104	0.0029	0.0075
259	0.0104	0.0029	0.0075
260	0.0103	0.0029	0.0074
261	0.0102	0.0029	0.0073
262	0.0101	0.0028	0.0073
263	0.0100	0.0028	0.0072
264	0.0100	0.0028	0.0072
265	0.0099	0.0028	0.0071
266	0.0098	0.0028	0.0071
267	0.0098	0.0027	0.0070
268	0.0097	0.0027	0.0070
269	0.0096	0.0027	0.0069
270	0.0096	0.0027	0.0069
271	0.0095	0.0027	0.0068
272	0.0094	0.0026	0.0068
273	0.0094	0.0026	0.0067
274	0.0093	0.0026	0.0067
275	0.0093	0.0026	0.0067
276	0.0092	0.0026	0.0066
277	0.0091	0.0026	0.0066
278	0.0091	0.0025	0.0065
279	0.0090	0.0025	0.0065
280	0.0090	0.0025	0.0065
281	0.0089	0.0025	0.0064
282	0.0089	0.0025	0.0064
283	0.0088	0.0025	0.0063
284	0.0088	0.0025	0.0063
285	0.0087	0.0024	0.0063
286	0.0087	0.0024	0.0062
287	0.0086	0.0024	0.0062
288	0.0086	0.0024	0.0062

Total soil rain loss = 1.34(In)
Total effective rainfall = 3.79(In)
Peak flow rate in flood hydrograph = 7.48(CFS)

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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

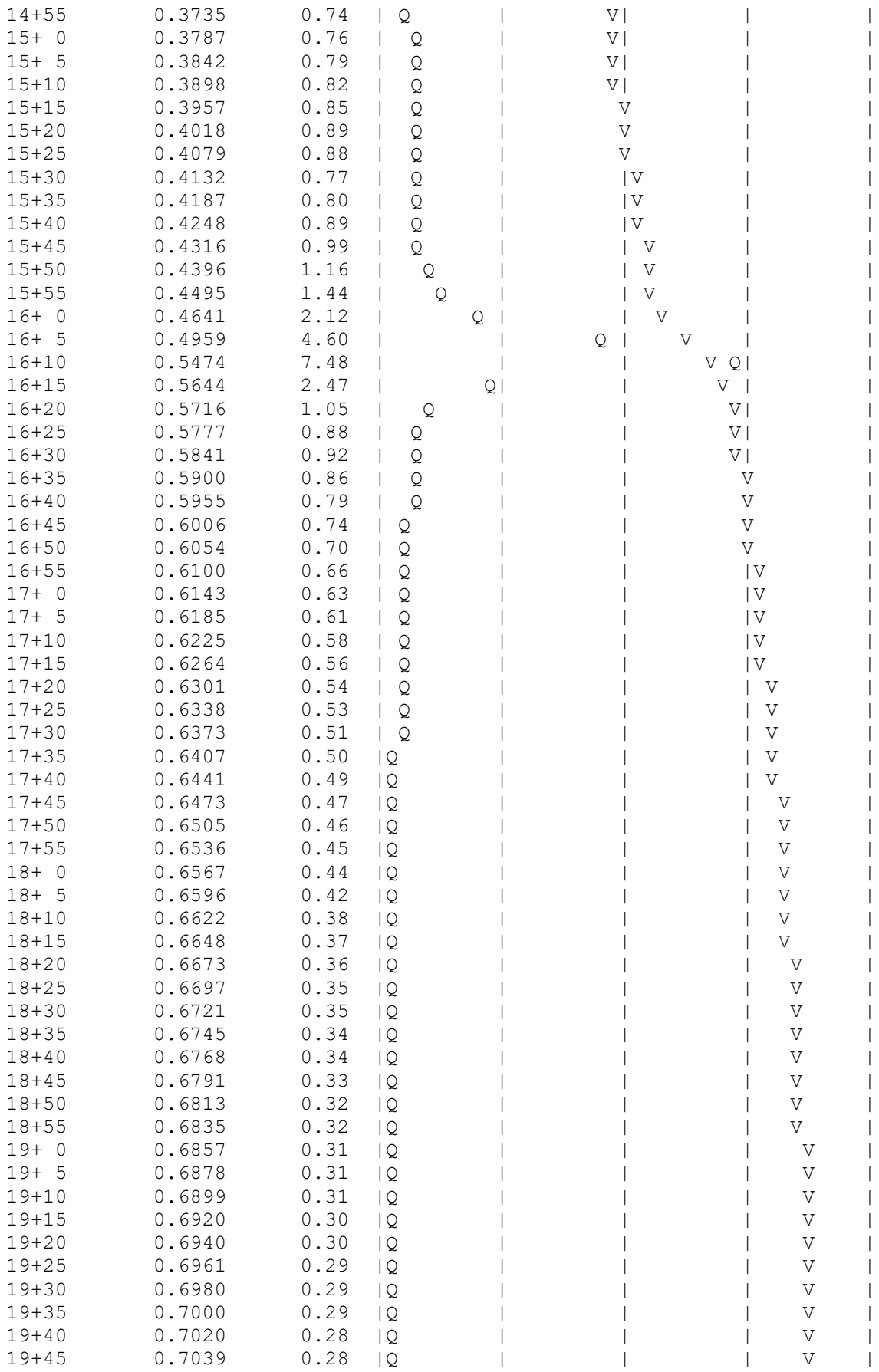
Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0003	0.04	Q	|	|	|	|

0+10	0.0014	0.16	Q	|	|	|	|
0+15	0.0027	0.18	Q	|	|	|	|
0+20	0.0040	0.19	Q	|	|	|	|
0+25	0.0052	0.19	Q	|	|	|	|
0+30	0.0065	0.19	Q	|	|	|	|
0+35	0.0078	0.19	Q	|	|	|	|
0+40	0.0091	0.19	Q	|	|	|	|
0+45	0.0104	0.19	Q	|	|	|	|
0+50	0.0117	0.19	Q	|	|	|	|
0+55	0.0130	0.19	Q	|	|	|	|
1+ 0	0.0143	0.19	Q	|	|	|	|
1+ 5	0.0156	0.19	Q	|	|	|	|
1+10	0.0169	0.19	Q	|	|	|	|
1+15	0.0182	0.19	Q	|	|	|	|
1+20	0.0196	0.19	Q	|	|	|	|
1+25	0.0209	0.19	QV	|	|	|	|
1+30	0.0222	0.19	QV	|	|	|	|
1+35	0.0235	0.19	QV	|	|	|	|
1+40	0.0249	0.19	QV	|	|	|	|
1+45	0.0262	0.19	QV	|	|	|	|
1+50	0.0276	0.20	QV	|	|	|	|
1+55	0.0289	0.20	QV	|	|	|	|
2+ 0	0.0303	0.20	QV	|	|	|	|
2+ 5	0.0316	0.20	QV	|	|	|	|
2+10	0.0330	0.20	QV	|	|	|	|
2+15	0.0344	0.20	QV	|	|	|	|
2+20	0.0357	0.20	QV	|	|	|	|
2+25	0.0371	0.20	QV	|	|	|	|
2+30	0.0385	0.20	QV	|	|	|	|
2+35	0.0399	0.20	Q V	|	|	|	|
2+40	0.0412	0.20	Q V	|	|	|	|
2+45	0.0426	0.20	Q V	|	|	|	|
2+50	0.0440	0.20	Q V	|	|	|	|
2+55	0.0454	0.20	Q V	|	|	|	|
3+ 0	0.0468	0.20	Q V	|	|	|	|
3+ 5	0.0482	0.20	Q V	|	|	|	|
3+10	0.0497	0.21	Q V	|	|	|	|
3+15	0.0511	0.21	Q V	|	|	|	|
3+20	0.0525	0.21	Q V	|	|	|	|
3+25	0.0539	0.21	Q V	|	|	|	|
3+30	0.0554	0.21	Q V	|	|	|	|
3+35	0.0568	0.21	Q V	|	|	|	|
3+40	0.0583	0.21	Q V	|	|	|	|
3+45	0.0597	0.21	Q V	|	|	|	|
3+50	0.0612	0.21	Q V	|	|	|	|
3+55	0.0626	0.21	Q V	|	|	|	|
4+ 0	0.0641	0.21	Q V	|	|	|	|
4+ 5	0.0655	0.21	Q V	|	|	|	|
4+10	0.0670	0.21	Q V	|	|	|	|
4+15	0.0685	0.21	Q V	|	|	|	|
4+20	0.0700	0.22	Q V	|	|	|	|
4+25	0.0715	0.22	Q V	|	|	|	|
4+30	0.0730	0.22	Q V	|	|	|	|
4+35	0.0745	0.22	Q V	|	|	|	|
4+40	0.0760	0.22	Q V	|	|	|	|
4+45	0.0775	0.22	Q V	|	|	|	|
4+50	0.0790	0.22	Q V	|	|	|	|
4+55	0.0805	0.22	Q V	|	|	|	|
5+ 0	0.0821	0.22	Q V	|	|	|	|

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5+ 5       0.0836      0.22  Q   V     |          |          |          |
5+10       0.0852      0.22  Q   V     |          |          |          |
5+15       0.0867      0.22  Q   V     |          |          |          |
5+20       0.0883      0.23  Q   V     |          |          |          |
5+25       0.0898      0.23  Q   V     |          |          |          |
5+30       0.0914      0.23  Q   V     |          |          |          |
5+35       0.0930      0.23  Q   V     |          |          |          |
5+40       0.0945      0.23  Q   V     |          |          |          |
5+45       0.0961      0.23  Q   V     |          |          |          |
5+50       0.0977      0.23  Q   V     |          |          |          |
5+55       0.0993      0.23  Q    V    |          |          |          |
6+ 0       0.1009      0.23  Q    V    |          |          |          |
6+ 5       0.1026      0.23  Q    V    |          |          |          |
6+10       0.1042      0.24  Q    V    |          |          |          |
6+15       0.1058      0.24  Q    V    |          |          |          |
6+20       0.1074      0.24  Q    V    |          |          |          |
6+25       0.1091      0.24  Q    V    |          |          |          |
6+30       0.1107      0.24  Q    V    |          |          |          |
6+35       0.1124      0.24  Q    V    |          |          |          |
6+40       0.1141      0.24  Q    V    |          |          |          |
6+45       0.1157      0.24  Q    V    |          |          |          |
6+50       0.1174      0.24  Q    V    |          |          |          |
6+55       0.1191      0.25  Q     V   |          |          |          |
7+ 0       0.1208      0.25  Q     V   |          |          |          |
7+ 5       0.1225      0.25  Q     V   |          |          |          |
7+10       0.1242      0.25  Q     V   |          |          |          |
7+15       0.1259      0.25  |Q    V   |          |          |          |
7+20       0.1277      0.25  |Q    V   |          |          |          |
7+25       0.1294      0.25  |Q    V   |          |          |          |
7+30       0.1312      0.25  |Q    V   |          |          |          |
7+35       0.1329      0.26  |Q    V   |          |          |          |
7+40       0.1347      0.26  |Q    V   |          |          |          |
7+45       0.1365      0.26  |Q    V   |          |          |          |
7+50       0.1382      0.26  |Q     V  |          |          |          |
7+55       0.1400      0.26  |Q     V  |          |          |          |
8+ 0       0.1418      0.26  |Q     V  |          |          |          |
8+ 5       0.1437      0.26  |Q     V  |          |          |          |
8+10       0.1455      0.26  |Q     V  |          |          |          |
8+15       0.1473      0.27  |Q     V  |          |          |          |
8+20       0.1492      0.27  |Q     V  |          |          |          |
8+25       0.1510      0.27  |Q     V  |          |          |          |
8+30       0.1529      0.27  |Q     V  |          |          |          |
8+35       0.1547      0.27  |Q     V  |          |          |          |
8+40       0.1566      0.27  |Q      V |          |          |          |
8+45       0.1585      0.28  |Q      V |          |          |          |
8+50       0.1604      0.28  |Q      V |          |          |          |
8+55       0.1624      0.28  |Q      V |          |          |          |
9+ 0       0.1643      0.28  |Q      V |          |          |          |
9+ 5       0.1662      0.28  |Q      V |          |          |          |
9+10       0.1682      0.28  |Q      V |          |          |          |
9+15       0.1701      0.29  |Q      V |          |          |          |
9+20       0.1721      0.29  |Q      V |          |          |          |
9+25       0.1741      0.29  |Q      V |          |          |          |
9+30       0.1761      0.29  |Q      V |          |          |          |
9+35       0.1781      0.29  |Q       V|          |          |          |
9+40       0.1802      0.30  |Q       V|          |          |          |
9+45       0.1822      0.30  |Q       V|          |          |          |
9+50       0.1843      0.30  |Q       V|          |          |          |
9+55       0.1864      0.30  |Q       V|          |          |          |
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10+ 0       0.1884      0.30  |Q       V|          |          |          |
10+ 5       0.1905      0.31  |Q       V|          |          |          |
10+10       0.1927      0.31  |Q       V|          |          |          |
10+15       0.1948      0.31  |Q       V|          |          |          |
10+20       0.1969      0.31  |Q        V          |          |          |
10+25       0.1991      0.31  |Q        V          |          |          |
10+30       0.2013      0.32  |Q        V          |          |          |
10+35       0.2035      0.32  |Q        V          |          |          |
10+40       0.2057      0.32  |Q        V          |          |          |
10+45       0.2079      0.32  |Q        V          |          |          |
10+50       0.2102      0.33  |Q        V          |          |          |
10+55       0.2125      0.33  |Q        V          |          |          |
11+ 0       0.2148      0.33  |Q        V          |          |          |
11+ 5       0.2171      0.34  |Q        |V         |          |          |
11+10       0.2194      0.34  |Q        |V         |          |          |
11+15       0.2217      0.34  |Q        |V         |          |          |
11+20       0.2241      0.34  |Q        |V         |          |          |
11+25       0.2265      0.35  |Q        |V         |          |          |
11+30       0.2289      0.35  |Q        |V         |          |          |
11+35       0.2314      0.35  |Q        |V         |          |          |
11+40       0.2338      0.36  |Q        |V         |          |          |
11+45       0.2363      0.36  |Q        | V        |          |          |
11+50       0.2388      0.36  |Q        | V        |          |          |
11+55       0.2414      0.37  |Q        | V        |          |          |
12+ 0       0.2439      0.37  |Q        | V        |          |          |
12+ 5       0.2466      0.39  |Q        | V        |          |          |
12+10       0.2495      0.42  |Q        | V        |          |          |
12+15       0.2525      0.43  |Q        | V        |          |          |
12+20       0.2555      0.44  |Q        |  V       |          |          |
12+25       0.2586      0.44  |Q        |  V       |          |          |
12+30       0.2617      0.45  |Q        |  V       |          |          |
12+35       0.2648      0.45  |Q        |  V       |          |          |
12+40       0.2679      0.46  |Q        |  V       |          |          |
12+45       0.2711      0.46  |Q        |  V       |          |          |
12+50       0.2743      0.47  |Q        |   V      |          |          |
12+55       0.2776      0.47  |Q        |   V      |          |          |
13+ 0       0.2809      0.48  |Q        |   V      |          |          |
13+ 5       0.2842      0.48  |Q        |   V      |          |          |
13+10       0.2876      0.49  |Q        |   V      |          |          |
13+15       0.2910      0.50  |Q        |   V      |          |          |
13+20       0.2945      0.50  | Q       |    V     |          |          |
13+25       0.2980      0.51  | Q       |    V     |          |          |
13+30       0.3016      0.52  | Q       |    V     |          |          |
13+35       0.3052      0.53  | Q       |    V     |          |          |
13+40       0.3089      0.53  | Q       |    V     |          |          |
13+45       0.3126      0.54  | Q       |    V     |          |          |
13+50       0.3164      0.55  | Q       |     V    |          |          |
13+55       0.3203      0.56  | Q       |     V    |          |          |
14+ 0       0.3242      0.57  | Q       |     V    |          |          |
14+ 5       0.3282      0.58  | Q       |     V    |          |          |
14+10       0.3323      0.59  | Q       |     V    |          |          |
14+15       0.3364      0.60  | Q       |      V   |          |          |
14+20       0.3407      0.62  | Q       |      V   |          |          |
14+25       0.3450      0.63  | Q       |      V   |          |          |
14+30       0.3495      0.65  | Q       |      V   |          |          |
14+35       0.3540      0.66  | Q       |       V  |          |          |
14+40       0.3587      0.68  | Q       |       V  |          |          |
14+45       0.3635      0.69  | Q       |       V  |          |          |
14+50       0.3684      0.72  | Q       |       V  |          |          |
```


14+55 0.3735 0.74
15+ 0 0.3787 0.76
15+ 5 0.3842 0.79
15+10 0.3898 0.82
15+15 0.3957 0.85
15+20 0.4018 0.89
15+25 0.4079 0.88
15+30 0.4132 0.77
15+35 0.4187 0.80
15+40 0.4248 0.89
15+45 0.4316 0.99
15+50 0.4396 1.16
15+55 0.4495 1.44
16+ 0 0.4641 2.12
16+ 5 0.4959 4.60
16+10 0.5474 7.48
16+15 0.5644 2.47
16+20 0.5716 1.05
16+25 0.5777 0.88
16+30 0.5841 0.92
16+35 0.5900 0.86
16+40 0.5955 0.79
16+45 0.6006 0.74
16+50 0.6054 0.70
16+55 0.6100 0.66
17+ 0 0.6143 0.63
17+ 5 0.6185 0.61
17+10 0.6225 0.58
17+15 0.6264 0.56
17+20 0.6301 0.54
17+25 0.6338 0.53
17+30 0.6373 0.51
17+35 0.6407 0.50
17+40 0.6441 0.49
17+45 0.6473 0.47
17+50 0.6505 0.46
17+55 0.6536 0.45
18+ 0 0.6567 0.44
18+ 5 0.6596 0.42
18+10 0.6622 0.38
18+15 0.6648 0.37
18+20 0.6673 0.36
18+25 0.6697 0.35
18+30 0.6721 0.35
18+35 0.6745 0.34
18+40 0.6768 0.34
18+45 0.6791 0.33
18+50 0.6813 0.32
18+55 0.6835 0.32
19+ 0 0.6857 0.31
19+ 5 0.6878 0.31
19+10 0.6899 0.31
19+15 0.6920 0.30
19+20 0.6940 0.30
19+25 0.6961 0.29
19+30 0.6980 0.29
19+35 0.7000 0.29
19+40 0.7020 0.28
19+45 0.7039 0.28

```
   19+50       0.7058      0.28  |Q        |          |          |     V   |
   19+55       0.7077      0.27  |Q        |          |          |     V   |
   20+ 0       0.7095      0.27  |Q        |          |          |     V   |
   20+ 5       0.7113      0.27  |Q        |          |          |     V   |
   20+10       0.7132      0.26  |Q        |          |          |     V   |
   20+15       0.7149      0.26  |Q        |          |          |     V   |
   20+20       0.7167      0.26  |Q        |          |          |     V   |
   20+25       0.7185      0.26  |Q        |          |          |     V   |
   20+30       0.7202      0.25  |Q        |          |          |     V   |
   20+35       0.7219      0.25  |Q        |          |          |     V   |
   20+40       0.7237      0.25  Q         |          |          |     V   |
   20+45       0.7253      0.25  Q         |          |          |      V  |
   20+50       0.7270      0.24  Q         |          |          |      V  |
   20+55       0.7287      0.24  Q         |          |          |      V  |
   21+ 0       0.7303      0.24  Q         |          |          |      V  |
   21+ 5       0.7320      0.24  Q         |          |          |      V  |
   21+10       0.7336      0.23  Q         |          |          |      V  |
   21+15       0.7352      0.23  Q         |          |          |      V  |
   21+20       0.7368      0.23  Q         |          |          |      V  |
   21+25       0.7383      0.23  Q         |          |          |      V  |
   21+30       0.7399      0.23  Q         |          |          |      V  |
   21+35       0.7415      0.23  Q         |          |          |      V  |
   21+40       0.7430      0.22  Q         |          |          |      V  |
   21+45       0.7445      0.22  Q         |          |          |       V |
   21+50       0.7460      0.22  Q         |          |          |       V |
   21+55       0.7475      0.22  Q         |          |          |       V |
   22+ 0       0.7490      0.22  Q         |          |          |       V |
   22+ 5       0.7505      0.22  Q         |          |          |       V |
   22+10       0.7520      0.21  Q         |          |          |       V |
   22+15       0.7534      0.21  Q         |          |          |       V |
   22+20       0.7549      0.21  Q         |          |          |       V |
   22+25       0.7563      0.21  Q         |          |          |       V |
   22+30       0.7578      0.21  Q         |          |          |       V |
   22+35       0.7592      0.21  Q         |          |          |       V |
   22+40       0.7606      0.20  Q         |          |          |       V |
   22+45       0.7620      0.20  Q         |          |          |       V |
   22+50       0.7634      0.20  Q         |          |          |       V |
   22+55       0.7648      0.20  Q         |          |          |        V|
   23+ 0       0.7661      0.20  Q         |          |          |        V|
   23+ 5       0.7675      0.20  Q         |          |          |        V|
   23+10       0.7689      0.20  Q         |          |          |        V|
   23+15       0.7702      0.20  Q         |          |          |        V|
   23+20       0.7716      0.19  Q         |          |          |        V|
   23+25       0.7729      0.19  Q         |          |          |        V|
   23+30       0.7742      0.19  Q         |          |          |        V|
   23+35       0.7755      0.19  Q         |          |          |        V|
   23+40       0.7768      0.19  Q         |          |          |        V|
   23+45       0.7781      0.19  Q         |          |          |        V|
   23+50       0.7794      0.19  Q         |          |          |        V|
   23+55       0.7807      0.19  Q         |          |          |        V|
   24+ 0       0.7820      0.19  Q         |          |          |        V|
   24+ 5       0.7830      0.14  Q         |          |          |        V|
   24+10       0.7831      0.02  Q         |          |          |         V
-------------------------------------------------------------------------
```

APPENDIX C.3: UNIT HYDROGRAPH ANALYSIS, AREA A, 25-YEAR

U n i t H y d r o g r a p h A n a l y s i s

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Study date 04/28/25

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San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6279

320.05 BUFFALO GROVE
UNIT HYDROGRAPH; AREA A
POST-PROJECT
25-YR, 24-HR

Storm Event Year = 25

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 25		
2.48	1	1.23
Rainfall data for year 25		
2.48	6	3.22
Rainfall data for year 25		
2.48	24	6.33

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
34.3	34.3	2.48	1.000	0.963	0.250	0.241

Area-averaged adjusted loss rate Fm (In/Hr) = 0.241

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
0.62	0.250	34.3	34.3	19.15	0.046
1.86	0.750	98.0	98.0	0.20	0.962

Area-averaged catchment yield fraction, Y = 0.733
Area-averaged low loss fraction, Yb = 0.267
User entry of time of concentration = 0.088 (hours)
++
Watershed area = 2.48(Ac.)
Catchment Lag time = 0.070 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 118.3712
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.241(In/Hr)
Average low loss rate fraction (Yb) = 0.267 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.455(In)
Computed peak 30-minute rainfall = 0.932(In)
Specified peak 1-hour rainfall = 1.230(In)
Computed peak 3-hour rainfall = 2.219(In)
Specified peak 6-hour rainfall = 3.220(In)
Specified peak 24-hour rainfall = 6.330(In)

Rainfall depth area reduction factors:
Using a total area of 2.48(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.455(In)
30-minute factor = 1.000 Adjusted rainfall = 0.932(In)
1-hour factor = 1.000 Adjusted rainfall = 1.230(In)
3-hour factor = 1.000 Adjusted rainfall = 2.219(In)
6-hour factor = 1.000 Adjusted rainfall = 3.220(In)
24-hour factor = 1.000 Adjusted rainfall = 6.330(In)

U n i t H y d r o g r a p h
++

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 29.99 (CFS))	
1	23.492	7.046
2	88.061	19.366
3	100.000	3.581

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.4552	0.4552
2	0.6006	0.1454
3	0.7064	0.1058
4	0.7925	0.0861
5	0.8665	0.0740
6	0.9321	0.0656
7	0.9913	0.0593

8	1.0457	0.0544
9	1.0962	0.0504
10	1.1434	0.0472
11	1.1878	0.0444
12	1.2299	0.0421
13	1.2839	0.0540
14	1.3360	0.0521
15	1.3865	0.0504
16	1.4354	0.0489
17	1.4829	0.0475
18	1.5292	0.0462
19	1.5742	0.0451
20	1.6182	0.0440
21	1.6612	0.0430
22	1.7032	0.0420
23	1.7444	0.0412
24	1.7847	0.0403
25	1.8243	0.0396
26	1.8631	0.0388
27	1.9013	0.0382
28	1.9388	0.0375
29	1.9757	0.0369
30	2.0120	0.0363
31	2.0478	0.0358
32	2.0830	0.0352
33	2.1177	0.0347
34	2.1519	0.0342
35	2.1857	0.0338
36	2.2190	0.0333
37	2.2519	0.0329
38	2.2844	0.0325
39	2.3165	0.0321
40	2.3482	0.0317
41	2.3796	0.0314
42	2.4106	0.0310
43	2.4412	0.0307
44	2.4716	0.0303
45	2.5016	0.0300
46	2.5313	0.0297
47	2.5607	0.0294
48	2.5898	0.0291
49	2.6187	0.0288
50	2.6472	0.0286
51	2.6755	0.0283
52	2.7036	0.0281
53	2.7314	0.0278
54	2.7590	0.0276
55	2.7863	0.0273
56	2.8134	0.0271
57	2.8403	0.0269
58	2.8669	0.0267
59	2.8934	0.0264
60	2.9196	0.0262
61	2.9456	0.0260
62	2.9715	0.0258
63	2.9971	0.0256
64	3.0226	0.0255
65	3.0479	0.0253
66	3.0730	0.0251

67	3.0979	0.0249
68	3.1226	0.0247
69	3.1472	0.0246
70	3.1716	0.0244
71	3.1959	0.0243
72	3.2200	0.0241
73	3.2417	0.0217
74	3.2633	0.0216
75	3.2847	0.0214
76	3.3060	0.0213
77	3.3271	0.0211
78	3.3481	0.0210
79	3.3690	0.0209
80	3.3897	0.0207
81	3.4103	0.0206
82	3.4308	0.0205
83	3.4511	0.0203
84	3.4713	0.0202
85	3.4914	0.0201
86	3.5114	0.0200
87	3.5312	0.0198
88	3.5510	0.0197
89	3.5706	0.0196
90	3.5901	0.0195
91	3.6095	0.0194
92	3.6288	0.0193
93	3.6479	0.0192
94	3.6670	0.0191
95	3.6860	0.0190
96	3.7048	0.0189
97	3.7236	0.0188
98	3.7423	0.0187
99	3.7608	0.0186
100	3.7793	0.0185
101	3.7977	0.0184
102	3.8160	0.0183
103	3.8342	0.0182
104	3.8523	0.0181
105	3.8703	0.0180
106	3.8882	0.0179
107	3.9061	0.0178
108	3.9238	0.0178
109	3.9415	0.0177
110	3.9591	0.0176
111	3.9766	0.0175
112	3.9940	0.0174
113	4.0114	0.0173
114	4.0286	0.0173
115	4.0458	0.0172
116	4.0630	0.0171
117	4.0800	0.0170
118	4.0970	0.0170
119	4.1139	0.0169
120	4.1307	0.0168
121	4.1474	0.0167
122	4.1641	0.0167
123	4.1807	0.0166
124	4.1972	0.0165
125	4.2137	0.0165

126	4.2301	0.0164
127	4.2464	0.0163
128	4.2627	0.0163
129	4.2789	0.0162
130	4.2951	0.0161
131	4.3111	0.0161
132	4.3272	0.0160
133	4.3431	0.0160
134	4.3590	0.0159
135	4.3748	0.0158
136	4.3906	0.0158
137	4.4063	0.0157
138	4.4220	0.0157
139	4.4376	0.0156
140	4.4531	0.0155
141	4.4686	0.0155
142	4.4840	0.0154
143	4.4994	0.0154
144	4.5147	0.0153
145	4.5299	0.0153
146	4.5451	0.0152
147	4.5603	0.0152
148	4.5754	0.0151
149	4.5904	0.0150
150	4.6054	0.0150
151	4.6204	0.0149
152	4.6353	0.0149
153	4.6501	0.0148
154	4.6649	0.0148
155	4.6797	0.0147
156	4.6944	0.0147
157	4.7090	0.0146
158	4.7236	0.0146
159	4.7382	0.0146
160	4.7527	0.0145
161	4.7671	0.0145
162	4.7815	0.0144
163	4.7959	0.0144
164	4.8102	0.0143
165	4.8245	0.0143
166	4.8387	0.0142
167	4.8529	0.0142
168	4.8671	0.0141
169	4.8812	0.0141
170	4.8953	0.0141
171	4.9093	0.0140
172	4.9232	0.0140
173	4.9372	0.0139
174	4.9511	0.0139
175	4.9649	0.0139
176	4.9787	0.0138
177	4.9925	0.0138
178	5.0062	0.0137
179	5.0199	0.0137
180	5.0336	0.0137
181	5.0472	0.0136
182	5.0608	0.0136
183	5.0743	0.0135
184	5.0878	0.0135

185	5.1013	0.0135
186	5.1147	0.0134
187	5.1281	0.0134
188	5.1415	0.0134
189	5.1548	0.0133
190	5.1681	0.0133
191	5.1813	0.0132
192	5.1945	0.0132
193	5.2077	0.0132
194	5.2208	0.0131
195	5.2339	0.0131
196	5.2470	0.0131
197	5.2600	0.0130
198	5.2730	0.0130
199	5.2860	0.0130
200	5.2989	0.0129
201	5.3118	0.0129
202	5.3247	0.0129
203	5.3375	0.0128
204	5.3503	0.0128
205	5.3631	0.0128
206	5.3759	0.0127
207	5.3886	0.0127
208	5.4012	0.0127
209	5.4139	0.0126
210	5.4265	0.0126
211	5.4391	0.0126
212	5.4516	0.0126
213	5.4642	0.0125
214	5.4767	0.0125
215	5.4891	0.0125
216	5.5016	0.0124
217	5.5140	0.0124
218	5.5263	0.0124
219	5.5387	0.0123
220	5.5510	0.0123
221	5.5633	0.0123
222	5.5755	0.0123
223	5.5878	0.0122
224	5.6000	0.0122
225	5.6122	0.0122
226	5.6243	0.0121
227	5.6364	0.0121
228	5.6485	0.0121
229	5.6606	0.0121
230	5.6726	0.0120
231	5.6846	0.0120
232	5.6966	0.0120
233	5.7086	0.0120
234	5.7205	0.0119
235	5.7324	0.0119
236	5.7443	0.0119
237	5.7561	0.0119
238	5.7680	0.0118
239	5.7798	0.0118
240	5.7916	0.0118
241	5.8033	0.0118
242	5.8150	0.0117
243	5.8267	0.0117

244	5.8384	0.0117
245	5.8501	0.0117
246	5.8617	0.0116
247	5.8733	0.0116
248	5.8849	0.0116
249	5.8965	0.0116
250	5.9080	0.0115
251	5.9195	0.0115
252	5.9310	0.0115
253	5.9424	0.0115
254	5.9539	0.0114
255	5.9653	0.0114
256	5.9767	0.0114
257	5.9881	0.0114
258	5.9994	0.0113
259	6.0108	0.0113
260	6.0221	0.0113
261	6.0333	0.0113
262	6.0446	0.0113
263	6.0558	0.0112
264	6.0671	0.0112
265	6.0782	0.0112
266	6.0894	0.0112
267	6.1006	0.0112
268	6.1117	0.0111
269	6.1228	0.0111
270	6.1339	0.0111
271	6.1450	0.0111
272	6.1560	0.0110
273	6.1670	0.0110
274	6.1780	0.0110
275	6.1890	0.0110
276	6.2000	0.0110
277	6.2109	0.0109
278	6.2218	0.0109
279	6.2327	0.0109
280	6.2436	0.0109
281	6.2545	0.0109
282	6.2653	0.0108
283	6.2762	0.0108
284	6.2870	0.0108
285	6.2977	0.0108
286	6.3085	0.0108
287	6.3193	0.0107
288	6.3300	0.0107

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0107	0.0029	0.0079
2	0.0107	0.0029	0.0079
3	0.0108	0.0029	0.0079
4	0.0108	0.0029	0.0079
5	0.0108	0.0029	0.0079
6	0.0109	0.0029	0.0080
7	0.0109	0.0029	0.0080
8	0.0109	0.0029	0.0080
9	0.0110	0.0029	0.0080

10	0.0110	0.0029	0.0081
11	0.0110	0.0029	0.0081
12	0.0110	0.0029	0.0081
13	0.0111	0.0030	0.0081
14	0.0111	0.0030	0.0081
15	0.0112	0.0030	0.0082
16	0.0112	0.0030	0.0082
17	0.0112	0.0030	0.0082
18	0.0112	0.0030	0.0082
19	0.0113	0.0030	0.0083
20	0.0113	0.0030	0.0083
21	0.0113	0.0030	0.0083
22	0.0114	0.0030	0.0083
23	0.0114	0.0030	0.0084
24	0.0114	0.0031	0.0084
25	0.0115	0.0031	0.0084
26	0.0115	0.0031	0.0084
27	0.0116	0.0031	0.0085
28	0.0116	0.0031	0.0085
29	0.0116	0.0031	0.0085
30	0.0117	0.0031	0.0085
31	0.0117	0.0031	0.0086
32	0.0117	0.0031	0.0086
33	0.0118	0.0031	0.0086
34	0.0118	0.0032	0.0087
35	0.0119	0.0032	0.0087
36	0.0119	0.0032	0.0087
37	0.0119	0.0032	0.0087
38	0.0120	0.0032	0.0088
39	0.0120	0.0032	0.0088
40	0.0120	0.0032	0.0088
41	0.0121	0.0032	0.0089
42	0.0121	0.0032	0.0089
43	0.0122	0.0032	0.0089
44	0.0122	0.0033	0.0089
45	0.0123	0.0033	0.0090
46	0.0123	0.0033	0.0090
47	0.0123	0.0033	0.0091
48	0.0124	0.0033	0.0091
49	0.0124	0.0033	0.0091
50	0.0125	0.0033	0.0091
51	0.0125	0.0033	0.0092
52	0.0126	0.0034	0.0092
53	0.0126	0.0034	0.0092
54	0.0126	0.0034	0.0093
55	0.0127	0.0034	0.0093
56	0.0127	0.0034	0.0093
57	0.0128	0.0034	0.0094
58	0.0128	0.0034	0.0094
59	0.0129	0.0034	0.0095
60	0.0129	0.0035	0.0095
61	0.0130	0.0035	0.0095
62	0.0130	0.0035	0.0096
63	0.0131	0.0035	0.0096
64	0.0131	0.0035	0.0096
65	0.0132	0.0035	0.0097
66	0.0132	0.0035	0.0097
67	0.0133	0.0036	0.0098
68	0.0134	0.0036	0.0098

69	0.0134	0.0036	0.0098
70	0.0135	0.0036	0.0099
71	0.0135	0.0036	0.0099
72	0.0136	0.0036	0.0100
73	0.0137	0.0036	0.0100
74	0.0137	0.0037	0.0100
75	0.0138	0.0037	0.0101
76	0.0138	0.0037	0.0101
77	0.0139	0.0037	0.0102
78	0.0139	0.0037	0.0102
79	0.0140	0.0037	0.0103
80	0.0141	0.0038	0.0103
81	0.0141	0.0038	0.0104
82	0.0142	0.0038	0.0104
83	0.0143	0.0038	0.0105
84	0.0143	0.0038	0.0105
85	0.0144	0.0038	0.0106
86	0.0145	0.0039	0.0106
87	0.0146	0.0039	0.0107
88	0.0146	0.0039	0.0107
89	0.0147	0.0039	0.0108
90	0.0147	0.0039	0.0108
91	0.0148	0.0040	0.0109
92	0.0149	0.0040	0.0109
93	0.0150	0.0040	0.0110
94	0.0150	0.0040	0.0110
95	0.0152	0.0040	0.0111
96	0.0152	0.0041	0.0111
97	0.0153	0.0041	0.0112
98	0.0154	0.0041	0.0113
99	0.0155	0.0041	0.0113
100	0.0155	0.0041	0.0114
101	0.0157	0.0042	0.0115
102	0.0157	0.0042	0.0115
103	0.0158	0.0042	0.0116
104	0.0159	0.0042	0.0117
105	0.0160	0.0043	0.0117
106	0.0161	0.0043	0.0118
107	0.0162	0.0043	0.0119
108	0.0163	0.0043	0.0119
109	0.0164	0.0044	0.0120
110	0.0165	0.0044	0.0121
111	0.0166	0.0044	0.0122
112	0.0167	0.0045	0.0122
113	0.0168	0.0045	0.0123
114	0.0169	0.0045	0.0124
115	0.0170	0.0045	0.0125
116	0.0171	0.0046	0.0125
117	0.0173	0.0046	0.0127
118	0.0173	0.0046	0.0127
119	0.0175	0.0047	0.0128
120	0.0176	0.0047	0.0129
121	0.0178	0.0047	0.0130
122	0.0178	0.0048	0.0131
123	0.0180	0.0048	0.0132
124	0.0181	0.0048	0.0133
125	0.0183	0.0049	0.0134
126	0.0184	0.0049	0.0135
127	0.0186	0.0050	0.0136

128	0.0187	0.0050	0.0137
129	0.0189	0.0050	0.0138
130	0.0190	0.0051	0.0139
131	0.0192	0.0051	0.0141
132	0.0193	0.0051	0.0141
133	0.0195	0.0052	0.0143
134	0.0196	0.0052	0.0144
135	0.0198	0.0053	0.0146
136	0.0200	0.0053	0.0146
137	0.0202	0.0054	0.0148
138	0.0203	0.0054	0.0149
139	0.0206	0.0055	0.0151
140	0.0207	0.0055	0.0152
141	0.0210	0.0056	0.0154
142	0.0211	0.0056	0.0155
143	0.0214	0.0057	0.0157
144	0.0216	0.0058	0.0158
145	0.0241	0.0064	0.0177
146	0.0243	0.0065	0.0178
147	0.0246	0.0066	0.0180
148	0.0247	0.0066	0.0181
149	0.0251	0.0067	0.0184
150	0.0253	0.0067	0.0185
151	0.0256	0.0068	0.0188
152	0.0258	0.0069	0.0189
153	0.0262	0.0070	0.0192
154	0.0264	0.0071	0.0194
155	0.0269	0.0072	0.0197
156	0.0271	0.0072	0.0199
157	0.0276	0.0074	0.0202
158	0.0278	0.0074	0.0204
159	0.0283	0.0076	0.0208
160	0.0286	0.0076	0.0209
161	0.0291	0.0078	0.0213
162	0.0294	0.0078	0.0216
163	0.0300	0.0080	0.0220
164	0.0303	0.0081	0.0222
165	0.0310	0.0083	0.0227
166	0.0314	0.0084	0.0230
167	0.0321	0.0086	0.0235
168	0.0325	0.0087	0.0238
169	0.0333	0.0089	0.0244
170	0.0338	0.0090	0.0248
171	0.0347	0.0093	0.0255
172	0.0352	0.0094	0.0258
173	0.0363	0.0097	0.0266
174	0.0369	0.0098	0.0270
175	0.0382	0.0102	0.0280
176	0.0388	0.0104	0.0285
177	0.0403	0.0108	0.0296
178	0.0412	0.0110	0.0302
179	0.0430	0.0115	0.0315
180	0.0440	0.0117	0.0322
181	0.0462	0.0123	0.0339
182	0.0475	0.0127	0.0348
183	0.0504	0.0135	0.0370
184	0.0521	0.0139	0.0382
185	0.0421	0.0112	0.0308
186	0.0444	0.0119	0.0326

187	0.0504	0.0135	0.0370
188	0.0544	0.0145	0.0399
189	0.0656	0.0175	0.0481
190	0.0740	0.0197	0.0542
191	0.1058	0.0201	0.0857
192	0.1454	0.0201	0.1254
193	0.4552	0.0201	0.4351
194	0.0861	0.0201	0.0661
195	0.0593	0.0158	0.0435
196	0.0472	0.0126	0.0346
197	0.0540	0.0144	0.0396
198	0.0489	0.0131	0.0359
199	0.0451	0.0120	0.0330
200	0.0420	0.0112	0.0308
201	0.0396	0.0106	0.0290
202	0.0375	0.0100	0.0275
203	0.0358	0.0095	0.0262
204	0.0342	0.0091	0.0251
205	0.0329	0.0088	0.0241
206	0.0317	0.0085	0.0233
207	0.0307	0.0082	0.0225
208	0.0297	0.0079	0.0218
209	0.0288	0.0077	0.0211
210	0.0281	0.0075	0.0206
211	0.0273	0.0073	0.0200
212	0.0267	0.0071	0.0195
213	0.0260	0.0069	0.0191
214	0.0255	0.0068	0.0187
215	0.0249	0.0067	0.0183
216	0.0244	0.0065	0.0179
217	0.0217	0.0058	0.0159
218	0.0213	0.0057	0.0156
219	0.0209	0.0056	0.0153
220	0.0205	0.0055	0.0150
221	0.0201	0.0054	0.0147
222	0.0197	0.0053	0.0145
223	0.0194	0.0052	0.0142
224	0.0191	0.0051	0.0140
225	0.0188	0.0050	0.0138
226	0.0185	0.0049	0.0135
227	0.0182	0.0049	0.0133
228	0.0179	0.0048	0.0131
229	0.0177	0.0047	0.0130
230	0.0174	0.0047	0.0128
231	0.0172	0.0046	0.0126
232	0.0170	0.0045	0.0124
233	0.0167	0.0045	0.0123
234	0.0165	0.0044	0.0121
235	0.0163	0.0044	0.0120
236	0.0161	0.0043	0.0118
237	0.0160	0.0043	0.0117
238	0.0158	0.0042	0.0116
239	0.0156	0.0042	0.0114
240	0.0154	0.0041	0.0113
241	0.0153	0.0041	0.0112
242	0.0151	0.0040	0.0111
243	0.0149	0.0040	0.0110
244	0.0148	0.0039	0.0108
245	0.0146	0.0039	0.0107

246	0.0145	0.0039	0.0106
247	0.0144	0.0038	0.0105
248	0.0142	0.0038	0.0104
249	0.0141	0.0038	0.0103
250	0.0140	0.0037	0.0102
251	0.0139	0.0037	0.0102
252	0.0137	0.0037	0.0101
253	0.0136	0.0036	0.0100
254	0.0135	0.0036	0.0099
255	0.0134	0.0036	0.0098
256	0.0133	0.0035	0.0097
257	0.0132	0.0035	0.0097
258	0.0131	0.0035	0.0096
259	0.0130	0.0035	0.0095
260	0.0129	0.0034	0.0094
261	0.0128	0.0034	0.0094
262	0.0127	0.0034	0.0093
263	0.0126	0.0034	0.0092
264	0.0125	0.0033	0.0092
265	0.0124	0.0033	0.0091
266	0.0123	0.0033	0.0090
267	0.0122	0.0033	0.0090
268	0.0121	0.0032	0.0089
269	0.0121	0.0032	0.0088
270	0.0120	0.0032	0.0088
271	0.0119	0.0032	0.0087
272	0.0118	0.0032	0.0087
273	0.0118	0.0031	0.0086
274	0.0117	0.0031	0.0086
275	0.0116	0.0031	0.0085
276	0.0115	0.0031	0.0085
277	0.0115	0.0031	0.0084
278	0.0114	0.0030	0.0084
279	0.0113	0.0030	0.0083
280	0.0113	0.0030	0.0083
281	0.0112	0.0030	0.0082
282	0.0111	0.0030	0.0082
283	0.0111	0.0030	0.0081
284	0.0110	0.0029	0.0081
285	0.0109	0.0029	0.0080
286	0.0109	0.0029	0.0080
287	0.0108	0.0029	0.0079
288	0.0108	0.0029	0.0079

Total soil rain loss = 1.56(In)
Total effective rainfall = 4.77(In)
Peak flow rate in flood hydrograph = 9.34(CFS)

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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

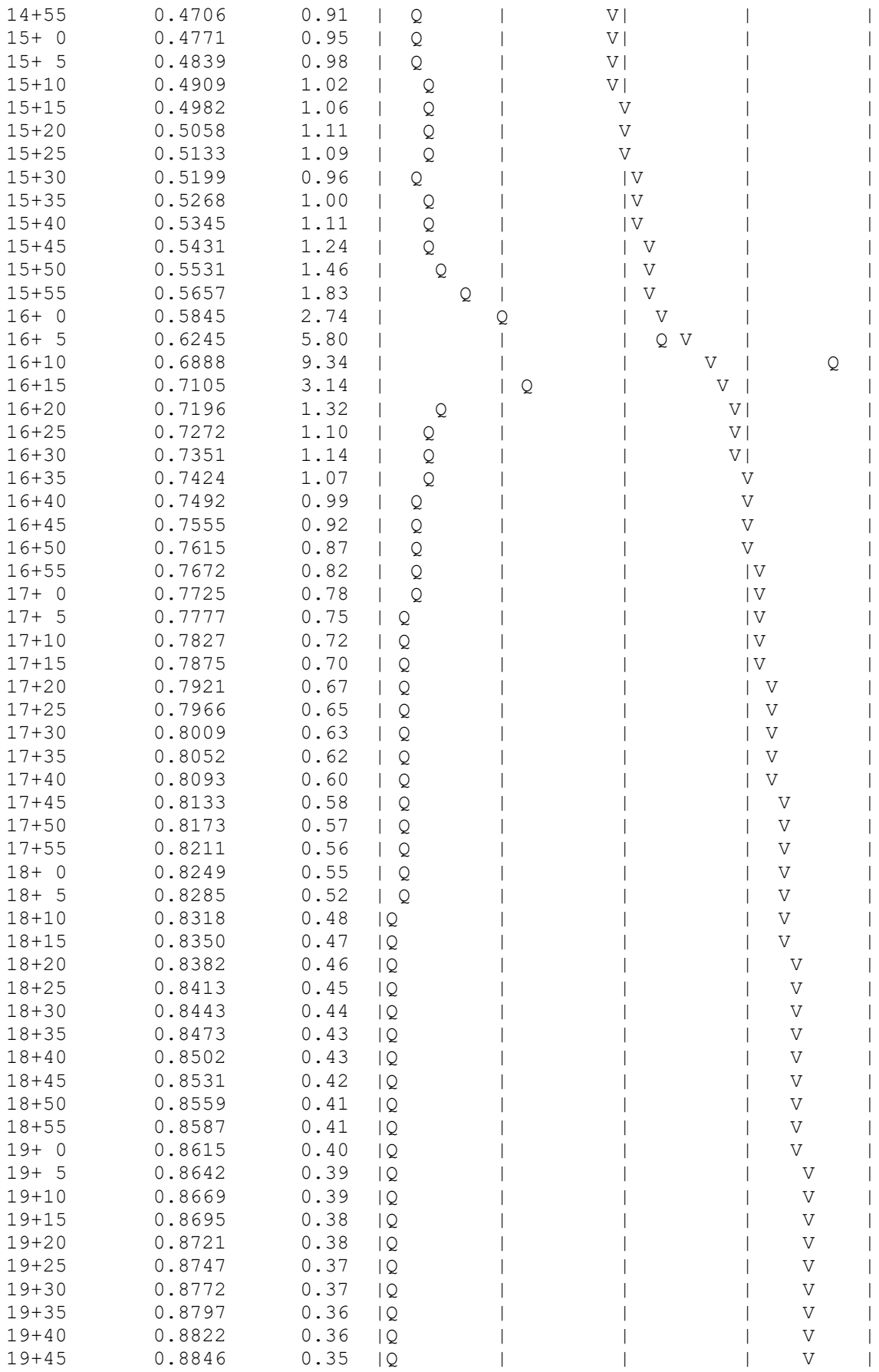
Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0004	0.06	Q	|	|	|	|

0+10	0.0018	0.21	Q	|	|	|	|
0+15	0.0034	0.24	Q	|	|	|	|
0+20	0.0051	0.24	Q	|	|	|	|
0+25	0.0067	0.24	Q	|	|	|	|
0+30	0.0084	0.24	Q	|	|	|	|
0+35	0.0100	0.24	Q	|	|	|	|
0+40	0.0116	0.24	Q	|	|	|	|
0+45	0.0133	0.24	Q	|	|	|	|
0+50	0.0150	0.24	Q	|	|	|	|
0+55	0.0166	0.24	Q	|	|	|	|
1+ 0	0.0183	0.24	Q	|	|	|	|
1+ 5	0.0200	0.24	Q	|	|	|	|
1+10	0.0217	0.24	Q	|	|	|	|
1+15	0.0233	0.24	Q	|	|	|	|
1+20	0.0250	0.25	QV	|	|	|	|
1+25	0.0267	0.25	QV	|	|	|	|
1+30	0.0284	0.25	QV	|	|	|	|
1+35	0.0301	0.25	QV	|	|	|	|
1+40	0.0318	0.25	QV	|	|	|	|
1+45	0.0335	0.25	QV	|	|	|	|
1+50	0.0353	0.25	QV	|	|	|	|
1+55	0.0370	0.25	|Q	|	|	|	|
2+ 0	0.0387	0.25	|Q	|	|	|	|
2+ 5	0.0404	0.25	|Q	|	|	|	|
2+10	0.0422	0.25	|Q	|	|	|	|
2+15	0.0439	0.25	|Q	|	|	|	|
2+20	0.0457	0.25	|Q	|	|	|	|
2+25	0.0474	0.25	|Q	|	|	|	|
2+30	0.0492	0.26	|Q	|	|	|	|
2+35	0.0510	0.26	|QV	|	|	|	|
2+40	0.0527	0.26	|QV	|	|	|	|
2+45	0.0545	0.26	|QV	|	|	|	|
2+50	0.0563	0.26	|QV	|	|	|	|
2+55	0.0581	0.26	|QV	|	|	|	|
3+ 0	0.0599	0.26	|QV	|	|	|	|
3+ 5	0.0617	0.26	|QV	|	|	|	|
3+10	0.0635	0.26	|QV	|	|	|	|
3+15	0.0653	0.26	|QV	|	|	|	|
3+20	0.0671	0.26	|QV	|	|	|	|
3+25	0.0689	0.26	|QV	|	|	|	|
3+30	0.0708	0.27	|QV	|	|	|	|
3+35	0.0726	0.27	|QV	|	|	|	|
3+40	0.0745	0.27	|Q V	|	|	|	|
3+45	0.0763	0.27	|Q V	|	|	|	|
3+50	0.0782	0.27	|Q V	|	|	|	|
3+55	0.0800	0.27	|Q V	|	|	|	|
4+ 0	0.0819	0.27	|Q V	|	|	|	|
4+ 5	0.0838	0.27	|Q V	|	|	|	|
4+10	0.0857	0.27	|Q V	|	|	|	|
4+15	0.0875	0.27	|Q V	|	|	|	|
4+20	0.0894	0.28	|Q V	|	|	|	|
4+25	0.0913	0.28	|Q V	|	|	|	|
4+30	0.0932	0.28	|Q V	|	|	|	|
4+35	0.0952	0.28	|Q V	|	|	|	|
4+40	0.0971	0.28	|Q V	|	|	|	|
4+45	0.0990	0.28	|Q V	|	|	|	|
4+50	0.1010	0.28	|Q V	|	|	|	|
4+55	0.1029	0.28	|Q V	|	|	|	|
5+ 0	0.1049	0.28	|Q V	|	|	|	|

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5+ 5       0.1068      0.28  |Q  V     |          |          |          |
5+10       0.1088      0.29  |Q  V     |          |          |          |
5+15       0.1108      0.29  |Q  V     |          |          |          |
5+20       0.1128      0.29  |Q  V     |          |          |          |
5+25       0.1147      0.29  |Q  V     |          |          |          |
5+30       0.1167      0.29  |Q  V     |          |          |          |
5+35       0.1187      0.29  |Q  V     |          |          |          |
5+40       0.1208      0.29  |Q  V     |          |          |          |
5+45       0.1228      0.29  |Q  V     |          |          |          |
5+50       0.1248      0.30  |Q   V    |          |          |          |
5+55       0.1269      0.30  |Q   V    |          |          |          |
6+ 0       0.1289      0.30  |Q   V    |          |          |          |
6+ 5       0.1310      0.30  |Q   V    |          |          |          |
6+10       0.1330      0.30  |Q   V    |          |          |          |
6+15       0.1351      0.30  |Q   V    |          |          |          |
6+20       0.1372      0.30  |Q   V    |          |          |          |
6+25       0.1393      0.30  |Q   V    |          |          |          |
6+30       0.1414      0.31  |Q   V    |          |          |          |
6+35       0.1435      0.31  |Q   V    |          |          |          |
6+40       0.1456      0.31  |Q   V    |          |          |          |
6+45       0.1478      0.31  |Q   V    |          |          |          |
6+50       0.1499      0.31  |Q    V   |          |          |          |
6+55       0.1521      0.31  |Q    V   |          |          |          |
7+ 0       0.1542      0.31  |Q    V   |          |          |          |
7+ 5       0.1564      0.32  |Q    V   |          |          |          |
7+10       0.1586      0.32  |Q    V   |          |          |          |
7+15       0.1608      0.32  |Q    V   |          |          |          |
7+20       0.1630      0.32  |Q    V   |          |          |          |
7+25       0.1652      0.32  |Q    V   |          |          |          |
7+30       0.1674      0.32  |Q    V   |          |          |          |
7+35       0.1696      0.32  |Q    V   |          |          |          |
7+40       0.1719      0.33  |Q    V   |          |          |          |
7+45       0.1742      0.33  |Q     V  |          |          |          |
7+50       0.1764      0.33  |Q     V  |          |          |          |
7+55       0.1787      0.33  |Q     V  |          |          |          |
8+ 0       0.1810      0.33  |Q     V  |          |          |          |
8+ 5       0.1833      0.33  |Q     V  |          |          |          |
8+10       0.1856      0.34  |Q     V  |          |          |          |
8+15       0.1880      0.34  |Q     V  |          |          |          |
8+20       0.1903      0.34  |Q     V  |          |          |          |
8+25       0.1927      0.34  |Q     V  |          |          |          |
8+30       0.1950      0.34  |Q     V  |          |          |          |
8+35       0.1974      0.35  |Q      V |          |          |          |
8+40       0.1998      0.35  |Q      V |          |          |          |
8+45       0.2022      0.35  |Q      V |          |          |          |
8+50       0.2046      0.35  |Q      V |          |          |          |
8+55       0.2071      0.35  |Q      V |          |          |          |
9+ 0       0.2095      0.36  |Q      V |          |          |          |
9+ 5       0.2120      0.36  |Q      V |          |          |          |
9+10       0.2145      0.36  |Q      V |          |          |          |
9+15       0.2170      0.36  |Q      V |          |          |          |
9+20       0.2195      0.37  |Q      V |          |          |          |
9+25       0.2220      0.37  |Q       V|          |          |          |
9+30       0.2246      0.37  |Q       V|          |          |          |
9+35       0.2271      0.37  |Q       V|          |          |          |
9+40       0.2297      0.37  |Q       V|          |          |          |
9+45       0.2323      0.38  |Q       V|          |          |          |
9+50       0.2349      0.38  |Q       V|          |          |          |
9+55       0.2376      0.38  |Q       V|          |          |          |
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```
10+ 0       0.2402      0.38  |Q       V|          |          |          |
10+ 5       0.2429      0.39  |Q       V|          |          |          |
10+10       0.2456      0.39  |Q       V|          |          |          |
10+15       0.2483      0.39  |Q        V          |          |          |
10+20       0.2510      0.40  |Q        V          |          |          |
10+25       0.2537      0.40  |Q        V          |          |          |
10+30       0.2565      0.40  |Q        V          |          |          |
10+35       0.2593      0.40  |Q        V          |          |          |
10+40       0.2621      0.41  |Q        V          |          |          |
10+45       0.2650      0.41  |Q        V          |          |          |
10+50       0.2678      0.41  |Q        V          |          |          |
10+55       0.2707      0.42  |Q        V          |          |          |
11+ 0       0.2736      0.42  |Q        |V         |          |          |
11+ 5       0.2765      0.42  |Q        |V         |          |          |
11+10       0.2795      0.43  |Q        |V         |          |          |
11+15       0.2824      0.43  |Q        |V         |          |          |
11+20       0.2855      0.44  |Q        |V         |          |          |
11+25       0.2885      0.44  |Q        |V         |          |          |
11+30       0.2915      0.44  |Q        |V         |          |          |
11+35       0.2946      0.45  |Q        |V         |          |          |
11+40       0.2978      0.45  |Q        | V        |          |          |
11+45       0.3009      0.46  |Q        | V        |          |          |
11+50       0.3041      0.46  |Q        | V        |          |          |
11+55       0.3073      0.47  |Q        | V        |          |          |
12+ 0       0.3105      0.47  |Q        | V        |          |          |
12+ 5       0.3139      0.49  |Q        | V        |          |          |
12+10       0.3175      0.52  | Q       | V        |          |          |
12+15       0.3212      0.53  | Q       |  V       |          |          |
12+20       0.3249      0.54  | Q       |  V       |          |          |
12+25       0.3287      0.55  | Q       |  V       |          |          |
12+30       0.3325      0.55  | Q       |  V       |          |          |
12+35       0.3363      0.56  | Q       |  V       |          |          |
12+40       0.3402      0.56  | Q       |  V       |          |          |
12+45       0.3441      0.57  | Q       |  V       |          |          |
12+50       0.3481      0.58  | Q       |   V      |          |          |
12+55       0.3521      0.58  | Q       |   V      |          |          |
13+ 0       0.3562      0.59  | Q       |   V      |          |          |
13+ 5       0.3603      0.60  | Q       |   V      |          |          |
13+10       0.3645      0.61  | Q       |   V      |          |          |
13+15       0.3687      0.61  | Q       |   V      |          |          |
13+20       0.3730      0.62  | Q       |    V     |          |          |
13+25       0.3773      0.63  | Q       |    V     |          |          |
13+30       0.3817      0.64  | Q       |    V     |          |          |
13+35       0.3862      0.65  | Q       |    V     |          |          |
13+40       0.3907      0.66  | Q       |    V     |          |          |
13+45       0.3953      0.67  | Q       |     V    |          |          |
13+50       0.4000      0.68  | Q       |     V    |          |          |
13+55       0.4048      0.69  | Q       |     V    |          |          |
14+ 0       0.4097      0.71  | Q       |     V    |          |          |
14+ 5       0.4146      0.72  | Q       |     V    |          |          |
14+10       0.4197      0.73  | Q       |      V   |          |          |
14+15       0.4248      0.75  | Q       |      V   |          |          |
14+20       0.4301      0.76  |  Q      |      V   |          |          |
14+25       0.4354      0.78  |  Q      |      V   |          |          |
14+30       0.4409      0.80  |  Q      |      V   |          |          |
14+35       0.4465      0.82  |  Q      |       V  |          |          |
14+40       0.4523      0.84  |  Q      |       V  |          |          |
14+45       0.4582      0.86  |  Q      |       V  |          |          |
14+50       0.4644      0.89  |  Q      |       V  |          |          |
```



14+55	0.4706	0.91	
15+ 0	0.4771	0.95	
15+ 5	0.4839	0.98	
15+10	0.4909	1.02	
15+15	0.4982	1.06	
15+20	0.5058	1.11	
15+25	0.5133	1.09	
15+30	0.5199	0.96	
15+35	0.5268	1.00	
15+40	0.5345	1.11	
15+45	0.5431	1.24	
15+50	0.5531	1.46	
15+55	0.5657	1.83	
16+ 0	0.5845	2.74	
16+ 5	0.6245	5.80	
16+10	0.6888	9.34	
16+15	0.7105	3.14	
16+20	0.7196	1.32	
16+25	0.7272	1.10	
16+30	0.7351	1.14	
16+35	0.7424	1.07	
16+40	0.7492	0.99	
16+45	0.7555	0.92	
16+50	0.7615	0.87	
16+55	0.7672	0.82	
17+ 0	0.7725	0.78	
17+ 5	0.7777	0.75	
17+10	0.7827	0.72	
17+15	0.7875	0.70	
17+20	0.7921	0.67	
17+25	0.7966	0.65	
17+30	0.8009	0.63	
17+35	0.8052	0.62	
17+40	0.8093	0.60	
17+45	0.8133	0.58	
17+50	0.8173	0.57	
17+55	0.8211	0.56	
18+ 0	0.8249	0.55	
18+ 5	0.8285	0.52	
18+10	0.8318	0.48	
18+15	0.8350	0.47	
18+20	0.8382	0.46	
18+25	0.8413	0.45	
18+30	0.8443	0.44	
18+35	0.8473	0.43	
18+40	0.8502	0.43	
18+45	0.8531	0.42	
18+50	0.8559	0.41	
18+55	0.8587	0.41	
19+ 0	0.8615	0.40	
19+ 5	0.8642	0.39	
19+10	0.8669	0.39	
19+15	0.8695	0.38	
19+20	0.8721	0.38	
19+25	0.8747	0.37	
19+30	0.8772	0.37	
19+35	0.8797	0.36	
19+40	0.8822	0.36	
19+45	0.8846	0.35	

```
   19+50       0.8870      0.35  |Q        |         |         |    V    |
   19+55       0.8894      0.35  |Q        |         |         |     V   |
   20+ 0       0.8918      0.34  |Q        |         |         |     V   |
   20+ 5       0.8941      0.34  |Q        |         |         |     V   |
   20+10       0.8964      0.34  |Q        |         |         |     V   |
   20+15       0.8987      0.33  |Q        |         |         |     V   |
   20+20       0.9009      0.33  |Q        |         |         |     V   |
   20+25       0.9032      0.32  |Q        |         |         |     V   |
   20+30       0.9054      0.32  |Q        |         |         |     V   |
   20+35       0.9076      0.32  |Q        |         |         |     V   |
   20+40       0.9098      0.32  |Q        |         |         |     V   |
   20+45       0.9119      0.31  |Q        |         |         |      V  |
   20+50       0.9141      0.31  |Q        |         |         |      V  |
   20+55       0.9162      0.31  |Q        |         |         |      V  |
   21+ 0       0.9183      0.30  |Q        |         |         |      V  |
   21+ 5       0.9203      0.30  |Q        |         |         |      V  |
   21+10       0.9224      0.30  |Q        |         |         |      V  |
   21+15       0.9244      0.30  |Q        |         |         |      V  |
   21+20       0.9265      0.29  |Q        |         |         |      V  |
   21+25       0.9285      0.29  |Q        |         |         |      V  |
   21+30       0.9305      0.29  |Q        |         |         |      V  |
   21+35       0.9325      0.29  |Q        |         |         |      V  |
   21+40       0.9344      0.28  |Q        |         |         |      V  |
   21+45       0.9364      0.28  |Q        |         |         |      V  |
   21+50       0.9383      0.28  |Q        |         |         |       V |
   21+55       0.9402      0.28  |Q        |         |         |       V |
   22+ 0       0.9421      0.28  |Q        |         |         |       V |
   22+ 5       0.9440      0.27  |Q        |         |         |       V |
   22+10       0.9459      0.27  |Q        |         |         |       V |
   22+15       0.9477      0.27  |Q        |         |         |       V |
   22+20       0.9496      0.27  |Q        |         |         |       V |
   22+25       0.9514      0.27  |Q        |         |         |       V |
   22+30       0.9533      0.27  |Q        |         |         |       V |
   22+35       0.9551      0.26  |Q        |         |         |       V |
   22+40       0.9569      0.26  |Q        |         |         |       V |
   22+45       0.9587      0.26  |Q        |         |         |       V |
   22+50       0.9604      0.26  |Q        |         |         |       V |
   22+55       0.9622      0.26  |Q        |         |         |        V|
   23+ 0       0.9640      0.26  |Q        |         |         |        V|
   23+ 5       0.9657      0.25  |Q        |         |         |        V|
   23+10       0.9674      0.25  |Q        |         |         |        V|
   23+15       0.9692      0.25  |Q        |         |         |        V|
   23+20       0.9709      0.25  Q         |         |         |        V|
   23+25       0.9726      0.25  Q         |         |         |        V|
   23+30       0.9743      0.25  Q         |         |         |        V|
   23+35       0.9760      0.24  Q         |         |         |        V|
   23+40       0.9776      0.24  Q         |         |         |        V|
   23+45       0.9793      0.24  Q         |         |         |        V|
   23+50       0.9810      0.24  Q         |         |         |        V|
   23+55       0.9826      0.24  Q         |         |         |        V|
   24+ 0       0.9843      0.24  Q         |         |         |        V|
   24+ 5       0.9855      0.18  Q         |         |         |        V|
   24+10       0.9857      0.03  Q         |         |         |         V
-------------------------------------------------------------------------
```

APPENDIX C.4: UNIT HYDROGRAPH ANALYSIS, AREA A, 100-YEAR

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2014, Version 9.0

Study date 04/28/25

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San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6279

320.05 BUFFALO GROVE
UNIT HYDROGRAPH; AREA A
POST-PROJECT
100-YR, 24-HR

Storm Event Year = 100

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 100		
2.48	1	1.61
Rainfall data for year 100		
2.48	6	4.16
Rainfall data for year 100		
2.48	24	8.26

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 3)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
34.3	54.3	2.48	1.000	0.756	0.250	0.189

Area-averaged adjusted loss rate Fm (In/Hr) = 0.189

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
0.62	0.250	34.3	54.3	8.42	0.349
1.86	0.750	98.0	98.0	0.20	0.971

Area-averaged catchment yield fraction, Y = 0.816
Area-averaged low loss fraction, Yb = 0.184
User entry of time of concentration = 0.087 (hours)
++
Watershed area = 2.48(Ac.)
Catchment Lag time = 0.070 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 119.7318
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.189(In/Hr)
Average low loss rate fraction (Yb) = 0.184 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.596(In)
Computed peak 30-minute rainfall = 1.220(In)
Specified peak 1-hour rainfall = 1.610(In)
Computed peak 3-hour rainfall = 2.881(In)
Specified peak 6-hour rainfall = 4.160(In)
Specified peak 24-hour rainfall = 8.260(In)

Rainfall depth area reduction factors:
Using a total area of 2.48(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.596(In)
30-minute factor = 1.000 Adjusted rainfall = 1.220(In)
1-hour factor = 1.000 Adjusted rainfall = 1.610(In)
3-hour factor = 1.000 Adjusted rainfall = 2.881(In)
6-hour factor = 1.000 Adjusted rainfall = 4.160(In)
24-hour factor = 1.000 Adjusted rainfall = 8.260(In)

U n i t H y d r o g r a p h
++

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 29.99 (CFS))	
1	23.983	7.193
2	88.530	19.359
3	100.000	3.440

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.5958	0.5958
2	0.7862	0.1904
3	0.9246	0.1384
4	1.0374	0.1128
5	1.1342	0.0968
6	1.2200	0.0858
7	1.2976	0.0776

8	1.3688	0.0712
9	1.4348	0.0660
10	1.4966	0.0618
11	1.5547	0.0582
12	1.6098	0.0551
13	1.6796	0.0697
14	1.7468	0.0673
15	1.8119	0.0650
16	1.8749	0.0630
17	1.9361	0.0612
18	1.9957	0.0595
19	2.0537	0.0580
20	2.1102	0.0566
21	2.1655	0.0553
22	2.2196	0.0540
23	2.2725	0.0529
24	2.3243	0.0518
25	2.3751	0.0508
26	2.4250	0.0499
27	2.4740	0.0490
28	2.5221	0.0481
29	2.5695	0.0473
30	2.6160	0.0466
31	2.6619	0.0459
32	2.7070	0.0452
33	2.7515	0.0445
34	2.7954	0.0439
35	2.8387	0.0433
36	2.8814	0.0427
37	2.9235	0.0421
38	2.9651	0.0416
39	3.0062	0.0411
40	3.0468	0.0406
41	3.0869	0.0401
42	3.1266	0.0397
43	3.1658	0.0392
44	3.2046	0.0388
45	3.2430	0.0384
46	3.2810	0.0380
47	3.3186	0.0376
48	3.3558	0.0372
49	3.3926	0.0369
50	3.4292	0.0365
51	3.4653	0.0362
52	3.5012	0.0358
53	3.5367	0.0355
54	3.5719	0.0352
55	3.6068	0.0349
56	3.6414	0.0346
57	3.6757	0.0343
58	3.7097	0.0340
59	3.7434	0.0338
60	3.7769	0.0335
61	3.8101	0.0332
62	3.8431	0.0330
63	3.8758	0.0327
64	3.9083	0.0325
65	3.9405	0.0322
66	3.9725	0.0320

67	4.0043	0.0318
68	4.0359	0.0316
69	4.0672	0.0313
70	4.0983	0.0311
71	4.1293	0.0309
72	4.1600	0.0307
73	4.1885	0.0285
74	4.2167	0.0283
75	4.2448	0.0281
76	4.2728	0.0279
77	4.3005	0.0277
78	4.3280	0.0275
79	4.3554	0.0274
80	4.3826	0.0272
81	4.4096	0.0270
82	4.4365	0.0269
83	4.4631	0.0267
84	4.4897	0.0265
85	4.5160	0.0264
86	4.5422	0.0262
87	4.5683	0.0261
88	4.5942	0.0259
89	4.6200	0.0258
90	4.6456	0.0256
91	4.6710	0.0255
92	4.6964	0.0253
93	4.7216	0.0252
94	4.7466	0.0251
95	4.7715	0.0249
96	4.7963	0.0248
97	4.8210	0.0247
98	4.8455	0.0245
99	4.8699	0.0244
100	4.8942	0.0243
101	4.9183	0.0242
102	4.9424	0.0240
103	4.9663	0.0239
104	4.9901	0.0238
105	5.0138	0.0237
106	5.0373	0.0236
107	5.0608	0.0235
108	5.0841	0.0233
109	5.1074	0.0232
110	5.1305	0.0231
111	5.1535	0.0230
112	5.1764	0.0229
113	5.1993	0.0228
114	5.2220	0.0227
115	5.2446	0.0226
116	5.2671	0.0225
117	5.2895	0.0224
118	5.3118	0.0223
119	5.3341	0.0222
120	5.3562	0.0221
121	5.3782	0.0220
122	5.4002	0.0219
123	5.4220	0.0219
124	5.4438	0.0218
125	5.4655	0.0217

126	5.4871	0.0216
127	5.5086	0.0215
128	5.5300	0.0214
129	5.5513	0.0213
130	5.5726	0.0213
131	5.5938	0.0212
132	5.6148	0.0211
133	5.6358	0.0210
134	5.6568	0.0209
135	5.6776	0.0208
136	5.6984	0.0208
137	5.7191	0.0207
138	5.7397	0.0206
139	5.7602	0.0205
140	5.7807	0.0205
141	5.8011	0.0204
142	5.8214	0.0203
143	5.8417	0.0202
144	5.8618	0.0202
145	5.8820	0.0201
146	5.9020	0.0200
147	5.9220	0.0200
148	5.9419	0.0199
149	5.9617	0.0198
150	5.9814	0.0198
151	6.0011	0.0197
152	6.0208	0.0196
153	6.0403	0.0196
154	6.0598	0.0195
155	6.0793	0.0194
156	6.0987	0.0194
157	6.1180	0.0193
158	6.1372	0.0192
159	6.1564	0.0192
160	6.1755	0.0191
161	6.1946	0.0191
162	6.2136	0.0190
163	6.2326	0.0189
164	6.2514	0.0189
165	6.2703	0.0188
166	6.2890	0.0188
167	6.3078	0.0187
168	6.3264	0.0187
169	6.3450	0.0186
170	6.3636	0.0185
171	6.3821	0.0185
172	6.4005	0.0184
173	6.4189	0.0184
174	6.4372	0.0183
175	6.4555	0.0183
176	6.4737	0.0182
177	6.4919	0.0182
178	6.5100	0.0181
179	6.5281	0.0181
180	6.5461	0.0180
181	6.5641	0.0180
182	6.5820	0.0179
183	6.5999	0.0179
184	6.6177	0.0178

185	6.6355	0.0178
186	6.6532	0.0177
187	6.6709	0.0177
188	6.6885	0.0176
189	6.7061	0.0176
190	6.7236	0.0175
191	6.7411	0.0175
192	6.7585	0.0174
193	6.7759	0.0174
194	6.7933	0.0173
195	6.8106	0.0173
196	6.8278	0.0173
197	6.8450	0.0172
198	6.8622	0.0172
199	6.8793	0.0171
200	6.8964	0.0171
201	6.9135	0.0170
202	6.9305	0.0170
203	6.9474	0.0170
204	6.9643	0.0169
205	6.9812	0.0169
206	6.9980	0.0168
207	7.0148	0.0168
208	7.0316	0.0167
209	7.0483	0.0167
210	7.0649	0.0167
211	7.0816	0.0166
212	7.0981	0.0166
213	7.1147	0.0165
214	7.1312	0.0165
215	7.1477	0.0165
216	7.1641	0.0164
217	7.1805	0.0164
218	7.1968	0.0164
219	7.2132	0.0163
220	7.2294	0.0163
221	7.2457	0.0162
222	7.2619	0.0162
223	7.2780	0.0162
224	7.2942	0.0161
225	7.3103	0.0161
226	7.3263	0.0161
227	7.3423	0.0160
228	7.3583	0.0160
229	7.3743	0.0160
230	7.3902	0.0159
231	7.4061	0.0159
232	7.4219	0.0158
233	7.4377	0.0158
234	7.4535	0.0158
235	7.4693	0.0157
236	7.4850	0.0157
237	7.5006	0.0157
238	7.5163	0.0156
239	7.5319	0.0156
240	7.5475	0.0156
241	7.5630	0.0155
242	7.5785	0.0155
243	7.5940	0.0155

244	7.6094	0.0154
245	7.6249	0.0154
246	7.6402	0.0154
247	7.6556	0.0154
248	7.6709	0.0153
249	7.6862	0.0153
250	7.7015	0.0153
251	7.7167	0.0152
252	7.7319	0.0152
253	7.7470	0.0152
254	7.7622	0.0151
255	7.7773	0.0151
256	7.7924	0.0151
257	7.8074	0.0150
258	7.8224	0.0150
259	7.8374	0.0150
260	7.8524	0.0150
261	7.8673	0.0149
262	7.8822	0.0149
263	7.8971	0.0149
264	7.9119	0.0148
265	7.9267	0.0148
266	7.9415	0.0148
267	7.9563	0.0148
268	7.9710	0.0147
269	7.9857	0.0147
270	8.0004	0.0147
271	8.0150	0.0146
272	8.0296	0.0146
273	8.0442	0.0146
274	8.0588	0.0146
275	8.0733	0.0145
276	8.0879	0.0145
277	8.1023	0.0145
278	8.1168	0.0145
279	8.1312	0.0144
280	8.1456	0.0144
281	8.1600	0.0144
282	8.1744	0.0144
283	8.1887	0.0143
284	8.2030	0.0143
285	8.2173	0.0143
286	8.2315	0.0143
287	8.2458	0.0142
288	8.2600	0.0142

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0142	0.0026	0.0116
2	0.0142	0.0026	0.0116
3	0.0143	0.0026	0.0116
4	0.0143	0.0026	0.0117
5	0.0144	0.0026	0.0117
6	0.0144	0.0027	0.0117
7	0.0144	0.0027	0.0118
8	0.0145	0.0027	0.0118
9	0.0145	0.0027	0.0118

10	0.0145	0.0027	0.0119
11	0.0146	0.0027	0.0119
12	0.0146	0.0027	0.0119
13	0.0147	0.0027	0.0120
14	0.0147	0.0027	0.0120
15	0.0148	0.0027	0.0120
16	0.0148	0.0027	0.0121
17	0.0148	0.0027	0.0121
18	0.0149	0.0027	0.0121
19	0.0149	0.0028	0.0122
20	0.0150	0.0028	0.0122
21	0.0150	0.0028	0.0122
22	0.0150	0.0028	0.0123
23	0.0151	0.0028	0.0123
24	0.0151	0.0028	0.0123
25	0.0152	0.0028	0.0124
26	0.0152	0.0028	0.0124
27	0.0153	0.0028	0.0125
28	0.0153	0.0028	0.0125
29	0.0154	0.0028	0.0125
30	0.0154	0.0028	0.0126
31	0.0155	0.0029	0.0126
32	0.0155	0.0029	0.0126
33	0.0156	0.0029	0.0127
34	0.0156	0.0029	0.0127
35	0.0157	0.0029	0.0128
36	0.0157	0.0029	0.0128
37	0.0158	0.0029	0.0129
38	0.0158	0.0029	0.0129
39	0.0159	0.0029	0.0130
40	0.0159	0.0029	0.0130
41	0.0160	0.0029	0.0130
42	0.0160	0.0030	0.0131
43	0.0161	0.0030	0.0131
44	0.0161	0.0030	0.0132
45	0.0162	0.0030	0.0132
46	0.0162	0.0030	0.0132
47	0.0163	0.0030	0.0133
48	0.0164	0.0030	0.0133
49	0.0164	0.0030	0.0134
50	0.0165	0.0030	0.0134
51	0.0165	0.0031	0.0135
52	0.0166	0.0031	0.0135
53	0.0167	0.0031	0.0136
54	0.0167	0.0031	0.0136
55	0.0168	0.0031	0.0137
56	0.0168	0.0031	0.0137
57	0.0169	0.0031	0.0138
58	0.0170	0.0031	0.0138
59	0.0170	0.0031	0.0139
60	0.0171	0.0032	0.0139
61	0.0172	0.0032	0.0140
62	0.0172	0.0032	0.0140
63	0.0173	0.0032	0.0141
64	0.0173	0.0032	0.0141
65	0.0174	0.0032	0.0142
66	0.0175	0.0032	0.0143
67	0.0176	0.0032	0.0143
68	0.0176	0.0033	0.0144

69	0.0177	0.0033	0.0145
70	0.0178	0.0033	0.0145
71	0.0179	0.0033	0.0146
72	0.0179	0.0033	0.0146
73	0.0180	0.0033	0.0147
74	0.0181	0.0033	0.0147
75	0.0182	0.0034	0.0148
76	0.0182	0.0034	0.0149
77	0.0183	0.0034	0.0149
78	0.0184	0.0034	0.0150
79	0.0185	0.0034	0.0151
80	0.0185	0.0034	0.0151
81	0.0187	0.0034	0.0152
82	0.0187	0.0035	0.0153
83	0.0188	0.0035	0.0154
84	0.0189	0.0035	0.0154
85	0.0190	0.0035	0.0155
86	0.0191	0.0035	0.0155
87	0.0192	0.0035	0.0156
88	0.0192	0.0036	0.0157
89	0.0194	0.0036	0.0158
90	0.0194	0.0036	0.0159
91	0.0196	0.0036	0.0160
92	0.0196	0.0036	0.0160
93	0.0198	0.0036	0.0161
94	0.0198	0.0037	0.0162
95	0.0200	0.0037	0.0163
96	0.0200	0.0037	0.0163
97	0.0202	0.0037	0.0165
98	0.0202	0.0037	0.0165
99	0.0204	0.0038	0.0166
100	0.0205	0.0038	0.0167
101	0.0206	0.0038	0.0168
102	0.0207	0.0038	0.0169
103	0.0208	0.0038	0.0170
104	0.0209	0.0039	0.0171
105	0.0211	0.0039	0.0172
106	0.0212	0.0039	0.0173
107	0.0213	0.0039	0.0174
108	0.0214	0.0040	0.0175
109	0.0216	0.0040	0.0176
110	0.0217	0.0040	0.0177
111	0.0219	0.0040	0.0178
112	0.0219	0.0040	0.0179
113	0.0221	0.0041	0.0180
114	0.0222	0.0041	0.0181
115	0.0224	0.0041	0.0183
116	0.0225	0.0042	0.0184
117	0.0227	0.0042	0.0185
118	0.0228	0.0042	0.0186
119	0.0230	0.0042	0.0188
120	0.0231	0.0043	0.0189
121	0.0233	0.0043	0.0190
122	0.0235	0.0043	0.0191
123	0.0237	0.0044	0.0193
124	0.0238	0.0044	0.0194
125	0.0240	0.0044	0.0196
126	0.0242	0.0045	0.0197
127	0.0244	0.0045	0.0199

128	0.0245	0.0045	0.0200
129	0.0248	0.0046	0.0202
130	0.0249	0.0046	0.0203
131	0.0252	0.0046	0.0205
132	0.0253	0.0047	0.0207
133	0.0256	0.0047	0.0209
134	0.0258	0.0048	0.0210
135	0.0261	0.0048	0.0212
136	0.0262	0.0048	0.0214
137	0.0265	0.0049	0.0216
138	0.0267	0.0049	0.0218
139	0.0270	0.0050	0.0220
140	0.0272	0.0050	0.0222
141	0.0275	0.0051	0.0225
142	0.0277	0.0051	0.0226
143	0.0281	0.0052	0.0229
144	0.0283	0.0052	0.0231
145	0.0307	0.0057	0.0250
146	0.0309	0.0057	0.0252
147	0.0313	0.0058	0.0256
148	0.0316	0.0058	0.0257
149	0.0320	0.0059	0.0261
150	0.0322	0.0059	0.0263
151	0.0327	0.0060	0.0267
152	0.0330	0.0061	0.0269
153	0.0335	0.0062	0.0273
154	0.0338	0.0062	0.0275
155	0.0343	0.0063	0.0280
156	0.0346	0.0064	0.0282
157	0.0352	0.0065	0.0287
158	0.0355	0.0066	0.0290
159	0.0362	0.0067	0.0295
160	0.0365	0.0067	0.0298
161	0.0372	0.0069	0.0304
162	0.0376	0.0069	0.0307
163	0.0384	0.0071	0.0313
164	0.0388	0.0072	0.0316
165	0.0397	0.0073	0.0323
166	0.0401	0.0074	0.0327
167	0.0411	0.0076	0.0335
168	0.0416	0.0077	0.0339
169	0.0427	0.0079	0.0348
170	0.0433	0.0080	0.0353
171	0.0445	0.0082	0.0363
172	0.0452	0.0083	0.0368
173	0.0466	0.0086	0.0380
174	0.0473	0.0087	0.0386
175	0.0490	0.0090	0.0399
176	0.0499	0.0092	0.0407
177	0.0518	0.0096	0.0423
178	0.0529	0.0098	0.0431
179	0.0553	0.0102	0.0451
180	0.0566	0.0104	0.0461
181	0.0595	0.0110	0.0486
182	0.0612	0.0113	0.0499
183	0.0650	0.0120	0.0530
184	0.0673	0.0124	0.0549
185	0.0551	0.0102	0.0449
186	0.0582	0.0107	0.0474

187	0.0660	0.0122	0.0539
188	0.0712	0.0131	0.0581
189	0.0858	0.0158	0.0701
190	0.0968	0.0158	0.0811
191	0.1384	0.0158	0.1227
192	0.1904	0.0158	0.1746
193	0.5958	0.0158	0.5801
194	0.1128	0.0158	0.0970
195	0.0776	0.0143	0.0633
196	0.0618	0.0114	0.0504
197	0.0697	0.0129	0.0569
198	0.0630	0.0116	0.0514
199	0.0580	0.0107	0.0473
200	0.0540	0.0100	0.0441
201	0.0508	0.0094	0.0414
202	0.0481	0.0089	0.0393
203	0.0459	0.0085	0.0374
204	0.0439	0.0081	0.0358
205	0.0421	0.0078	0.0344
206	0.0406	0.0075	0.0331
207	0.0392	0.0072	0.0320
208	0.0380	0.0070	0.0310
209	0.0369	0.0068	0.0301
210	0.0358	0.0066	0.0292
211	0.0349	0.0064	0.0285
212	0.0340	0.0063	0.0277
213	0.0332	0.0061	0.0271
214	0.0325	0.0060	0.0265
215	0.0318	0.0059	0.0259
216	0.0311	0.0057	0.0254
217	0.0285	0.0053	0.0232
218	0.0279	0.0051	0.0228
219	0.0274	0.0050	0.0223
220	0.0269	0.0050	0.0219
221	0.0264	0.0049	0.0215
222	0.0259	0.0048	0.0211
223	0.0255	0.0047	0.0208
224	0.0251	0.0046	0.0204
225	0.0247	0.0045	0.0201
226	0.0243	0.0045	0.0198
227	0.0239	0.0044	0.0195
228	0.0236	0.0043	0.0192
229	0.0232	0.0043	0.0190
230	0.0229	0.0042	0.0187
231	0.0226	0.0042	0.0184
232	0.0223	0.0041	0.0182
233	0.0220	0.0041	0.0180
234	0.0218	0.0040	0.0178
235	0.0215	0.0040	0.0175
236	0.0213	0.0039	0.0173
237	0.0210	0.0039	0.0171
238	0.0208	0.0038	0.0169
239	0.0205	0.0038	0.0168
240	0.0203	0.0037	0.0166
241	0.0201	0.0037	0.0164
242	0.0199	0.0037	0.0162
243	0.0197	0.0036	0.0161
244	0.0195	0.0036	0.0159
245	0.0193	0.0036	0.0157

246	0.0191	0.0035	0.0156
247	0.0189	0.0035	0.0155
248	0.0188	0.0035	0.0153
249	0.0186	0.0034	0.0152
250	0.0184	0.0034	0.0150
251	0.0183	0.0034	0.0149
252	0.0181	0.0033	0.0148
253	0.0180	0.0033	0.0147
254	0.0178	0.0033	0.0145
255	0.0177	0.0033	0.0144
256	0.0175	0.0032	0.0143
257	0.0174	0.0032	0.0142
258	0.0173	0.0032	0.0141
259	0.0171	0.0032	0.0140
260	0.0170	0.0031	0.0139
261	0.0169	0.0031	0.0138
262	0.0167	0.0031	0.0137
263	0.0166	0.0031	0.0136
264	0.0165	0.0030	0.0135
265	0.0164	0.0030	0.0134
266	0.0163	0.0030	0.0133
267	0.0162	0.0030	0.0132
268	0.0161	0.0030	0.0131
269	0.0160	0.0029	0.0130
270	0.0158	0.0029	0.0129
271	0.0157	0.0029	0.0128
272	0.0156	0.0029	0.0128
273	0.0155	0.0029	0.0127
274	0.0154	0.0028	0.0126
275	0.0154	0.0028	0.0125
276	0.0153	0.0028	0.0124
277	0.0152	0.0028	0.0124
278	0.0151	0.0028	0.0123
279	0.0150	0.0028	0.0122
280	0.0149	0.0027	0.0122
281	0.0148	0.0027	0.0121
282	0.0147	0.0027	0.0120
283	0.0146	0.0027	0.0119
284	0.0146	0.0027	0.0119
285	0.0145	0.0027	0.0118
286	0.0144	0.0027	0.0117
287	0.0143	0.0026	0.0117
288	0.0143	0.0026	0.0116

Total soil rain loss = 1.39(In)
Total effective rainfall = 6.87(In)
Peak flow rate in flood hydrograph = 12.53(CFS)

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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

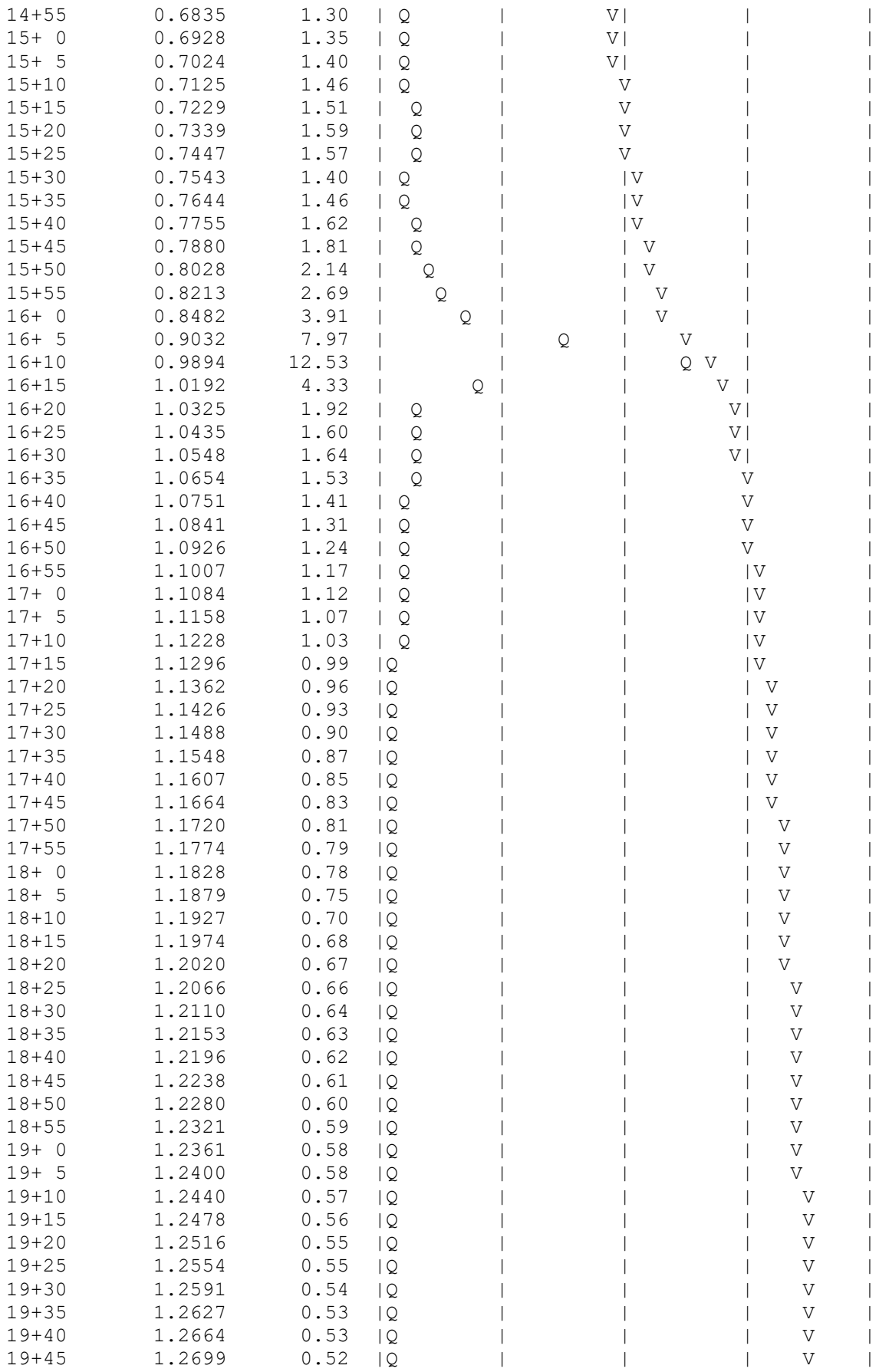
Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	5.0	10.0	15.0	20.0
0+ 5	0.0006	0.08	Q	|	|	|	|

0+10	0.0027	0.31	Q	|	|	|	|
0+15	0.0051	0.35	Q	|	|	|	|
0+20	0.0075	0.35	Q	|	|	|	|
0+25	0.0099	0.35	Q	|	|	|	|
0+30	0.0123	0.35	Q	|	|	|	|
0+35	0.0148	0.35	Q	|	|	|	|
0+40	0.0172	0.35	Q	|	|	|	|
0+45	0.0196	0.35	Q	|	|	|	|
0+50	0.0221	0.35	Q	|	|	|	|
0+55	0.0245	0.36	Q	|	|	|	|
1+ 0	0.0270	0.36	Q	|	|	|	|
1+ 5	0.0294	0.36	Q	|	|	|	|
1+10	0.0319	0.36	Q	|	|	|	|
1+15	0.0344	0.36	Q	|	|	|	|
1+20	0.0369	0.36	QV	|	|	|	|
1+25	0.0394	0.36	QV	|	|	|	|
1+30	0.0419	0.36	QV	|	|	|	|
1+35	0.0444	0.36	QV	|	|	|	|
1+40	0.0469	0.37	QV	|	|	|	|
1+45	0.0494	0.37	QV	|	|	|	|
1+50	0.0519	0.37	QV	|	|	|	|
1+55	0.0545	0.37	QV	|	|	|	|
2+ 0	0.0570	0.37	QV	|	|	|	|
2+ 5	0.0596	0.37	QV	|	|	|	|
2+10	0.0621	0.37	QV	|	|	|	|
2+15	0.0647	0.37	QV	|	|	|	|
2+20	0.0673	0.37	QV	|	|	|	|
2+25	0.0699	0.37	QV	|	|	|	|
2+30	0.0724	0.38	Q V	|	|	|	|
2+35	0.0750	0.38	Q V	|	|	|	|
2+40	0.0777	0.38	Q V	|	|	|	|
2+45	0.0803	0.38	Q V	|	|	|	|
2+50	0.0829	0.38	Q V	|	|	|	|
2+55	0.0855	0.38	Q V	|	|	|	|
3+ 0	0.0882	0.38	Q V	|	|	|	|
3+ 5	0.0908	0.38	Q V	|	|	|	|
3+10	0.0935	0.39	Q V	|	|	|	|
3+15	0.0961	0.39	Q V	|	|	|	|
3+20	0.0988	0.39	Q V	|	|	|	|
3+25	0.1015	0.39	Q V	|	|	|	|
3+30	0.1042	0.39	Q V	|	|	|	|
3+35	0.1069	0.39	Q V	|	|	|	|
3+40	0.1096	0.39	Q V	|	|	|	|
3+45	0.1123	0.39	Q V	|	|	|	|
3+50	0.1151	0.40	Q V	|	|	|	|
3+55	0.1178	0.40	Q V	|	|	|	|
4+ 0	0.1205	0.40	Q V	|	|	|	|
4+ 5	0.1233	0.40	Q V	|	|	|	|
4+10	0.1261	0.40	Q V	|	|	|	|
4+15	0.1288	0.40	Q V	|	|	|	|
4+20	0.1316	0.40	Q V	|	|	|	|
4+25	0.1344	0.41	Q V	|	|	|	|
4+30	0.1372	0.41	Q V	|	|	|	|
4+35	0.1400	0.41	Q V	|	|	|	|
4+40	0.1429	0.41	Q V	|	|	|	|
4+45	0.1457	0.41	Q V	|	|	|	|
4+50	0.1486	0.41	Q V	|	|	|	|
4+55	0.1514	0.42	Q V	|	|	|	|
5+ 0	0.1543	0.42	Q V	|	|	|	|

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5+ 5       0.1572      0.42  Q   V     |          |          |          |
5+10       0.1601      0.42  Q   V     |          |          |          |
5+15       0.1630      0.42  Q   V     |          |          |          |
5+20       0.1659      0.42  Q   V     |          |          |          |
5+25       0.1688      0.42  Q   V     |          |          |          |
5+30       0.1717      0.43  Q   V     |          |          |          |
5+35       0.1747      0.43  Q   V     |          |          |          |
5+40       0.1777      0.43  Q    V    |          |          |          |
5+45       0.1806      0.43  Q    V    |          |          |          |
5+50       0.1836      0.43  Q    V    |          |          |          |
5+55       0.1866      0.44  Q    V    |          |          |          |
6+ 0       0.1896      0.44  Q    V    |          |          |          |
6+ 5       0.1926      0.44  Q    V    |          |          |          |
6+10       0.1957      0.44  Q    V    |          |          |          |
6+15       0.1987      0.44  Q    V    |          |          |          |
6+20       0.2018      0.44  Q    V    |          |          |          |
6+25       0.2049      0.45  Q    V    |          |          |          |
6+30       0.2079      0.45  Q    V    |          |          |          |
6+35       0.2110      0.45  Q    V    |          |          |          |
6+40       0.2142      0.45  Q     V   |          |          |          |
6+45       0.2173      0.45  Q     V   |          |          |          |
6+50       0.2204      0.46  Q     V   |          |          |          |
6+55       0.2236      0.46  Q     V   |          |          |          |
7+ 0       0.2268      0.46  Q     V   |          |          |          |
7+ 5       0.2299      0.46  Q     V   |          |          |          |
7+10       0.2332      0.46  Q     V   |          |          |          |
7+15       0.2364      0.47  Q     V   |          |          |          |
7+20       0.2396      0.47  Q     V   |          |          |          |
7+25       0.2428      0.47  Q     V   |          |          |          |
7+30       0.2461      0.47  Q     V   |          |          |          |
7+35       0.2494      0.48  Q      V  |          |          |          |
7+40       0.2527      0.48  Q      V  |          |          |          |
7+45       0.2560      0.48  Q      V  |          |          |          |
7+50       0.2593      0.48  Q      V  |          |          |          |
7+55       0.2627      0.49  Q      V  |          |          |          |
8+ 0       0.2660      0.49  Q      V  |          |          |          |
8+ 5       0.2694      0.49  Q      V  |          |          |          |
8+10       0.2728      0.49  Q      V  |          |          |          |
8+15       0.2762      0.50  Q      V  |          |          |          |
8+20       0.2797      0.50  Q      V  |          |          |          |
8+25       0.2831      0.50  |Q     V  |          |          |          |
8+30       0.2866      0.50  |Q      V |          |          |          |
8+35       0.2901      0.51  |Q      V |          |          |          |
8+40       0.2936      0.51  |Q      V |          |          |          |
8+45       0.2971      0.51  |Q      V |          |          |          |
8+50       0.3007      0.52  |Q      V |          |          |          |
8+55       0.3042      0.52  |Q      V |          |          |          |
9+ 0       0.3078      0.52  |Q      V |          |          |          |
9+ 5       0.3115      0.52  |Q      V |          |          |          |
9+10       0.3151      0.53  |Q      V |          |          |          |
9+15       0.3187      0.53  |Q      V |          |          |          |
9+20       0.3224      0.53  |Q       V|          |          |          |
9+25       0.3261      0.54  |Q       V|          |          |          |
9+30       0.3299      0.54  |Q       V|          |          |          |
9+35       0.3336      0.54  |Q       V|          |          |          |
9+40       0.3374      0.55  |Q       V|          |          |          |
9+45       0.3412      0.55  |Q       V|          |          |          |
9+50       0.3450      0.56  |Q       V|          |          |          |
9+55       0.3489      0.56  |Q       V|          |          |          |
```

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10+ 0       0.3527      0.56  |Q       V|          |          |          |
10+ 5       0.3566      0.57  |Q        V          |          |          |
10+10       0.3606      0.57  |Q        V          |          |          |
10+15       0.3645      0.57  |Q        V          |          |          |
10+20       0.3685      0.58  |Q        V          |          |          |
10+25       0.3725      0.58  |Q        V          |          |          |
10+30       0.3766      0.59  |Q        V          |          |          |
10+35       0.3807      0.59  |Q        V          |          |          |
10+40       0.3848      0.60  |Q        V          |          |          |
10+45       0.3889      0.60  |Q        V          |          |          |
10+50       0.3931      0.61  |Q        |V         |          |          |
10+55       0.3973      0.61  |Q        |V         |          |          |
11+ 0       0.4015      0.62  |Q        |V         |          |          |
11+ 5       0.4058      0.62  |Q        |V         |          |          |
11+10       0.4101      0.63  |Q        |V         |          |          |
11+15       0.4145      0.63  |Q        |V         |          |          |
11+20       0.4189      0.64  |Q        |V         |          |          |
11+25       0.4233      0.64  |Q        |V         |          |          |
11+30       0.4278      0.65  |Q        | V        |          |          |
11+35       0.4323      0.65  |Q        | V        |          |          |
11+40       0.4368      0.66  |Q        | V        |          |          |
11+45       0.4414      0.67  |Q        | V        |          |          |
11+50       0.4461      0.67  |Q        | V        |          |          |
11+55       0.4507      0.68  |Q        | V        |          |          |
12+ 0       0.4555      0.69  |Q        | V        |          |          |
12+ 5       0.4603      0.71  |Q        | V        |          |          |
12+10       0.4655      0.75  |Q        |  V       |          |          |
12+15       0.4707      0.76  |Q        |  V       |          |          |
12+20       0.4760      0.77  |Q        |  V       |          |          |
12+25       0.4813      0.77  |Q        |  V       |          |          |
12+30       0.4867      0.78  |Q        |  V       |          |          |
12+35       0.4921      0.79  |Q        |  V       |          |          |
12+40       0.4976      0.80  |Q        |   V      |          |          |
12+45       0.5032      0.81  |Q        |   V      |          |          |
12+50       0.5089      0.82  |Q        |   V      |          |          |
12+55       0.5146      0.83  |Q        |   V      |          |          |
13+ 0       0.5203      0.84  |Q        |   V      |          |          |
13+ 5       0.5262      0.85  |Q        |   V      |          |          |
13+10       0.5321      0.86  |Q        |    V     |          |          |
13+15       0.5381      0.87  |Q        |    V     |          |          |
13+20       0.5442      0.88  |Q        |    V     |          |          |
13+25       0.5504      0.90  |Q        |    V     |          |          |
13+30       0.5567      0.91  |Q        |    V     |          |          |
13+35       0.5630      0.92  |Q        |    V     |          |          |
13+40       0.5695      0.94  |Q        |     V    |          |          |
13+45       0.5760      0.95  |Q        |     V    |          |          |
13+50       0.5827      0.97  |Q        |     V    |          |          |
13+55       0.5895      0.99  |Q        |     V    |          |          |
14+ 0       0.5964      1.01  | Q       |     V    |          |          |
14+ 5       0.6035      1.02  | Q       |      V   |          |          |
14+10       0.6107      1.04  | Q       |      V   |          |          |
14+15       0.6180      1.06  | Q       |      V   |          |          |
14+20       0.6255      1.09  | Q       |      V   |          |          |
14+25       0.6332      1.11  | Q       |      V   |          |          |
14+30       0.6410      1.14  | Q       |       V  |          |          |
14+35       0.6490      1.17  | Q       |       V  |          |          |
14+40       0.6573      1.20  | Q       |       V  |          |          |
14+45       0.6658      1.23  | Q       |       V  |          |          |
14+50       0.6745      1.27  | Q       |        V|          |          |
```



14+55	0.6835	1.30	Q		V			
15+ 0	0.6928	1.35	Q		V			
15+ 5	0.7024	1.40	Q		V			
15+10	0.7125	1.46	Q		V			
15+15	0.7229	1.51	Q		V			
15+20	0.7339	1.59	Q		V			
15+25	0.7447	1.57	Q		V			
15+30	0.7543	1.40	Q		V			
15+35	0.7644	1.46	Q		V			
15+40	0.7755	1.62	Q		V			
15+45	0.7880	1.81	Q		V			
15+50	0.8028	2.14	Q		V			
15+55	0.8213	2.69	Q		V			
16+ 0	0.8482	3.91	Q		V			
16+ 5	0.9032	7.97		Q	V			
16+10	0.9894	12.53			Q V			
16+15	1.0192	4.33	Q		V			
16+20	1.0325	1.92	Q		V			
16+25	1.0435	1.60	Q		V			
16+30	1.0548	1.64	Q		V			
16+35	1.0654	1.53	Q		V			
16+40	1.0751	1.41	Q		V			
16+45	1.0841	1.31	Q		V			
16+50	1.0926	1.24	Q		V			
16+55	1.1007	1.17	Q		V			
17+ 0	1.1084	1.12	Q		V			
17+ 5	1.1158	1.07	Q		V			
17+10	1.1228	1.03	Q		V			
17+15	1.1296	0.99	Q		V			
17+20	1.1362	0.96	Q		V			
17+25	1.1426	0.93	Q		V			
17+30	1.1488	0.90	Q		V			
17+35	1.1548	0.87	Q		V			
17+40	1.1607	0.85	Q		V			
17+45	1.1664	0.83	Q		V			
17+50	1.1720	0.81	Q		V			
17+55	1.1774	0.79	Q		V			
18+ 0	1.1828	0.78	Q		V			
18+ 5	1.1879	0.75	Q		V			
18+10	1.1927	0.70	Q		V			
18+15	1.1974	0.68	Q		V			
18+20	1.2020	0.67	Q		V			
18+25	1.2066	0.66	Q		V			
18+30	1.2110	0.64	Q		V			
18+35	1.2153	0.63	Q		V			
18+40	1.2196	0.62	Q		V			
18+45	1.2238	0.61	Q		V			
18+50	1.2280	0.60	Q		V			
18+55	1.2321	0.59	Q		V			
19+ 0	1.2361	0.58	Q		V			
19+ 5	1.2400	0.58	Q		V			
19+10	1.2440	0.57	Q		V			
19+15	1.2478	0.56	Q		V			
19+20	1.2516	0.55	Q		V			
19+25	1.2554	0.55	Q		V			
19+30	1.2591	0.54	Q		V			
19+35	1.2627	0.53	Q		V			
19+40	1.2664	0.53	Q		V			
19+45	1.2699	0.52	Q		V			

```
19+50       1.2735      0.51  |Q        |          |          |    V     |
19+55       1.2770      0.51  |Q        |          |          |     V    |
20+ 0       1.2804      0.50  |Q        |          |          |     V    |
20+ 5       1.2838      0.50  Q         |          |          |     V    |
20+10       1.2872      0.49  Q         |          |          |     V    |
20+15       1.2906      0.49  Q         |          |          |     V    |
20+20       1.2939      0.48  Q         |          |          |     V    |
20+25       1.2972      0.48  Q         |          |          |     V    |
20+30       1.3004      0.47  Q         |          |          |     V    |
20+35       1.3036      0.47  Q         |          |          |     V    |
20+40       1.3068      0.46  Q         |          |          |     V    |
20+45       1.3100      0.46  Q         |          |          |     V    |
20+50       1.3131      0.45  Q         |          |          |      V   |
20+55       1.3162      0.45  Q         |          |          |      V   |
21+ 0       1.3193      0.45  Q         |          |          |      V   |
21+ 5       1.3223      0.44  Q         |          |          |      V   |
21+10       1.3254      0.44  Q         |          |          |      V   |
21+15       1.3284      0.44  Q         |          |          |      V   |
21+20       1.3313      0.43  Q         |          |          |      V   |
21+25       1.3343      0.43  Q         |          |          |      V   |
21+30       1.3372      0.43  Q         |          |          |      V   |
21+35       1.3401      0.42  Q         |          |          |      V   |
21+40       1.3430      0.42  Q         |          |          |      V   |
21+45       1.3459      0.42  Q         |          |          |      V   |
21+50       1.3487      0.41  Q         |          |          |       V  |
21+55       1.3515      0.41  Q         |          |          |       V  |
22+ 0       1.3543      0.41  Q         |          |          |       V  |
22+ 5       1.3571      0.40  Q         |          |          |       V  |
22+10       1.3598      0.40  Q         |          |          |       V  |
22+15       1.3626      0.40  Q         |          |          |       V  |
22+20       1.3653      0.40  Q         |          |          |       V  |
22+25       1.3680      0.39  Q         |          |          |       V  |
22+30       1.3707      0.39  Q         |          |          |       V  |
22+35       1.3734      0.39  Q         |          |          |       V  |
22+40       1.3760      0.38  Q         |          |          |       V  |
22+45       1.3786      0.38  Q         |          |          |       V  |
22+50       1.3813      0.38  Q         |          |          |       V  |
22+55       1.3839      0.38  Q         |          |          |        V |
23+ 0       1.3864      0.38  Q         |          |          |        V |
23+ 5       1.3890      0.37  Q         |          |          |        V |
23+10       1.3916      0.37  Q         |          |          |        V |
23+15       1.3941      0.37  Q         |          |          |        V |
23+20       1.3966      0.37  Q         |          |          |        V |
23+25       1.3991      0.36  Q         |          |          |        V |
23+30       1.4016      0.36  Q         |          |          |        V |
23+35       1.4041      0.36  Q         |          |          |        V |
23+40       1.4066      0.36  Q         |          |          |        V |
23+45       1.4090      0.36  Q         |          |          |        V |
23+50       1.4115      0.35  Q         |          |          |        V |
23+55       1.4139      0.35  Q         |          |          |        V |
24+ 0       1.4163      0.35  Q         |          |          |        V |
24+ 5       1.4181      0.27  Q         |          |          |        V |
24+10       1.4184      0.04  Q         |          |          |        V |
-------------------------------------------------------------------------
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APPENDIX C.5: UNIT HYDROGRAPH ANALYSIS, AREA B, 2-YEAR

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2014, Version 9.0

Study date 04/28/25

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San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6279

320.05 BUFFALO GROVE
UNIT HYDROGRAPH; AREA B
POST-PROJECT
2-YR, 24-HR

Storm Event Year = 2

Antecedent Moisture Condition = 1

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 2		
1.84	1	0.63
Rainfall data for year 2		
1.84	6	1.71
Rainfall data for year 2		
1.84	24	3.23

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 1)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
32.0	16.6	1.84	1.000	1.000	0.200	0.200

Area-averaged adjusted loss rate Fm (In/Hr) = 0.200

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC1)	S	Pervious Yield Fr
0.37	0.200	32.0	16.6	16.15	0.000
1.47	0.800	98.0	98.0	0.20	0.928

Area-averaged catchment yield fraction, Y = 0.742
Area-averaged low loss fraction, Yb = 0.258
User entry of time of concentration = 0.083 (hours)
++
Watershed area = 1.84(Ac.)
Catchment Lag time = 0.066 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 125.5020
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.200(In/Hr)
Average low loss rate fraction (Yb) = 0.258 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.233(In)
Computed peak 30-minute rainfall = 0.477(In)
Specified peak 1-hour rainfall = 0.630(In)
Computed peak 3-hour rainfall = 1.162(In)
Specified peak 6-hour rainfall = 1.710(In)
Specified peak 24-hour rainfall = 3.230(In)

Rainfall depth area reduction factors:
Using a total area of 1.84(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.233(In)
30-minute factor = 1.000 Adjusted rainfall = 0.477(In)
1-hour factor = 1.000 Adjusted rainfall = 0.630(In)
3-hour factor = 1.000 Adjusted rainfall = 1.162(In)
6-hour factor = 1.000 Adjusted rainfall = 1.710(In)
24-hour factor = 1.000 Adjusted rainfall = 3.230(In)

U n i t H y d r o g r a p h
++

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
(K = 22.25 (CFS))		
1	26.066	5.800
2	90.306	14.295
3	100.000	2.157

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2331	0.2331
2	0.3076	0.0745
3	0.3618	0.0542
4	0.4059	0.0441
5	0.4438	0.0379
6	0.4774	0.0336
7	0.5078	0.0304

8	0.5356	0.0279
9	0.5615	0.0258
10	0.5856	0.0242
11	0.6084	0.0228
12	0.6299	0.0215
13	0.6587	0.0287
14	0.6865	0.0278
15	0.7134	0.0269
16	0.7395	0.0261
17	0.7649	0.0254
18	0.7897	0.0248
19	0.8138	0.0242
20	0.8374	0.0236
21	0.8605	0.0231
22	0.8831	0.0226
23	0.9053	0.0222
24	0.9270	0.0217
25	0.9483	0.0213
26	0.9693	0.0210
27	0.9899	0.0206
28	1.0102	0.0203
29	1.0301	0.0200
30	1.0498	0.0196
31	1.0691	0.0194
32	1.0882	0.0191
33	1.1071	0.0188
34	1.1256	0.0186
35	1.1440	0.0183
36	1.1621	0.0181
37	1.1799	0.0179
38	1.1976	0.0177
39	1.2151	0.0175
40	1.2323	0.0173
41	1.2494	0.0171
42	1.2663	0.0169
43	1.2830	0.0167
44	1.2996	0.0165
45	1.3159	0.0164
46	1.3322	0.0162
47	1.3482	0.0161
48	1.3641	0.0159
49	1.3799	0.0158
50	1.3955	0.0156
51	1.4110	0.0155
52	1.4264	0.0154
53	1.4416	0.0152
54	1.4567	0.0151
55	1.4717	0.0150
56	1.4865	0.0149
57	1.5012	0.0147
58	1.5159	0.0146
59	1.5304	0.0145
60	1.5448	0.0144
61	1.5591	0.0143
62	1.5733	0.0142
63	1.5874	0.0141
64	1.6014	0.0140
65	1.6152	0.0139
66	1.6290	0.0138

67	1.6428	0.0137
68	1.6564	0.0136
69	1.6699	0.0135
70	1.6834	0.0134
71	1.6967	0.0134
72	1.7100	0.0133
73	1.7208	0.0109
74	1.7316	0.0108
75	1.7423	0.0107
76	1.7529	0.0106
77	1.7635	0.0105
78	1.7740	0.0105
79	1.7843	0.0104
80	1.7947	0.0103
81	1.8049	0.0103
82	1.8151	0.0102
83	1.8252	0.0101
84	1.8353	0.0101
85	1.8453	0.0100
86	1.8552	0.0099
87	1.8651	0.0099
88	1.8749	0.0098
89	1.8846	0.0097
90	1.8943	0.0097
91	1.9039	0.0096
92	1.9135	0.0096
93	1.9230	0.0095
94	1.9325	0.0095
95	1.9419	0.0094
96	1.9512	0.0094
97	1.9605	0.0093
98	1.9698	0.0092
99	1.9790	0.0092
100	1.9881	0.0091
101	1.9972	0.0091
102	2.0063	0.0090
103	2.0153	0.0090
104	2.0242	0.0090
105	2.0331	0.0089
106	2.0420	0.0089
107	2.0508	0.0088
108	2.0596	0.0088
109	2.0683	0.0087
110	2.0770	0.0087
111	2.0856	0.0086
112	2.0942	0.0086
113	2.1028	0.0086
114	2.1113	0.0085
115	2.1198	0.0085
116	2.1282	0.0084
117	2.1366	0.0084
118	2.1450	0.0084
119	2.1533	0.0083
120	2.1616	0.0083
121	2.1698	0.0082
122	2.1780	0.0082
123	2.1862	0.0082
124	2.1943	0.0081
125	2.2024	0.0081

126	2.2105	0.0081
127	2.2185	0.0080
128	2.2265	0.0080
129	2.2345	0.0080
130	2.2424	0.0079
131	2.2503	0.0079
132	2.2582	0.0079
133	2.2660	0.0078
134	2.2738	0.0078
135	2.2816	0.0078
136	2.2893	0.0077
137	2.2970	0.0077
138	2.3047	0.0077
139	2.3124	0.0076
140	2.3200	0.0076
141	2.3276	0.0076
142	2.3351	0.0076
143	2.3427	0.0075
144	2.3502	0.0075
145	2.3576	0.0075
146	2.3651	0.0074
147	2.3725	0.0074
148	2.3799	0.0074
149	2.3873	0.0074
150	2.3946	0.0073
151	2.4019	0.0073
152	2.4092	0.0073
153	2.4164	0.0073
154	2.4237	0.0072
155	2.4309	0.0072
156	2.4381	0.0072
157	2.4452	0.0072
158	2.4524	0.0071
159	2.4595	0.0071
160	2.4665	0.0071
161	2.4736	0.0071
162	2.4806	0.0070
163	2.4877	0.0070
164	2.4946	0.0070
165	2.5016	0.0070
166	2.5086	0.0069
167	2.5155	0.0069
168	2.5224	0.0069
169	2.5293	0.0069
170	2.5361	0.0069
171	2.5429	0.0068
172	2.5498	0.0068
173	2.5565	0.0068
174	2.5633	0.0068
175	2.5701	0.0067
176	2.5768	0.0067
177	2.5835	0.0067
178	2.5902	0.0067
179	2.5969	0.0067
180	2.6035	0.0066
181	2.6101	0.0066
182	2.6167	0.0066
183	2.6233	0.0066
184	2.6299	0.0066

185	2.6364	0.0065
186	2.6430	0.0065
187	2.6495	0.0065
188	2.6560	0.0065
189	2.6624	0.0065
190	2.6689	0.0065
191	2.6753	0.0064
192	2.6817	0.0064
193	2.6881	0.0064
194	2.6945	0.0064
195	2.7009	0.0064
196	2.7072	0.0063
197	2.7136	0.0063
198	2.7199	0.0063
199	2.7262	0.0063
200	2.7324	0.0063
201	2.7387	0.0063
202	2.7449	0.0062
203	2.7512	0.0062
204	2.7574	0.0062
205	2.7636	0.0062
206	2.7697	0.0062
207	2.7759	0.0062
208	2.7820	0.0061
209	2.7882	0.0061
210	2.7943	0.0061
211	2.8004	0.0061
212	2.8065	0.0061
213	2.8125	0.0061
214	2.8186	0.0061
215	2.8246	0.0060
216	2.8306	0.0060
217	2.8366	0.0060
218	2.8426	0.0060
219	2.8486	0.0060
220	2.8546	0.0060
221	2.8605	0.0059
222	2.8664	0.0059
223	2.8724	0.0059
224	2.8783	0.0059
225	2.8841	0.0059
226	2.8900	0.0059
227	2.8959	0.0059
228	2.9017	0.0058
229	2.9076	0.0058
230	2.9134	0.0058
231	2.9192	0.0058
232	2.9250	0.0058
233	2.9307	0.0058
234	2.9365	0.0058
235	2.9423	0.0058
236	2.9480	0.0057
237	2.9537	0.0057
238	2.9594	0.0057
239	2.9651	0.0057
240	2.9708	0.0057
241	2.9765	0.0057
242	2.9821	0.0057
243	2.9878	0.0056

244	2.9934	0.0056
245	2.9990	0.0056
246	3.0047	0.0056
247	3.0103	0.0056
248	3.0158	0.0056
249	3.0214	0.0056
250	3.0270	0.0056
251	3.0325	0.0055
252	3.0381	0.0055
253	3.0436	0.0055
254	3.0491	0.0055
255	3.0546	0.0055
256	3.0601	0.0055
257	3.0656	0.0055
258	3.0710	0.0055
259	3.0765	0.0055
260	3.0819	0.0054
261	3.0874	0.0054
262	3.0928	0.0054
263	3.0982	0.0054
264	3.1036	0.0054
265	3.1090	0.0054
266	3.1144	0.0054
267	3.1197	0.0054
268	3.1251	0.0054
269	3.1304	0.0053
270	3.1358	0.0053
271	3.1411	0.0053
272	3.1464	0.0053
273	3.1517	0.0053
274	3.1570	0.0053
275	3.1623	0.0053
276	3.1675	0.0053
277	3.1728	0.0053
278	3.1780	0.0052
279	3.1833	0.0052
280	3.1885	0.0052
281	3.1937	0.0052
282	3.1989	0.0052
283	3.2041	0.0052
284	3.2093	0.0052
285	3.2145	0.0052
286	3.2197	0.0052
287	3.2248	0.0052
288	3.2300	0.0052

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0052	0.0013	0.0038
2	0.0052	0.0013	0.0038
3	0.0052	0.0013	0.0038
4	0.0052	0.0013	0.0039
5	0.0052	0.0013	0.0039
6	0.0052	0.0013	0.0039
7	0.0052	0.0013	0.0039
8	0.0052	0.0014	0.0039
9	0.0053	0.0014	0.0039

10	0.0053	0.0014	0.0039
11	0.0053	0.0014	0.0039
12	0.0053	0.0014	0.0039
13	0.0053	0.0014	0.0040
14	0.0053	0.0014	0.0040
15	0.0054	0.0014	0.0040
16	0.0054	0.0014	0.0040
17	0.0054	0.0014	0.0040
18	0.0054	0.0014	0.0040
19	0.0054	0.0014	0.0040
20	0.0054	0.0014	0.0040
21	0.0055	0.0014	0.0041
22	0.0055	0.0014	0.0041
23	0.0055	0.0014	0.0041
24	0.0055	0.0014	0.0041
25	0.0055	0.0014	0.0041
26	0.0055	0.0014	0.0041
27	0.0056	0.0014	0.0041
28	0.0056	0.0014	0.0041
29	0.0056	0.0014	0.0042
30	0.0056	0.0014	0.0042
31	0.0056	0.0015	0.0042
32	0.0057	0.0015	0.0042
33	0.0057	0.0015	0.0042
34	0.0057	0.0015	0.0042
35	0.0057	0.0015	0.0042
36	0.0057	0.0015	0.0043
37	0.0058	0.0015	0.0043
38	0.0058	0.0015	0.0043
39	0.0058	0.0015	0.0043
40	0.0058	0.0015	0.0043
41	0.0058	0.0015	0.0043
42	0.0059	0.0015	0.0044
43	0.0059	0.0015	0.0044
44	0.0059	0.0015	0.0044
45	0.0059	0.0015	0.0044
46	0.0059	0.0015	0.0044
47	0.0060	0.0015	0.0044
48	0.0060	0.0015	0.0044
49	0.0060	0.0016	0.0045
50	0.0060	0.0016	0.0045
51	0.0061	0.0016	0.0045
52	0.0061	0.0016	0.0045
53	0.0061	0.0016	0.0045
54	0.0061	0.0016	0.0045
55	0.0062	0.0016	0.0046
56	0.0062	0.0016	0.0046
57	0.0062	0.0016	0.0046
58	0.0062	0.0016	0.0046
59	0.0063	0.0016	0.0046
60	0.0063	0.0016	0.0047
61	0.0063	0.0016	0.0047
62	0.0063	0.0016	0.0047
63	0.0064	0.0016	0.0047
64	0.0064	0.0016	0.0047
65	0.0064	0.0017	0.0048
66	0.0064	0.0017	0.0048
67	0.0065	0.0017	0.0048
68	0.0065	0.0017	0.0048

69	0.0065	0.0017	0.0048
70	0.0065	0.0017	0.0049
71	0.0066	0.0017	0.0049
72	0.0066	0.0017	0.0049
73	0.0066	0.0017	0.0049
74	0.0067	0.0017	0.0049
75	0.0067	0.0017	0.0050
76	0.0067	0.0017	0.0050
77	0.0068	0.0017	0.0050
78	0.0068	0.0017	0.0050
79	0.0068	0.0018	0.0051
80	0.0069	0.0018	0.0051
81	0.0069	0.0018	0.0051
82	0.0069	0.0018	0.0051
83	0.0070	0.0018	0.0052
84	0.0070	0.0018	0.0052
85	0.0070	0.0018	0.0052
86	0.0071	0.0018	0.0052
87	0.0071	0.0018	0.0053
88	0.0071	0.0018	0.0053
89	0.0072	0.0019	0.0053
90	0.0072	0.0019	0.0054
91	0.0073	0.0019	0.0054
92	0.0073	0.0019	0.0054
93	0.0073	0.0019	0.0054
94	0.0074	0.0019	0.0055
95	0.0074	0.0019	0.0055
96	0.0074	0.0019	0.0055
97	0.0075	0.0019	0.0056
98	0.0075	0.0019	0.0056
99	0.0076	0.0020	0.0056
100	0.0076	0.0020	0.0057
101	0.0077	0.0020	0.0057
102	0.0077	0.0020	0.0057
103	0.0078	0.0020	0.0058
104	0.0078	0.0020	0.0058
105	0.0079	0.0020	0.0058
106	0.0079	0.0020	0.0059
107	0.0080	0.0021	0.0059
108	0.0080	0.0021	0.0059
109	0.0081	0.0021	0.0060
110	0.0081	0.0021	0.0060
111	0.0082	0.0021	0.0061
112	0.0082	0.0021	0.0061
113	0.0083	0.0021	0.0061
114	0.0083	0.0021	0.0062
115	0.0084	0.0022	0.0062
116	0.0084	0.0022	0.0063
117	0.0085	0.0022	0.0063
118	0.0086	0.0022	0.0064
119	0.0086	0.0022	0.0064
120	0.0087	0.0022	0.0064
121	0.0088	0.0023	0.0065
122	0.0088	0.0023	0.0065
123	0.0089	0.0023	0.0066
124	0.0090	0.0023	0.0066
125	0.0090	0.0023	0.0067
126	0.0091	0.0023	0.0068
127	0.0092	0.0024	0.0068

128	0.0092	0.0024	0.0069
129	0.0094	0.0024	0.0069
130	0.0094	0.0024	0.0070
131	0.0095	0.0025	0.0071
132	0.0096	0.0025	0.0071
133	0.0097	0.0025	0.0072
134	0.0097	0.0025	0.0072
135	0.0099	0.0025	0.0073
136	0.0099	0.0026	0.0074
137	0.0101	0.0026	0.0075
138	0.0101	0.0026	0.0075
139	0.0103	0.0026	0.0076
140	0.0103	0.0027	0.0077
141	0.0105	0.0027	0.0078
142	0.0105	0.0027	0.0078
143	0.0107	0.0028	0.0079
144	0.0108	0.0028	0.0080
145	0.0133	0.0034	0.0099
146	0.0134	0.0034	0.0099
147	0.0135	0.0035	0.0100
148	0.0136	0.0035	0.0101
149	0.0138	0.0036	0.0102
150	0.0139	0.0036	0.0103
151	0.0141	0.0036	0.0105
152	0.0142	0.0037	0.0105
153	0.0144	0.0037	0.0107
154	0.0145	0.0037	0.0108
155	0.0147	0.0038	0.0109
156	0.0149	0.0038	0.0110
157	0.0151	0.0039	0.0112
158	0.0152	0.0039	0.0113
159	0.0155	0.0040	0.0115
160	0.0156	0.0040	0.0116
161	0.0159	0.0041	0.0118
162	0.0161	0.0041	0.0119
163	0.0164	0.0042	0.0122
164	0.0165	0.0043	0.0123
165	0.0169	0.0044	0.0125
166	0.0171	0.0044	0.0127
167	0.0175	0.0045	0.0130
168	0.0177	0.0046	0.0131
169	0.0181	0.0047	0.0134
170	0.0183	0.0047	0.0136
171	0.0188	0.0048	0.0140
172	0.0191	0.0049	0.0142
173	0.0196	0.0051	0.0146
174	0.0200	0.0051	0.0148
175	0.0206	0.0053	0.0153
176	0.0210	0.0054	0.0156
177	0.0217	0.0056	0.0161
178	0.0222	0.0057	0.0164
179	0.0231	0.0059	0.0171
180	0.0236	0.0061	0.0175
181	0.0248	0.0064	0.0184
182	0.0254	0.0065	0.0189
183	0.0269	0.0069	0.0200
184	0.0278	0.0072	0.0206
185	0.0215	0.0056	0.0160
186	0.0228	0.0059	0.0169

187	0.0258	0.0067	0.0192
188	0.0279	0.0072	0.0207
189	0.0336	0.0087	0.0249
190	0.0379	0.0098	0.0281
191	0.0542	0.0140	0.0402
192	0.0745	0.0167	0.0578
193	0.2331	0.0167	0.2165
194	0.0441	0.0114	0.0328
195	0.0304	0.0078	0.0225
196	0.0242	0.0062	0.0179
197	0.0287	0.0074	0.0213
198	0.0261	0.0067	0.0194
199	0.0242	0.0062	0.0179
200	0.0226	0.0058	0.0168
201	0.0213	0.0055	0.0158
202	0.0203	0.0052	0.0150
203	0.0194	0.0050	0.0144
204	0.0186	0.0048	0.0138
205	0.0179	0.0046	0.0133
206	0.0173	0.0044	0.0128
207	0.0167	0.0043	0.0124
208	0.0162	0.0042	0.0120
209	0.0158	0.0041	0.0117
210	0.0154	0.0040	0.0114
211	0.0150	0.0039	0.0111
212	0.0146	0.0038	0.0109
213	0.0143	0.0037	0.0106
214	0.0140	0.0036	0.0104
215	0.0137	0.0035	0.0102
216	0.0134	0.0035	0.0100
217	0.0109	0.0028	0.0081
218	0.0106	0.0027	0.0079
219	0.0104	0.0027	0.0077
220	0.0102	0.0026	0.0076
221	0.0100	0.0026	0.0074
222	0.0098	0.0025	0.0073
223	0.0096	0.0025	0.0071
224	0.0095	0.0024	0.0070
225	0.0093	0.0024	0.0069
226	0.0091	0.0024	0.0068
227	0.0090	0.0023	0.0067
228	0.0089	0.0023	0.0066
229	0.0087	0.0022	0.0065
230	0.0086	0.0022	0.0064
231	0.0085	0.0022	0.0063
232	0.0084	0.0022	0.0062
233	0.0082	0.0021	0.0061
234	0.0081	0.0021	0.0060
235	0.0080	0.0021	0.0060
236	0.0079	0.0020	0.0059
237	0.0078	0.0020	0.0058
238	0.0077	0.0020	0.0057
239	0.0076	0.0020	0.0057
240	0.0076	0.0019	0.0056
241	0.0075	0.0019	0.0055
242	0.0074	0.0019	0.0055
243	0.0073	0.0019	0.0054
244	0.0072	0.0019	0.0054
245	0.0072	0.0018	0.0053

246	0.0071	0.0018	0.0053
247	0.0070	0.0018	0.0052
248	0.0069	0.0018	0.0052
249	0.0069	0.0018	0.0051
250	0.0068	0.0018	0.0051
251	0.0067	0.0017	0.0050
252	0.0067	0.0017	0.0050
253	0.0066	0.0017	0.0049
254	0.0066	0.0017	0.0049
255	0.0065	0.0017	0.0048
256	0.0065	0.0017	0.0048
257	0.0064	0.0016	0.0048
258	0.0063	0.0016	0.0047
259	0.0063	0.0016	0.0047
260	0.0062	0.0016	0.0046
261	0.0062	0.0016	0.0046
262	0.0061	0.0016	0.0046
263	0.0061	0.0016	0.0045
264	0.0061	0.0016	0.0045
265	0.0060	0.0015	0.0045
266	0.0060	0.0015	0.0044
267	0.0059	0.0015	0.0044
268	0.0059	0.0015	0.0044
269	0.0058	0.0015	0.0043
270	0.0058	0.0015	0.0043
271	0.0058	0.0015	0.0043
272	0.0057	0.0015	0.0042
273	0.0057	0.0015	0.0042
274	0.0056	0.0015	0.0042
275	0.0056	0.0014	0.0042
276	0.0056	0.0014	0.0041
277	0.0055	0.0014	0.0041
278	0.0055	0.0014	0.0041
279	0.0055	0.0014	0.0040
280	0.0054	0.0014	0.0040
281	0.0054	0.0014	0.0040
282	0.0054	0.0014	0.0040
283	0.0053	0.0014	0.0040
284	0.0053	0.0014	0.0039
285	0.0053	0.0014	0.0039
286	0.0052	0.0013	0.0039
287	0.0052	0.0013	0.0039
288	0.0052	0.0013	0.0038

Total soil rain loss = 0.79(In)
Total effective rainfall = 2.44(In)
Peak flow rate in flood hydrograph = 3.41(CFS)

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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0002	0.02	Q	|	|	|	|

0+10	0.0007	0.08	Q	|	|	|	|
0+15	0.0013	0.09	Q	|	|	|	|
0+20	0.0019	0.09	Q	|	|	|	|
0+25	0.0024	0.09	Q	|	|	|	|
0+30	0.0030	0.09	Q	|	|	|	|
0+35	0.0036	0.09	Q	|	|	|	|
0+40	0.0042	0.09	Q	|	|	|	|
0+45	0.0048	0.09	Q	|	|	|	|
0+50	0.0054	0.09	Q	|	|	|	|
0+55	0.0060	0.09	Q	|	|	|	|
1+ 0	0.0066	0.09	Q	|	|	|	|
1+ 5	0.0072	0.09	Q	|	|	|	|
1+10	0.0078	0.09	Q	|	|	|	|
1+15	0.0085	0.09	Q	|	|	|	|
1+20	0.0091	0.09	Q	|	|	|	|
1+25	0.0097	0.09	QV	|	|	|	|
1+30	0.0103	0.09	QV	|	|	|	|
1+35	0.0109	0.09	QV	|	|	|	|
1+40	0.0115	0.09	QV	|	|	|	|
1+45	0.0121	0.09	QV	|	|	|	|
1+50	0.0128	0.09	QV	|	|	|	|
1+55	0.0134	0.09	QV	|	|	|	|
2+ 0	0.0140	0.09	QV	|	|	|	|
2+ 5	0.0146	0.09	QV	|	|	|	|
2+10	0.0153	0.09	QV	|	|	|	|
2+15	0.0159	0.09	QV	|	|	|	|
2+20	0.0165	0.09	QV	|	|	|	|
2+25	0.0172	0.09	QV	|	|	|	|
2+30	0.0178	0.09	QV	|	|	|	|
2+35	0.0185	0.09	QV	|	|	|	|
2+40	0.0191	0.09	Q V	|	|	|	|
2+45	0.0197	0.09	Q V	|	|	|	|
2+50	0.0204	0.09	Q V	|	|	|	|
2+55	0.0210	0.09	Q V	|	|	|	|
3+ 0	0.0217	0.09	Q V	|	|	|	|
3+ 5	0.0223	0.09	Q V	|	|	|	|
3+10	0.0230	0.10	Q V	|	|	|	|
3+15	0.0237	0.10	Q V	|	|	|	|
3+20	0.0243	0.10	Q V	|	|	|	|
3+25	0.0250	0.10	Q V	|	|	|	|
3+30	0.0256	0.10	Q V	|	|	|	|
3+35	0.0263	0.10	Q V	|	|	|	|
3+40	0.0270	0.10	Q V	|	|	|	|
3+45	0.0277	0.10	Q V	|	|	|	|
3+50	0.0283	0.10	Q V	|	|	|	|
3+55	0.0290	0.10	Q V	|	|	|	|
4+ 0	0.0297	0.10	Q V	|	|	|	|
4+ 5	0.0304	0.10	Q V	|	|	|	|
4+10	0.0311	0.10	Q V	|	|	|	|
4+15	0.0317	0.10	Q V	|	|	|	|
4+20	0.0324	0.10	Q V	|	|	|	|
4+25	0.0331	0.10	Q V	|	|	|	|
4+30	0.0338	0.10	Q V	|	|	|	|
4+35	0.0345	0.10	Q V	|	|	|	|
4+40	0.0352	0.10	Q V	|	|	|	|
4+45	0.0359	0.10	Q V	|	|	|	|
4+50	0.0366	0.10	Q V	|	|	|	|
4+55	0.0373	0.10	Q V	|	|	|	|
5+ 0	0.0381	0.10	Q V	|	|	|	|

5+ 5	0.0388	0.10	Q	V	|	|	|	|
5+10	0.0395	0.10	Q	V	|	|	|	|
5+15	0.0402	0.10	Q	V	|	|	|	|
5+20	0.0409	0.11	Q	V	|	|	|	|
5+25	0.0417	0.11	Q	V	|	|	|	|
5+30	0.0424	0.11	Q	V	|	|	|	|
5+35	0.0431	0.11	Q	V	|	|	|	|
5+40	0.0439	0.11	Q	V	|	|	|	|
5+45	0.0446	0.11	Q	V	|	|	|	|
5+50	0.0453	0.11	Q	V	|	|	|	|
5+55	0.0461	0.11	Q	V	|	|	|	|
6+ 0	0.0468	0.11	Q	V	|	|	|	|
6+ 5	0.0476	0.11	Q	V	|	|	|	|
6+10	0.0483	0.11	Q	V	|	|	|	|
6+15	0.0491	0.11	Q	V	|	|	|	|
6+20	0.0499	0.11	Q	V	|	|	|	|
6+25	0.0506	0.11	Q	V	|	|	|	|
6+30	0.0514	0.11	Q	V	|	|	|	|
6+35	0.0522	0.11	Q	V	|	|	|	|
6+40	0.0530	0.11	Q	V	|	|	|	|
6+45	0.0537	0.11	Q	V	|	|	|	|
6+50	0.0545	0.11	Q	V	|	|	|	|
6+55	0.0553	0.11	Q	V	|	|	|	|
7+ 0	0.0561	0.12	Q	V	|	|	|	|
7+ 5	0.0569	0.12	Q	V	|	|	|	|
7+10	0.0577	0.12	Q	V	|	|	|	|
7+15	0.0585	0.12	Q	V	|	|	|	|
7+20	0.0593	0.12	Q	V	|	|	|	|
7+25	0.0601	0.12	Q	V	|	|	|	|
7+30	0.0609	0.12	Q	V	|	|	|	|
7+35	0.0618	0.12	Q	V	|	|	|	|
7+40	0.0626	0.12	Q	V	|	|	|	|
7+45	0.0634	0.12	Q	V	|	|	|	|
7+50	0.0643	0.12	Q	V	|	|	|	|
7+55	0.0651	0.12	Q	V	|	|	|	|
8+ 0	0.0659	0.12	Q	V	|	|	|	|
8+ 5	0.0668	0.12	Q	V	|	|	|	|
8+10	0.0676	0.12	Q	V	|	|	|	|
8+15	0.0685	0.12	Q	V	|	|	|	|
8+20	0.0694	0.13	Q	V	|	|	|	|
8+25	0.0702	0.13	Q	V	|	|	|	|
8+30	0.0711	0.13	Q	V	|	|	|	|
8+35	0.0720	0.13	Q	V	|	|	|	|
8+40	0.0729	0.13	Q	V	|	|	|	|
8+45	0.0738	0.13	Q	V	|	|	|	|
8+50	0.0746	0.13	Q	V	|	|	|	|
8+55	0.0755	0.13	Q	V	|	|	|	|
9+ 0	0.0765	0.13	Q	V	|	|	|	|
9+ 5	0.0774	0.13	Q	V	|	|	|	|
9+10	0.0783	0.13	Q	V	|	|	|	|
9+15	0.0792	0.13	Q	V	|	|	|	|
9+20	0.0801	0.14	Q	V	|	|	|	|
9+25	0.0811	0.14	Q	V	|	|	|	|
9+30	0.0820	0.14	Q	V	|	|	|	|
9+35	0.0830	0.14	Q	V	|	|	|	|
9+40	0.0839	0.14	Q	V	|	|	|	|
9+45	0.0849	0.14	Q	V	|	|	|	|
9+50	0.0859	0.14	Q	V	|	|	|	|
9+55	0.0868	0.14	Q	V	|	|	|	|

```
10+ 0       0.0878      0.14  Q        V|          |          |          |
10+ 5       0.0888      0.14  Q        V|          |          |          |
10+10       0.0898      0.14  Q        V|          |          |          |
10+15       0.0908      0.15  Q        V|          |          |          |
10+20       0.0918      0.15  Q        V|          |          |          |
10+25       0.0928      0.15  Q        V|          |          |          |
10+30       0.0939      0.15  Q         V          |          |          |
10+35       0.0949      0.15  Q         V          |          |          |
10+40       0.0960      0.15  Q         V          |          |          |
10+45       0.0970      0.15  Q         V          |          |          |
10+50       0.0981      0.15  Q         V          |          |          |
10+55       0.0991      0.16  Q         V          |          |          |
11+ 0       0.1002      0.16  Q         V          |          |          |
11+ 5       0.1013      0.16  Q         V          |          |          |
11+10       0.1024      0.16  Q         V          |          |          |
11+15       0.1035      0.16  Q         |V         |          |          |
11+20       0.1047      0.16  Q         |V         |          |          |
11+25       0.1058      0.16  Q         |V         |          |          |
11+30       0.1069      0.17  Q         |V         |          |          |
11+35       0.1081      0.17  Q         |V         |          |          |
11+40       0.1093      0.17  Q         |V         |          |          |
11+45       0.1104      0.17  Q         |V         |          |          |
11+50       0.1116      0.17  Q         |V         |          |          |
11+55       0.1128      0.17  Q         | V        |          |          |
12+ 0       0.1140      0.18  Q         | V        |          |          |
12+ 5       0.1153      0.19  Q         | V        |          |          |
12+10       0.1168      0.22  Q         | V        |          |          |
12+15       0.1184      0.22  Q         | V        |          |          |
12+20       0.1199      0.22  Q         | V        |          |          |
12+25       0.1215      0.23  Q         | V        |          |          |
12+30       0.1230      0.23  Q         |  V       |          |          |
12+35       0.1246      0.23  Q         |  V       |          |          |
12+40       0.1262      0.23  Q         |  V       |          |          |
12+45       0.1278      0.24  Q         |  V       |          |          |
12+50       0.1295      0.24  Q         |  V       |          |          |
12+55       0.1311      0.24  Q         |   V      |          |          |
13+ 0       0.1328      0.24  Q         |   V      |          |          |
13+ 5       0.1345      0.25  Q         |   V      |          |          |
13+10       0.1362      0.25  Q         |   V      |          |          |
13+15       0.1380      0.25  |Q        |   V      |          |          |
13+20       0.1397      0.26  |Q        |   V      |          |          |
13+25       0.1415      0.26  |Q        |    V     |          |          |
13+30       0.1433      0.26  |Q        |    V     |          |          |
13+35       0.1452      0.27  |Q        |    V     |          |          |
13+40       0.1470      0.27  |Q        |    V     |          |          |
13+45       0.1489      0.27  |Q        |    V     |          |          |
13+50       0.1508      0.28  |Q        |     V    |          |          |
13+55       0.1528      0.28  |Q        |     V    |          |          |
14+ 0       0.1548      0.29  |Q        |     V    |          |          |
14+ 5       0.1568      0.29  |Q        |     V    |          |          |
14+10       0.1589      0.30  |Q        |     V    |          |          |
14+15       0.1610      0.30  |Q        |      V   |          |          |
14+20       0.1631      0.31  |Q        |      V   |          |          |
14+25       0.1653      0.32  |Q        |      V   |          |          |
14+30       0.1675      0.33  |Q        |      V   |          |          |
14+35       0.1698      0.33  |Q        |       V  |          |          |
14+40       0.1722      0.34  |Q        |       V  |          |          |
14+45       0.1746      0.35  |Q        |       V  |          |          |
14+50       0.1770      0.36  |Q        |       V  |          |          |
```

```
14+55       0.1796      0.37  |Q         |         V|          |          |
15+ 0       0.1822      0.38  |Q         |         V|          |          |
15+ 5       0.1849      0.39  |Q         |         V|          |          |
15+10       0.1877      0.41  |Q         |          V          |          |
15+15       0.1907      0.43  |Q         |          V          |          |
15+20       0.1937      0.45  |Q         |          V          |          |
15+25       0.1967      0.43  |Q         |          |V         |          |
15+30       0.1993      0.37  |Q         |          |V         |          |
15+35       0.2019      0.39  |Q         |          |V         |          |
15+40       0.2049      0.43  |Q         |          |V         |          |
15+45       0.2082      0.48  |Q         |          | V        |          |
15+50       0.2121      0.56  | Q        |          | V        |          |
15+55       0.2169      0.69  | Q        |          |  V       |          |
16+ 0       0.2235      0.97  |  Q       |          |  V       |          |
16+ 5       0.2385      2.17  |        Q |          |    V     |          |
16+10       0.2620      3.41  |          |  Q       |      V   |          |
16+15       0.2693      1.07  |   Q      |          |       V  |          |
16+20       0.2727      0.50  |Q         |          |         V|          |
16+25       0.2757      0.43  |Q         |          |         V|          |
16+30       0.2788      0.46  |Q         |          |         V|          |
16+35       0.2818      0.43  |Q         |          |          V          |
16+40       0.2845      0.40  |Q         |          |          V          |
16+45       0.2870      0.37  |Q         |          |          V          |
16+50       0.2894      0.35  |Q         |          |          V          |
16+55       0.2917      0.33  |Q         |          |          |V         |
17+ 0       0.2939      0.32  |Q         |          |          |V         |
17+ 5       0.2960      0.31  |Q         |          |          |V         |
17+10       0.2980      0.29  |Q         |          |          |V         |
17+15       0.3000      0.28  |Q         |          |          | V        |
17+20       0.3019      0.27  |Q         |          |          | V        |
17+25       0.3037      0.27  |Q         |          |          | V        |
17+30       0.3055      0.26  |Q         |          |          | V        |
17+35       0.3073      0.25  |Q         |          |          | V        |
17+40       0.3090      0.25  Q          |          |          | V        |
17+45       0.3106      0.24  Q          |          |          |  V       |
17+50       0.3122      0.24  Q          |          |          |  V       |
17+55       0.3138      0.23  Q          |          |          |  V       |
18+ 0       0.3154      0.23  Q          |          |          |  V       |
18+ 5       0.3168      0.21  Q          |          |          |  V       |
18+10       0.3181      0.18  Q          |          |          |  V       |
18+15       0.3193      0.17  Q          |          |          |   V      |
18+20       0.3205      0.17  Q          |          |          |   V      |
18+25       0.3216      0.17  Q          |          |          |   V      |
18+30       0.3228      0.16  Q          |          |          |   V      |
18+35       0.3239      0.16  Q          |          |          |   V      |
18+40       0.3250      0.16  Q          |          |          |   V      |
18+45       0.3260      0.16  Q          |          |          |   V      |
18+50       0.3271      0.15  Q          |          |          |   V      |
18+55       0.3281      0.15  Q          |          |          |    V     |
19+ 0       0.3292      0.15  Q          |          |          |    V     |
19+ 5       0.3302      0.15  Q          |          |          |    V     |
19+10       0.3312      0.14  Q          |          |          |    V     |
19+15       0.3321      0.14  Q          |          |          |    V     |
19+20       0.3331      0.14  Q          |          |          |    V     |
19+25       0.3340      0.14  Q          |          |          |    V     |
19+30       0.3350      0.14  Q          |          |          |    V     |
19+35       0.3359      0.13  Q          |          |          |    V     |
19+40       0.3368      0.13  Q          |          |          |    V     |
19+45       0.3377      0.13  Q          |          |          |     V    |
```

19+50	0.3386	0.13	Q	|	|	|	V |
19+55	0.3395	0.13	Q	|	|	|	V |
20+ 0	0.3403	0.13	Q	|	|	|	V |
20+ 5	0.3412	0.12	Q	|	|	|	V |
20+10	0.3421	0.12	Q	|	|	|	V |
20+15	0.3429	0.12	Q	|	|	|	V |
20+20	0.3437	0.12	Q	|	|	|	V |
20+25	0.3445	0.12	Q	|	|	|	V |
20+30	0.3454	0.12	Q	|	|	|	V |
20+35	0.3462	0.12	Q	|	|	|	V |
20+40	0.3470	0.12	Q	|	|	|	V |
20+45	0.3478	0.11	Q	|	|	|	V |
20+50	0.3485	0.11	Q	|	|	|	V |
20+55	0.3493	0.11	Q	|	|	|	V |
21+ 0	0.3501	0.11	Q	|	|	|	V |
21+ 5	0.3508	0.11	Q	|	|	|	V |
21+10	0.3516	0.11	Q	|	|	|	V |
21+15	0.3523	0.11	Q	|	|	|	V |
21+20	0.3531	0.11	Q	|	|	|	V |
21+25	0.3538	0.11	Q	|	|	|	V |
21+30	0.3545	0.11	Q	|	|	|	V |
21+35	0.3553	0.10	Q	|	|	|	V |
21+40	0.3560	0.10	Q	|	|	|	V |
21+45	0.3567	0.10	Q	|	|	|	V |
21+50	0.3574	0.10	Q	|	|	|	V |
21+55	0.3581	0.10	Q	|	|	|	V |
22+ 0	0.3588	0.10	Q	|	|	|	V |
22+ 5	0.3595	0.10	Q	|	|	|	V |
22+10	0.3601	0.10	Q	|	|	|	V |
22+15	0.3608	0.10	Q	|	|	|	V |
22+20	0.3615	0.10	Q	|	|	|	V |
22+25	0.3622	0.10	Q	|	|	|	V |
22+30	0.3628	0.10	Q	|	|	|	V |
22+35	0.3635	0.10	Q	|	|	|	V |
22+40	0.3641	0.09	Q	|	|	|	V |
22+45	0.3648	0.09	Q	|	|	|	V |
22+50	0.3654	0.09	Q	|	|	|	V|
22+55	0.3661	0.09	Q	|	|	|	V|
23+ 0	0.3667	0.09	Q	|	|	|	V|
23+ 5	0.3673	0.09	Q	|	|	|	V|
23+10	0.3680	0.09	Q	|	|	|	V|
23+15	0.3686	0.09	Q	|	|	|	V|
23+20	0.3692	0.09	Q	|	|	|	V|
23+25	0.3698	0.09	Q	|	|	|	V|
23+30	0.3704	0.09	Q	|	|	|	V|
23+35	0.3710	0.09	Q	|	|	|	V|
23+40	0.3716	0.09	Q	|	|	|	V|
23+45	0.3722	0.09	Q	|	|	|	V|
23+50	0.3728	0.09	Q	|	|	|	V|
23+55	0.3734	0.09	Q	|	|	|	V|
24+ 0	0.3740	0.09	Q	|	|	|	V|
24+ 5	0.3745	0.06	Q	|	|	|	V|
24+10	0.3745	0.01	Q	|	|	|	V

APPENDIX C.6: UNIT HYDROGRAPH ANALYSIS, AREA B, 10-YEAR

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2014, Version 9.0

Study date 04/28/25

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San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6279

320.05 BUFFALO GROVE
UNIT HYDROGRAPH; AREA B
POST-PROJECT
10-YR, 24-HR

Storm Event Year = 10

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
1.84	1	1.00
Rainfall data for year 10		
1.84	6	2.64
Rainfall data for year 10		
1.84	24	5.13

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
32.0	32.0	1.84	1.000	0.978	0.200	0.196

Area-averaged adjusted loss rate Fm (In/Hr) = 0.196

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
0.37	0.200	32.0	32.0	21.25	0.007
1.47	0.800	98.0	98.0	0.20	0.954

Area-averaged catchment yield fraction, Y = 0.764
Area-averaged low loss fraction, Yb = 0.236
User entry of time of concentration = 0.083 (hours)
++
Watershed area = 1.84(Ac.)
Catchment Lag time = 0.066 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 125.5020
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.196(In/Hr)
Average low loss rate fraction (Yb) = 0.236 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.370(In)
Computed peak 30-minute rainfall = 0.758(In)
Specified peak 1-hour rainfall = 1.000(In)
Computed peak 3-hour rainfall = 1.813(In)
Specified peak 6-hour rainfall = 2.640(In)
Specified peak 24-hour rainfall = 5.130(In)

Rainfall depth area reduction factors:
Using a total area of 1.84(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.370(In)
30-minute factor = 1.000 Adjusted rainfall = 0.758(In)
1-hour factor = 1.000 Adjusted rainfall = 1.000(In)
3-hour factor = 1.000 Adjusted rainfall = 1.813(In)
6-hour factor = 1.000 Adjusted rainfall = 2.640(In)
24-hour factor = 1.000 Adjusted rainfall = 5.130(In)

U n i t H y d r o g r a p h
++

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
(K = 22.25 (CFS))		
1	26.066	5.800
2	90.306	14.295
3	100.000	2.157

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.3701	0.3701
2	0.4883	0.1182
3	0.5743	0.0860
4	0.6443	0.0700
5	0.7045	0.0602
6	0.7578	0.0533
7	0.8060	0.0482

8	0.8502	0.0442
9	0.8912	0.0410
10	0.9296	0.0384
11	0.9657	0.0361
12	0.9999	0.0342
13	1.0442	0.0443
14	1.0870	0.0428
15	1.1284	0.0414
16	1.1686	0.0402
17	1.2076	0.0390
18	1.2456	0.0380
19	1.2826	0.0370
20	1.3188	0.0362
21	1.3541	0.0353
22	1.3887	0.0346
23	1.4225	0.0339
24	1.4557	0.0332
25	1.4883	0.0326
26	1.5203	0.0320
27	1.5517	0.0314
28	1.5826	0.0309
29	1.6129	0.0304
30	1.6428	0.0299
31	1.6723	0.0295
32	1.7013	0.0290
33	1.7299	0.0286
34	1.7581	0.0282
35	1.7860	0.0278
36	1.8134	0.0275
37	1.8406	0.0271
38	1.8673	0.0268
39	1.8938	0.0265
40	1.9200	0.0262
41	1.9458	0.0259
42	1.9714	0.0256
43	1.9967	0.0253
44	2.0217	0.0250
45	2.0465	0.0248
46	2.0710	0.0245
47	2.0953	0.0243
48	2.1193	0.0240
49	2.1431	0.0238
50	2.1667	0.0236
51	2.1901	0.0234
52	2.2132	0.0232
53	2.2362	0.0230
54	2.2590	0.0228
55	2.2815	0.0226
56	2.3039	0.0224
57	2.3261	0.0222
58	2.3481	0.0220
59	2.3700	0.0218
60	2.3917	0.0217
61	2.4132	0.0215
62	2.4345	0.0214
63	2.4557	0.0212
64	2.4768	0.0210
65	2.4977	0.0209
66	2.5184	0.0207

67	2.5390	0.0206
68	2.5595	0.0205
69	2.5798	0.0203
70	2.6000	0.0202
71	2.6201	0.0201
72	2.6400	0.0199
73	2.6575	0.0175
74	2.6749	0.0174
75	2.6921	0.0173
76	2.7093	0.0171
77	2.7263	0.0170
78	2.7432	0.0169
79	2.7600	0.0168
80	2.7767	0.0167
81	2.7933	0.0166
82	2.8098	0.0165
83	2.8261	0.0164
84	2.8424	0.0163
85	2.8586	0.0162
86	2.8746	0.0161
87	2.8906	0.0160
88	2.9065	0.0159
89	2.9222	0.0158
90	2.9379	0.0157
91	2.9535	0.0156
92	2.9690	0.0155
93	2.9845	0.0154
94	2.9998	0.0153
95	3.0150	0.0153
96	3.0302	0.0152
97	3.0453	0.0151
98	3.0603	0.0150
99	3.0752	0.0149
100	3.0901	0.0148
101	3.1048	0.0148
102	3.1195	0.0147
103	3.1342	0.0146
104	3.1487	0.0145
105	3.1632	0.0145
106	3.1776	0.0144
107	3.1919	0.0143
108	3.2062	0.0143
109	3.2204	0.0142
110	3.2345	0.0141
111	3.2485	0.0141
112	3.2625	0.0140
113	3.2765	0.0139
114	3.2903	0.0139
115	3.3041	0.0138
116	3.3179	0.0137
117	3.3315	0.0137
118	3.3452	0.0136
119	3.3587	0.0136
120	3.3722	0.0135
121	3.3856	0.0134
122	3.3990	0.0134
123	3.4123	0.0133
124	3.4256	0.0133
125	3.4388	0.0132

126	3.4520	0.0132
127	3.4651	0.0131
128	3.4781	0.0130
129	3.4911	0.0130
130	3.5041	0.0129
131	3.5170	0.0129
132	3.5298	0.0128
133	3.5426	0.0128
134	3.5553	0.0127
135	3.5680	0.0127
136	3.5807	0.0126
137	3.5933	0.0126
138	3.6058	0.0125
139	3.6183	0.0125
140	3.6307	0.0125
141	3.6432	0.0124
142	3.6555	0.0124
143	3.6678	0.0123
144	3.6801	0.0123
145	3.6923	0.0122
146	3.7045	0.0122
147	3.7166	0.0121
148	3.7287	0.0121
149	3.7408	0.0121
150	3.7528	0.0120
151	3.7648	0.0120
152	3.7767	0.0119
153	3.7886	0.0119
154	3.8004	0.0118
155	3.8122	0.0118
156	3.8240	0.0118
157	3.8357	0.0117
158	3.8474	0.0117
159	3.8591	0.0117
160	3.8707	0.0116
161	3.8822	0.0116
162	3.8938	0.0115
163	3.9053	0.0115
164	3.9167	0.0115
165	3.9282	0.0114
166	3.9396	0.0114
167	3.9509	0.0114
168	3.9622	0.0113
169	3.9735	0.0113
170	3.9848	0.0112
171	3.9960	0.0112
172	4.0072	0.0112
173	4.0183	0.0111
174	4.0294	0.0111
175	4.0405	0.0111
176	4.0516	0.0110
177	4.0626	0.0110
178	4.0736	0.0110
179	4.0845	0.0110
180	4.0954	0.0109
181	4.1063	0.0109
182	4.1172	0.0109
183	4.1280	0.0108
184	4.1388	0.0108

185	4.1496	0.0108
186	4.1603	0.0107
187	4.1710	0.0107
188	4.1817	0.0107
189	4.1923	0.0106
190	4.2029	0.0106
191	4.2135	0.0106
192	4.2241	0.0106
193	4.2346	0.0105
194	4.2451	0.0105
195	4.2556	0.0105
196	4.2660	0.0104
197	4.2764	0.0104
198	4.2868	0.0104
199	4.2972	0.0104
200	4.3075	0.0103
201	4.3178	0.0103
202	4.3281	0.0103
203	4.3384	0.0103
204	4.3486	0.0102
205	4.3588	0.0102
206	4.3690	0.0102
207	4.3791	0.0102
208	4.3892	0.0101
209	4.3993	0.0101
210	4.4094	0.0101
211	4.4195	0.0100
212	4.4295	0.0100
213	4.4395	0.0100
214	4.4495	0.0100
215	4.4594	0.0100
216	4.4693	0.0099
217	4.4793	0.0099
218	4.4891	0.0099
219	4.4990	0.0099
220	4.5088	0.0098
221	4.5186	0.0098
222	4.5284	0.0098
223	4.5382	0.0098
224	4.5479	0.0097
225	4.5576	0.0097
226	4.5673	0.0097
227	4.5770	0.0097
228	4.5867	0.0097
229	4.5963	0.0096
230	4.6059	0.0096
231	4.6155	0.0096
232	4.6250	0.0096
233	4.6346	0.0095
234	4.6441	0.0095
235	4.6536	0.0095
236	4.6631	0.0095
237	4.6725	0.0095
238	4.6820	0.0094
239	4.6914	0.0094
240	4.7008	0.0094
241	4.7102	0.0094
242	4.7195	0.0094
243	4.7289	0.0093

244	4.7382	0.0093
245	4.7475	0.0093
246	4.7568	0.0093
247	4.7660	0.0093
248	4.7752	0.0092
249	4.7845	0.0092
250	4.7937	0.0092
251	4.8028	0.0092
252	4.8120	0.0092
253	4.8211	0.0091
254	4.8303	0.0091
255	4.8394	0.0091
256	4.8485	0.0091
257	4.8575	0.0091
258	4.8666	0.0090
259	4.8756	0.0090
260	4.8846	0.0090
261	4.8936	0.0090
262	4.9026	0.0090
263	4.9115	0.0090
264	4.9205	0.0089
265	4.9294	0.0089
266	4.9383	0.0089
267	4.9472	0.0089
268	4.9561	0.0089
269	4.9649	0.0089
270	4.9738	0.0088
271	4.9826	0.0088
272	4.9914	0.0088
273	5.0002	0.0088
274	5.0089	0.0088
275	5.0177	0.0088
276	5.0264	0.0087
277	5.0351	0.0087
278	5.0438	0.0087
279	5.0525	0.0087
280	5.0612	0.0087
281	5.0699	0.0087
282	5.0785	0.0086
283	5.0871	0.0086
284	5.0957	0.0086
285	5.1043	0.0086
286	5.1129	0.0086
287	5.1214	0.0086
288	5.1300	0.0085

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0085	0.0020	0.0065
2	0.0086	0.0020	0.0065
3	0.0086	0.0020	0.0066
4	0.0086	0.0020	0.0066
5	0.0086	0.0020	0.0066
6	0.0087	0.0020	0.0066
7	0.0087	0.0020	0.0066
8	0.0087	0.0021	0.0067
9	0.0087	0.0021	0.0067

10	0.0088	0.0021	0.0067
11	0.0088	0.0021	0.0067
12	0.0088	0.0021	0.0067
13	0.0088	0.0021	0.0068
14	0.0089	0.0021	0.0068
15	0.0089	0.0021	0.0068
16	0.0089	0.0021	0.0068
17	0.0089	0.0021	0.0068
18	0.0090	0.0021	0.0068
19	0.0090	0.0021	0.0069
20	0.0090	0.0021	0.0069
21	0.0090	0.0021	0.0069
22	0.0091	0.0021	0.0069
23	0.0091	0.0021	0.0070
24	0.0091	0.0021	0.0070
25	0.0092	0.0022	0.0070
26	0.0092	0.0022	0.0070
27	0.0092	0.0022	0.0070
28	0.0092	0.0022	0.0071
29	0.0093	0.0022	0.0071
30	0.0093	0.0022	0.0071
31	0.0093	0.0022	0.0071
32	0.0094	0.0022	0.0072
33	0.0094	0.0022	0.0072
34	0.0094	0.0022	0.0072
35	0.0095	0.0022	0.0072
36	0.0095	0.0022	0.0072
37	0.0095	0.0022	0.0073
38	0.0095	0.0022	0.0073
39	0.0096	0.0023	0.0073
40	0.0096	0.0023	0.0073
41	0.0097	0.0023	0.0074
42	0.0097	0.0023	0.0074
43	0.0097	0.0023	0.0074
44	0.0097	0.0023	0.0074
45	0.0098	0.0023	0.0075
46	0.0098	0.0023	0.0075
47	0.0099	0.0023	0.0075
48	0.0099	0.0023	0.0076
49	0.0099	0.0023	0.0076
50	0.0100	0.0023	0.0076
51	0.0100	0.0024	0.0076
52	0.0100	0.0024	0.0077
53	0.0101	0.0024	0.0077
54	0.0101	0.0024	0.0077
55	0.0102	0.0024	0.0078
56	0.0102	0.0024	0.0078
57	0.0102	0.0024	0.0078
58	0.0103	0.0024	0.0078
59	0.0103	0.0024	0.0079
60	0.0103	0.0024	0.0079
61	0.0104	0.0024	0.0079
62	0.0104	0.0025	0.0080
63	0.0105	0.0025	0.0080
64	0.0105	0.0025	0.0080
65	0.0106	0.0025	0.0081
66	0.0106	0.0025	0.0081
67	0.0106	0.0025	0.0081
68	0.0107	0.0025	0.0082

69	0.0107	0.0025	0.0082
70	0.0108	0.0025	0.0082
71	0.0108	0.0026	0.0083
72	0.0109	0.0026	0.0083
73	0.0109	0.0026	0.0083
74	0.0110	0.0026	0.0084
75	0.0110	0.0026	0.0084
76	0.0110	0.0026	0.0084
77	0.0111	0.0026	0.0085
78	0.0111	0.0026	0.0085
79	0.0112	0.0026	0.0086
80	0.0112	0.0027	0.0086
81	0.0113	0.0027	0.0087
82	0.0114	0.0027	0.0087
83	0.0114	0.0027	0.0087
84	0.0115	0.0027	0.0088
85	0.0115	0.0027	0.0088
86	0.0116	0.0027	0.0088
87	0.0117	0.0027	0.0089
88	0.0117	0.0028	0.0089
89	0.0118	0.0028	0.0090
90	0.0118	0.0028	0.0090
91	0.0119	0.0028	0.0091
92	0.0119	0.0028	0.0091
93	0.0120	0.0028	0.0092
94	0.0121	0.0028	0.0092
95	0.0121	0.0029	0.0093
96	0.0122	0.0029	0.0093
97	0.0123	0.0029	0.0094
98	0.0123	0.0029	0.0094
99	0.0124	0.0029	0.0095
100	0.0125	0.0029	0.0095
101	0.0125	0.0030	0.0096
102	0.0126	0.0030	0.0096
103	0.0127	0.0030	0.0097
104	0.0127	0.0030	0.0097
105	0.0128	0.0030	0.0098
106	0.0129	0.0030	0.0099
107	0.0130	0.0031	0.0099
108	0.0130	0.0031	0.0100
109	0.0132	0.0031	0.0101
110	0.0132	0.0031	0.0101
111	0.0133	0.0031	0.0102
112	0.0134	0.0032	0.0102
113	0.0135	0.0032	0.0103
114	0.0136	0.0032	0.0104
115	0.0137	0.0032	0.0105
116	0.0137	0.0032	0.0105
117	0.0139	0.0033	0.0106
118	0.0139	0.0033	0.0106
119	0.0141	0.0033	0.0107
120	0.0141	0.0033	0.0108
121	0.0143	0.0034	0.0109
122	0.0143	0.0034	0.0110
123	0.0145	0.0034	0.0111
124	0.0145	0.0034	0.0111
125	0.0147	0.0035	0.0112
126	0.0148	0.0035	0.0113
127	0.0149	0.0035	0.0114

128	0.0150	0.0035	0.0115
129	0.0152	0.0036	0.0116
130	0.0153	0.0036	0.0117
131	0.0154	0.0036	0.0118
132	0.0155	0.0037	0.0119
133	0.0157	0.0037	0.0120
134	0.0158	0.0037	0.0121
135	0.0160	0.0038	0.0122
136	0.0161	0.0038	0.0123
137	0.0163	0.0038	0.0124
138	0.0164	0.0039	0.0125
139	0.0166	0.0039	0.0127
140	0.0167	0.0039	0.0128
141	0.0169	0.0040	0.0129
142	0.0170	0.0040	0.0130
143	0.0173	0.0041	0.0132
144	0.0174	0.0041	0.0133
145	0.0199	0.0047	0.0152
146	0.0201	0.0047	0.0153
147	0.0203	0.0048	0.0155
148	0.0205	0.0048	0.0156
149	0.0207	0.0049	0.0159
150	0.0209	0.0049	0.0160
151	0.0212	0.0050	0.0162
152	0.0214	0.0050	0.0163
153	0.0217	0.0051	0.0166
154	0.0218	0.0051	0.0167
155	0.0222	0.0052	0.0170
156	0.0224	0.0053	0.0171
157	0.0228	0.0054	0.0174
158	0.0230	0.0054	0.0176
159	0.0234	0.0055	0.0179
160	0.0236	0.0056	0.0180
161	0.0240	0.0057	0.0184
162	0.0243	0.0057	0.0186
163	0.0248	0.0058	0.0189
164	0.0250	0.0059	0.0191
165	0.0256	0.0060	0.0195
166	0.0259	0.0061	0.0198
167	0.0265	0.0062	0.0202
168	0.0268	0.0063	0.0205
169	0.0275	0.0065	0.0210
170	0.0278	0.0066	0.0213
171	0.0286	0.0067	0.0219
172	0.0290	0.0068	0.0222
173	0.0299	0.0070	0.0229
174	0.0304	0.0072	0.0232
175	0.0314	0.0074	0.0240
176	0.0320	0.0075	0.0244
177	0.0332	0.0078	0.0254
178	0.0339	0.0080	0.0259
179	0.0353	0.0083	0.0270
180	0.0362	0.0085	0.0276
181	0.0380	0.0089	0.0290
182	0.0390	0.0092	0.0298
183	0.0414	0.0098	0.0317
184	0.0428	0.0101	0.0327
185	0.0342	0.0081	0.0261
186	0.0361	0.0085	0.0276

187	0.0410	0.0097	0.0314
188	0.0442	0.0104	0.0338
189	0.0533	0.0126	0.0407
190	0.0602	0.0142	0.0460
191	0.0860	0.0163	0.0697
192	0.1182	0.0163	0.1019
193	0.3701	0.0163	0.3538
194	0.0700	0.0163	0.0537
195	0.0482	0.0114	0.0368
196	0.0384	0.0090	0.0293
197	0.0443	0.0104	0.0339
198	0.0402	0.0095	0.0307
199	0.0370	0.0087	0.0283
200	0.0346	0.0081	0.0264
201	0.0326	0.0077	0.0249
202	0.0309	0.0073	0.0236
203	0.0295	0.0069	0.0225
204	0.0282	0.0066	0.0216
205	0.0271	0.0064	0.0207
206	0.0262	0.0062	0.0200
207	0.0253	0.0060	0.0193
208	0.0245	0.0058	0.0187
209	0.0238	0.0056	0.0182
210	0.0232	0.0055	0.0177
211	0.0226	0.0053	0.0173
212	0.0220	0.0052	0.0168
213	0.0215	0.0051	0.0164
214	0.0210	0.0050	0.0161
215	0.0206	0.0049	0.0157
216	0.0202	0.0048	0.0154
217	0.0175	0.0041	0.0134
218	0.0171	0.0040	0.0131
219	0.0168	0.0040	0.0128
220	0.0165	0.0039	0.0126
221	0.0162	0.0038	0.0124
222	0.0159	0.0037	0.0121
223	0.0156	0.0037	0.0119
224	0.0153	0.0036	0.0117
225	0.0151	0.0036	0.0115
226	0.0148	0.0035	0.0113
227	0.0146	0.0034	0.0112
228	0.0144	0.0034	0.0110
229	0.0142	0.0033	0.0108
230	0.0140	0.0033	0.0107
231	0.0138	0.0033	0.0105
232	0.0136	0.0032	0.0104
233	0.0134	0.0032	0.0103
234	0.0133	0.0031	0.0101
235	0.0131	0.0031	0.0100
236	0.0129	0.0030	0.0099
237	0.0128	0.0030	0.0098
238	0.0126	0.0030	0.0097
239	0.0125	0.0029	0.0096
240	0.0124	0.0029	0.0094
241	0.0122	0.0029	0.0093
242	0.0121	0.0028	0.0092
243	0.0120	0.0028	0.0091
244	0.0118	0.0028	0.0091
245	0.0117	0.0028	0.0090

246	0.0116	0.0027	0.0089
247	0.0115	0.0027	0.0088
248	0.0114	0.0027	0.0087
249	0.0113	0.0027	0.0086
250	0.0112	0.0026	0.0085
251	0.0111	0.0026	0.0085
252	0.0110	0.0026	0.0084
253	0.0109	0.0026	0.0083
254	0.0108	0.0025	0.0083
255	0.0107	0.0025	0.0082
256	0.0106	0.0025	0.0081
257	0.0105	0.0025	0.0080
258	0.0104	0.0025	0.0080
259	0.0104	0.0024	0.0079
260	0.0103	0.0024	0.0079
261	0.0102	0.0024	0.0078
262	0.0101	0.0024	0.0077
263	0.0100	0.0024	0.0077
264	0.0100	0.0024	0.0076
265	0.0099	0.0023	0.0076
266	0.0098	0.0023	0.0075
267	0.0098	0.0023	0.0075
268	0.0097	0.0023	0.0074
269	0.0096	0.0023	0.0074
270	0.0096	0.0023	0.0073
271	0.0095	0.0022	0.0073
272	0.0094	0.0022	0.0072
273	0.0094	0.0022	0.0072
274	0.0093	0.0022	0.0071
275	0.0093	0.0022	0.0071
276	0.0092	0.0022	0.0070
277	0.0091	0.0022	0.0070
278	0.0091	0.0021	0.0069
279	0.0090	0.0021	0.0069
280	0.0090	0.0021	0.0069
281	0.0089	0.0021	0.0068
282	0.0089	0.0021	0.0068
283	0.0088	0.0021	0.0067
284	0.0088	0.0021	0.0067
285	0.0087	0.0021	0.0067
286	0.0087	0.0020	0.0066
287	0.0086	0.0020	0.0066
288	0.0086	0.0020	0.0066

Total soil rain loss = 1.12(In)
Total effective rainfall = 4.01(In)
Peak flow rate in flood hydrograph = 5.59(CFS)

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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0003	0.04	Q	|	|	|	|

0+10	0.0012	0.13	Q	|	|	|	|
0+15	0.0022	0.15	Q	|	|	|	|
0+20	0.0032	0.15	Q	|	|	|	|
0+25	0.0042	0.15	Q	|	|	|	|
0+30	0.0052	0.15	Q	|	|	|	|
0+35	0.0062	0.15	Q	|	|	|	|
0+40	0.0072	0.15	Q	|	|	|	|
0+45	0.0082	0.15	Q	|	|	|	|
0+50	0.0093	0.15	Q	|	|	|	|
0+55	0.0103	0.15	Q	|	|	|	|
1+ 0	0.0113	0.15	Q	|	|	|	|
1+ 5	0.0124	0.15	Q	|	|	|	|
1+10	0.0134	0.15	Q	|	|	|	|
1+15	0.0144	0.15	Q	|	|	|	|
1+20	0.0155	0.15	QV	|	|	|	|
1+25	0.0165	0.15	QV	|	|	|	|
1+30	0.0176	0.15	QV	|	|	|	|
1+35	0.0186	0.15	QV	|	|	|	|
1+40	0.0197	0.15	QV	|	|	|	|
1+45	0.0207	0.15	QV	|	|	|	|
1+50	0.0218	0.15	QV	|	|	|	|
1+55	0.0228	0.15	QV	|	|	|	|
2+ 0	0.0239	0.15	QV	|	|	|	|
2+ 5	0.0250	0.16	QV	|	|	|	|
2+10	0.0261	0.16	QV	|	|	|	|
2+15	0.0271	0.16	QV	|	|	|	|
2+20	0.0282	0.16	QV	|	|	|	|
2+25	0.0293	0.16	QV	|	|	|	|
2+30	0.0304	0.16	QV	|	|	|	|
2+35	0.0315	0.16	Q V	|	|	|	|
2+40	0.0326	0.16	Q V	|	|	|	|
2+45	0.0337	0.16	Q V	|	|	|	|
2+50	0.0348	0.16	Q V	|	|	|	|
2+55	0.0359	0.16	Q V	|	|	|	|
3+ 0	0.0370	0.16	Q V	|	|	|	|
3+ 5	0.0381	0.16	Q V	|	|	|	|
3+10	0.0392	0.16	Q V	|	|	|	|
3+15	0.0403	0.16	Q V	|	|	|	|
3+20	0.0414	0.16	Q V	|	|	|	|
3+25	0.0426	0.16	Q V	|	|	|	|
3+30	0.0437	0.16	Q V	|	|	|	|
3+35	0.0448	0.16	Q V	|	|	|	|
3+40	0.0460	0.17	Q V	|	|	|	|
3+45	0.0471	0.17	Q V	|	|	|	|
3+50	0.0483	0.17	Q V	|	|	|	|
3+55	0.0494	0.17	Q V	|	|	|	|
4+ 0	0.0506	0.17	Q V	|	|	|	|
4+ 5	0.0517	0.17	Q V	|	|	|	|
4+10	0.0529	0.17	Q V	|	|	|	|
4+15	0.0541	0.17	Q V	|	|	|	|
4+20	0.0552	0.17	Q V	|	|	|	|
4+25	0.0564	0.17	Q V	|	|	|	|
4+30	0.0576	0.17	Q V	|	|	|	|
4+35	0.0588	0.17	Q V	|	|	|	|
4+40	0.0600	0.17	Q V	|	|	|	|
4+45	0.0612	0.17	Q V	|	|	|	|
4+50	0.0624	0.17	Q V	|	|	|	|
4+55	0.0636	0.17	Q V	|	|	|	|
5+ 0	0.0648	0.18	Q V	|	|	|	|

5+ 5	0.0660	0.18	Q	V	|	|	|	|
5+10	0.0672	0.18	Q	V	|	|	|	|
5+15	0.0684	0.18	Q	V	|	|	|	|
5+20	0.0696	0.18	Q	V	|	|	|	|
5+25	0.0709	0.18	Q	V	|	|	|	|
5+30	0.0721	0.18	Q	V	|	|	|	|
5+35	0.0734	0.18	Q	V	|	|	|	|
5+40	0.0746	0.18	Q	V	|	|	|	|
5+45	0.0759	0.18	Q	V	|	|	|	|
5+50	0.0771	0.18	Q	V	|	|	|	|
5+55	0.0784	0.18	Q	V	|	|	|	|
6+ 0	0.0796	0.18	Q	V	|	|	|	|
6+ 5	0.0809	0.18	Q	V	|	|	|	|
6+10	0.0822	0.19	Q	V	|	|	|	|
6+15	0.0835	0.19	Q	V	|	|	|	|
6+20	0.0848	0.19	Q	V	|	|	|	|
6+25	0.0861	0.19	Q	V	|	|	|	|
6+30	0.0874	0.19	Q	V	|	|	|	|
6+35	0.0887	0.19	Q	V	|	|	|	|
6+40	0.0900	0.19	Q	V	|	|	|	|
6+45	0.0913	0.19	Q	V	|	|	|	|
6+50	0.0926	0.19	Q	V	|	|	|	|
6+55	0.0940	0.19	Q	V	|	|	|	|
7+ 0	0.0953	0.19	Q	V	|	|	|	|
7+ 5	0.0967	0.20	Q	V	|	|	|	|
7+10	0.0980	0.20	Q	V	|	|	|	|
7+15	0.0994	0.20	Q	V	|	|	|	|
7+20	0.1007	0.20	Q	V	|	|	|	|
7+25	0.1021	0.20	Q	V	|	|	|	|
7+30	0.1035	0.20	Q	V	|	|	|	|
7+35	0.1049	0.20	Q	V	|	|	|	|
7+40	0.1063	0.20	Q	V	|	|	|	|
7+45	0.1077	0.20	Q	V	|	|	|	|
7+50	0.1091	0.20	Q	V	|	|	|	|
7+55	0.1105	0.21	Q	V	|	|	|	|
8+ 0	0.1119	0.21	Q	V	|	|	|	|
8+ 5	0.1133	0.21	Q	V	|	|	|	|
8+10	0.1148	0.21	Q	V	|	|	|	|
8+15	0.1162	0.21	Q	V	|	|	|	|
8+20	0.1177	0.21	Q	V	|	|	|	|
8+25	0.1191	0.21	Q	V	|	|	|	|
8+30	0.1206	0.21	Q	V	|	|	|	|
8+35	0.1221	0.21	Q	V	|	|	|	|
8+40	0.1236	0.22	Q	V	|	|	|	|
8+45	0.1251	0.22	Q	V	|	|	|	|
8+50	0.1266	0.22	Q	V	|	|	|	|
8+55	0.1281	0.22	Q	V	|	|	|	|
9+ 0	0.1296	0.22	Q	V	|	|	|	|
9+ 5	0.1311	0.22	Q	V	|	|	|	|
9+10	0.1327	0.22	Q	V	|	|	|	|
9+15	0.1342	0.23	Q	V	|	|	|	|
9+20	0.1358	0.23	Q	V	|	|	|	|
9+25	0.1373	0.23	Q	V	|	|	|	|
9+30	0.1389	0.23	Q	V	|	|	|	|
9+35	0.1405	0.23	Q	V	|	|	|	|
9+40	0.1421	0.23	Q	V	|	|	|	|
9+45	0.1437	0.23	Q	V	|	|	|	|
9+50	0.1454	0.24	Q	V	|	|	|	|
9+55	0.1470	0.24	Q	V	|	|	|	|

```
10+ 0       0.1486      0.24  Q        V|          |          |          |
10+ 5       0.1503      0.24  Q        V|          |          |          |
10+10       0.1520      0.24  Q        V|          |          |          |
10+15       0.1537      0.24  Q         V          |          |          |
10+20       0.1553      0.25  Q         V          |          |          |
10+25       0.1571      0.25  Q         V          |          |          |
10+30       0.1588      0.25  |Q        V          |          |          |
10+35       0.1605      0.25  |Q        V          |          |          |
10+40       0.1623      0.25  |Q        V          |          |          |
10+45       0.1640      0.26  |Q        V          |          |          |
10+50       0.1658      0.26  |Q        V          |          |          |
10+55       0.1676      0.26  |Q        V          |          |          |
11+ 0       0.1694      0.26  |Q        |V         |          |          |
11+ 5       0.1712      0.26  |Q        |V         |          |          |
11+10       0.1731      0.27  |Q        |V         |          |          |
11+15       0.1749      0.27  |Q        |V         |          |          |
11+20       0.1768      0.27  |Q        |V         |          |          |
11+25       0.1787      0.27  |Q        |V         |          |          |
11+30       0.1806      0.28  |Q        |V         |          |          |
11+35       0.1825      0.28  |Q        |V         |          |          |
11+40       0.1844      0.28  |Q        | V        |          |          |
11+45       0.1864      0.28  |Q        | V        |          |          |
11+50       0.1884      0.29  |Q        | V        |          |          |
11+55       0.1904      0.29  |Q        | V        |          |          |
12+ 0       0.1924      0.29  |Q        | V        |          |          |
12+ 5       0.1945      0.31  |Q        | V        |          |          |
12+10       0.1968      0.34  |Q        | V        |          |          |
12+15       0.1992      0.34  |Q        | V        |          |          |
12+20       0.2016      0.35  |Q        |  V       |          |          |
12+25       0.2040      0.35  |Q        |  V       |          |          |
12+30       0.2064      0.35  |Q        |  V       |          |          |
12+35       0.2089      0.36  |Q        |  V       |          |          |
12+40       0.2113      0.36  |Q        |  V       |          |          |
12+45       0.2139      0.36  |Q        |  V       |          |          |
12+50       0.2164      0.37  |Q        |   V      |          |          |
12+55       0.2190      0.37  |Q        |   V      |          |          |
13+ 0       0.2216      0.38  |Q        |   V      |          |          |
13+ 5       0.2242      0.38  |Q        |   V      |          |          |
13+10       0.2269      0.39  |Q        |   V      |          |          |
13+15       0.2296      0.39  |Q        |   V      |          |          |
13+20       0.2323      0.40  |Q        |    V     |          |          |
13+25       0.2351      0.40  |Q        |    V     |          |          |
13+30       0.2379      0.41  |Q        |    V     |          |          |
13+35       0.2408      0.41  |Q        |    V     |          |          |
13+40       0.2437      0.42  |Q        |    V     |          |          |
13+45       0.2466      0.43  |Q        |     V    |          |          |
13+50       0.2496      0.44  |Q        |     V    |          |          |
13+55       0.2526      0.44  |Q        |     V    |          |          |
14+ 0       0.2558      0.45  |Q        |     V    |          |          |
14+ 5       0.2589      0.46  |Q        |     V    |          |          |
14+10       0.2621      0.47  |Q        |      V   |          |          |
14+15       0.2654      0.48  |Q        |      V   |          |          |
14+20       0.2688      0.49  |Q        |      V   |          |          |
14+25       0.2722      0.50  |Q        |      V   |          |          |
14+30       0.2757      0.51  | Q       |      V   |          |          |
14+35       0.2793      0.52  | Q       |       V  |          |          |
14+40       0.2830      0.54  | Q       |       V  |          |          |
14+45       0.2867      0.55  | Q       |       V  |          |          |
14+50       0.2906      0.57  | Q       |       V  |          |          |
```

14+55	0.2946	0.58	Q		V			
15+ 0	0.2988	0.60	Q		V			
15+ 5	0.3031	0.62	Q		V			
15+10	0.3075	0.65	Q		V			
15+15	0.3122	0.67	Q		V			
15+20	0.3170	0.71	Q		V			
15+25	0.3218	0.69	Q		V			
15+30	0.3259	0.60	Q		V			
15+35	0.3303	0.63	Q		V			
15+40	0.3351	0.70	Q		V			
15+45	0.3406	0.79	Q		V			
15+50	0.3469	0.92	Q		V			
15+55	0.3548	1.15	Q		V			
16+ 0	0.3664	1.69	Q		V			
16+ 5	0.3916	3.66		Q	V			
16+10	0.4301	5.59			Q V			
16+15	0.4421	1.75	Q		V			
16+20	0.4477	0.81	Q		V			
16+25	0.4525	0.70	Q		V			
16+30	0.4575	0.73	Q		V			
16+35	0.4622	0.68	Q		V			
16+40	0.4665	0.62	Q		V			
16+45	0.4705	0.58	Q		V			
16+50	0.4743	0.55	Q		V			
16+55	0.4779	0.52	Q		V			
17+ 0	0.4813	0.50	Q		V			
17+ 5	0.4846	0.48	Q		V			
17+10	0.4878	0.46	Q		V			
17+15	0.4908	0.44	Q		V			
17+20	0.4938	0.43	Q		V			
17+25	0.4966	0.42	Q		V			
17+30	0.4994	0.40	Q		V			
17+35	0.5021	0.39	Q		V			
17+40	0.5047	0.38	Q		V			
17+45	0.5073	0.37	Q		V			
17+50	0.5098	0.36	Q		V			
17+55	0.5123	0.36	Q		V			
18+ 0	0.5147	0.35	Q		V			
18+ 5	0.5170	0.33	Q		V			
18+10	0.5190	0.30	Q		V			
18+15	0.5210	0.29	Q		V			
18+20	0.5230	0.28	Q		V			
18+25	0.5249	0.28	Q		V			
18+30	0.5268	0.27	Q		V			
18+35	0.5287	0.27	Q		V			
18+40	0.5305	0.26	Q		V			
18+45	0.5323	0.26	Q		V			
18+50	0.5340	0.26	Q		V			
18+55	0.5358	0.25	Q		V			
19+ 0	0.5375	0.25	Q		V			
19+ 5	0.5392	0.24	Q		V			
19+10	0.5408	0.24	Q		V			
19+15	0.5425	0.24	Q		V			
19+20	0.5441	0.23	Q		V			
19+25	0.5457	0.23	Q		V			
19+30	0.5472	0.23	Q		V			
19+35	0.5488	0.23	Q		V			
19+40	0.5503	0.22	Q		V			
19+45	0.5518	0.22	Q		V			

```
   19+50       0.5533      0.22  Q          |          |          |      V   |
   19+55       0.5548      0.21  Q          |          |          |      V   |
   20+ 0       0.5563      0.21  Q          |          |          |      V   |
   20+ 5       0.5577      0.21  Q          |          |          |      V   |
   20+10       0.5591      0.21  Q          |          |          |      V   |
   20+15       0.5606      0.21  Q          |          |          |      V   |
   20+20       0.5620      0.20  Q          |          |          |      V   |
   20+25       0.5633      0.20  Q          |          |          |      V   |
   20+30       0.5647      0.20  Q          |          |          |      V   |
   20+35       0.5661      0.20  Q          |          |          |      V   |
   20+40       0.5674      0.20  Q          |          |          |      V   |
   20+45       0.5687      0.19  Q          |          |          |       V  |
   20+50       0.5701      0.19  Q          |          |          |       V  |
   20+55       0.5714      0.19  Q          |          |          |       V  |
   21+ 0       0.5727      0.19  Q          |          |          |       V  |
   21+ 5       0.5740      0.19  Q          |          |          |       V  |
   21+10       0.5752      0.18  Q          |          |          |       V  |
   21+15       0.5765      0.18  Q          |          |          |       V  |
   21+20       0.5777      0.18  Q          |          |          |       V  |
   21+25       0.5790      0.18  Q          |          |          |       V  |
   21+30       0.5802      0.18  Q          |          |          |       V  |
   21+35       0.5814      0.18  Q          |          |          |       V  |
   21+40       0.5827      0.18  Q          |          |          |       V  |
   21+45       0.5839      0.17  Q          |          |          |        V |
   21+50       0.5851      0.17  Q          |          |          |        V |
   21+55       0.5862      0.17  Q          |          |          |        V |
   22+ 0       0.5874      0.17  Q          |          |          |        V |
   22+ 5       0.5886      0.17  Q          |          |          |        V |
   22+10       0.5897      0.17  Q          |          |          |        V |
   22+15       0.5909      0.17  Q          |          |          |        V |
   22+20       0.5920      0.17  Q          |          |          |        V |
   22+25       0.5932      0.16  Q          |          |          |        V |
   22+30       0.5943      0.16  Q          |          |          |        V |
   22+35       0.5954      0.16  Q          |          |          |        V |
   22+40       0.5965      0.16  Q          |          |          |        V |
   22+45       0.5976      0.16  Q          |          |          |        V |
   22+50       0.5987      0.16  Q          |          |          |        V |
   22+55       0.5998      0.16  Q          |          |          |         V|
   23+ 0       0.6009      0.16  Q          |          |          |         V|
   23+ 5       0.6020      0.16  Q          |          |          |         V|
   23+10       0.6030      0.16  Q          |          |          |         V|
   23+15       0.6041      0.15  Q          |          |          |         V|
   23+20       0.6052      0.15  Q          |          |          |         V|
   23+25       0.6062      0.15  Q          |          |          |         V|
   23+30       0.6073      0.15  Q          |          |          |         V|
   23+35       0.6083      0.15  Q          |          |          |         V|
   23+40       0.6093      0.15  Q          |          |          |         V|
   23+45       0.6104      0.15  Q          |          |          |         V|
   23+50       0.6114      0.15  Q          |          |          |         V|
   23+55       0.6124      0.15  Q          |          |          |         V|
   24+ 0       0.6134      0.15  Q          |          |          |         V|
   24+ 5       0.6141      0.11  Q          |          |          |         V|
   24+10       0.6142      0.01  Q          |          |          |          V
-------------------------------------------------------------------------------
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APPENDIX C.7: UNIT HYDROGRAPH ANALYSIS, AREA A, 25-YEAR

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2014, Version 9.0

Study date 04/28/25

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San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6279

320.05 BUFFALO GROVE
UNIT HYDROGRAPH; AREA B
POST-PROJECT
25-YR, 24-HR

Storm Event Year = 25

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 25		
1.84	1	1.23
Rainfall data for year 25		
1.84	6	3.22
Rainfall data for year 25		
1.84	24	6.33

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
32.0	32.0	1.84	1.000	0.978	0.200	0.196

Area-averaged adjusted loss rate Fm (In/Hr) = 0.196

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
0.37	0.200	32.0	32.0	21.25	0.029
1.47	0.800	98.0	98.0	0.20	0.962

Area-averaged catchment yield fraction, Y = 0.776
Area-averaged low loss fraction, Yb = 0.224
User entry of time of concentration = 0.083 (hours)
++
Watershed area = 1.84(Ac.)
Catchment Lag time = 0.066 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 125.5020
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.196(In/Hr)
Average low loss rate fraction (Yb) = 0.224 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.455(In)
Computed peak 30-minute rainfall = 0.932(In)
Specified peak 1-hour rainfall = 1.230(In)
Computed peak 3-hour rainfall = 2.219(In)
Specified peak 6-hour rainfall = 3.220(In)
Specified peak 24-hour rainfall = 6.330(In)

Rainfall depth area reduction factors:
Using a total area of 1.84(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.455(In)
30-minute factor = 1.000 Adjusted rainfall = 0.932(In)
1-hour factor = 1.000 Adjusted rainfall = 1.230(In)
3-hour factor = 1.000 Adjusted rainfall = 2.219(In)
6-hour factor = 1.000 Adjusted rainfall = 3.220(In)
24-hour factor = 1.000 Adjusted rainfall = 6.330(In)

U n i t H y d r o g r a p h
++

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
(K = 22.25 (CFS))		
1	26.066	5.800
2	90.306	14.295
3	100.000	2.157

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.4552	0.4552
2	0.6006	0.1454
3	0.7064	0.1058
4	0.7925	0.0861
5	0.8665	0.0740
6	0.9321	0.0656
7	0.9914	0.0593

8	1.0458	0.0544
9	1.0962	0.0504
10	1.1434	0.0472
11	1.1878	0.0444
12	1.2299	0.0421
13	1.2839	0.0540
14	1.3361	0.0521
15	1.3865	0.0504
16	1.4354	0.0489
17	1.4829	0.0475
18	1.5292	0.0462
19	1.5742	0.0451
20	1.6182	0.0440
21	1.6612	0.0430
22	1.7032	0.0420
23	1.7444	0.0412
24	1.7847	0.0403
25	1.8243	0.0396
26	1.8631	0.0388
27	1.9013	0.0382
28	1.9388	0.0375
29	1.9757	0.0369
30	2.0120	0.0363
31	2.0478	0.0358
32	2.0830	0.0352
33	2.1177	0.0347
34	2.1519	0.0342
35	2.1857	0.0338
36	2.2190	0.0333
37	2.2519	0.0329
38	2.2844	0.0325
39	2.3165	0.0321
40	2.3482	0.0317
41	2.3796	0.0314
42	2.4106	0.0310
43	2.4413	0.0307
44	2.4716	0.0303
45	2.5016	0.0300
46	2.5313	0.0297
47	2.5607	0.0294
48	2.5898	0.0291
49	2.6187	0.0288
50	2.6472	0.0286
51	2.6756	0.0283
52	2.7036	0.0281
53	2.7314	0.0278
54	2.7590	0.0276
55	2.7863	0.0273
56	2.8134	0.0271
57	2.8403	0.0269
58	2.8669	0.0267
59	2.8934	0.0264
60	2.9196	0.0262
61	2.9456	0.0260
62	2.9715	0.0258
63	2.9971	0.0256
64	3.0226	0.0255
65	3.0479	0.0253
66	3.0730	0.0251

67	3.0979	0.0249
68	3.1226	0.0247
69	3.1472	0.0246
70	3.1716	0.0244
71	3.1959	0.0243
72	3.2200	0.0241
73	3.2417	0.0217
74	3.2633	0.0216
75	3.2847	0.0214
76	3.3060	0.0213
77	3.3271	0.0211
78	3.3481	0.0210
79	3.3690	0.0209
80	3.3897	0.0207
81	3.4103	0.0206
82	3.4308	0.0205
83	3.4511	0.0203
84	3.4713	0.0202
85	3.4914	0.0201
86	3.5114	0.0200
87	3.5312	0.0198
88	3.5510	0.0197
89	3.5706	0.0196
90	3.5901	0.0195
91	3.6095	0.0194
92	3.6288	0.0193
93	3.6479	0.0192
94	3.6670	0.0191
95	3.6860	0.0190
96	3.7048	0.0189
97	3.7236	0.0188
98	3.7423	0.0187
99	3.7609	0.0186
100	3.7793	0.0185
101	3.7977	0.0184
102	3.8160	0.0183
103	3.8342	0.0182
104	3.8523	0.0181
105	3.8703	0.0180
106	3.8882	0.0179
107	3.9061	0.0178
108	3.9238	0.0178
109	3.9415	0.0177
110	3.9591	0.0176
111	3.9766	0.0175
112	3.9940	0.0174
113	4.0114	0.0173
114	4.0287	0.0173
115	4.0458	0.0172
116	4.0630	0.0171
117	4.0800	0.0170
118	4.0970	0.0170
119	4.1139	0.0169
120	4.1307	0.0168
121	4.1474	0.0167
122	4.1641	0.0167
123	4.1807	0.0166
124	4.1972	0.0165
125	4.2137	0.0165

126	4.2301	0.0164
127	4.2465	0.0163
128	4.2627	0.0163
129	4.2789	0.0162
130	4.2951	0.0161
131	4.3111	0.0161
132	4.3272	0.0160
133	4.3431	0.0160
134	4.3590	0.0159
135	4.3748	0.0158
136	4.3906	0.0158
137	4.4063	0.0157
138	4.4220	0.0157
139	4.4376	0.0156
140	4.4531	0.0155
141	4.4686	0.0155
142	4.4840	0.0154
143	4.4994	0.0154
144	4.5147	0.0153
145	4.5300	0.0153
146	4.5452	0.0152
147	4.5603	0.0152
148	4.5754	0.0151
149	4.5905	0.0150
150	4.6055	0.0150
151	4.6204	0.0149
152	4.6353	0.0149
153	4.6501	0.0148
154	4.6649	0.0148
155	4.6797	0.0147
156	4.6944	0.0147
157	4.7090	0.0146
158	4.7236	0.0146
159	4.7382	0.0146
160	4.7527	0.0145
161	4.7671	0.0145
162	4.7816	0.0144
163	4.7959	0.0144
164	4.8102	0.0143
165	4.8245	0.0143
166	4.8388	0.0142
167	4.8529	0.0142
168	4.8671	0.0141
169	4.8812	0.0141
170	4.8953	0.0141
171	4.9093	0.0140
172	4.9233	0.0140
173	4.9372	0.0139
174	4.9511	0.0139
175	4.9649	0.0139
176	4.9787	0.0138
177	4.9925	0.0138
178	5.0063	0.0137
179	5.0199	0.0137
180	5.0336	0.0137
181	5.0472	0.0136
182	5.0608	0.0136
183	5.0743	0.0135
184	5.0878	0.0135

185	5.1013	0.0135
186	5.1147	0.0134
187	5.1281	0.0134
188	5.1415	0.0134
189	5.1548	0.0133
190	5.1681	0.0133
191	5.1813	0.0132
192	5.1945	0.0132
193	5.2077	0.0132
194	5.2208	0.0131
195	5.2339	0.0131
196	5.2470	0.0131
197	5.2600	0.0130
198	5.2730	0.0130
199	5.2860	0.0130
200	5.2989	0.0129
201	5.3118	0.0129
202	5.3247	0.0129
203	5.3375	0.0128
204	5.3504	0.0128
205	5.3631	0.0128
206	5.3759	0.0127
207	5.3886	0.0127
208	5.4012	0.0127
209	5.4139	0.0126
210	5.4265	0.0126
211	5.4391	0.0126
212	5.4516	0.0126
213	5.4642	0.0125
214	5.4767	0.0125
215	5.4891	0.0125
216	5.5016	0.0124
217	5.5140	0.0124
218	5.5263	0.0124
219	5.5387	0.0123
220	5.5510	0.0123
221	5.5633	0.0123
222	5.5755	0.0123
223	5.5878	0.0122
224	5.6000	0.0122
225	5.6122	0.0122
226	5.6243	0.0121
227	5.6364	0.0121
228	5.6485	0.0121
229	5.6606	0.0121
230	5.6726	0.0120
231	5.6846	0.0120
232	5.6966	0.0120
233	5.7086	0.0120
234	5.7205	0.0119
235	5.7324	0.0119
236	5.7443	0.0119
237	5.7562	0.0119
238	5.7680	0.0118
239	5.7798	0.0118
240	5.7916	0.0118
241	5.8033	0.0118
242	5.8150	0.0117
243	5.8268	0.0117

244	5.8384	0.0117
245	5.8501	0.0117
246	5.8617	0.0116
247	5.8733	0.0116
248	5.8849	0.0116
249	5.8965	0.0116
250	5.9080	0.0115
251	5.9195	0.0115
252	5.9310	0.0115
253	5.9425	0.0115
254	5.9539	0.0114
255	5.9653	0.0114
256	5.9767	0.0114
257	5.9881	0.0114
258	5.9994	0.0113
259	6.0108	0.0113
260	6.0221	0.0113
261	6.0333	0.0113
262	6.0446	0.0113
263	6.0558	0.0112
264	6.0671	0.0112
265	6.0782	0.0112
266	6.0894	0.0112
267	6.1006	0.0112
268	6.1117	0.0111
269	6.1228	0.0111
270	6.1339	0.0111
271	6.1450	0.0111
272	6.1560	0.0110
273	6.1670	0.0110
274	6.1780	0.0110
275	6.1890	0.0110
276	6.2000	0.0110
277	6.2109	0.0109
278	6.2219	0.0109
279	6.2328	0.0109
280	6.2436	0.0109
281	6.2545	0.0109
282	6.2653	0.0108
283	6.2762	0.0108
284	6.2870	0.0108
285	6.2977	0.0108
286	6.3085	0.0108
287	6.3193	0.0107
288	6.3300	0.0107

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0107	0.0024	0.0083
2	0.0107	0.0024	0.0083
3	0.0108	0.0024	0.0084
4	0.0108	0.0024	0.0084
5	0.0108	0.0024	0.0084
6	0.0109	0.0024	0.0084
7	0.0109	0.0024	0.0085
8	0.0109	0.0024	0.0085
9	0.0110	0.0025	0.0085

10	0.0110	0.0025	0.0085
11	0.0110	0.0025	0.0086
12	0.0110	0.0025	0.0086
13	0.0111	0.0025	0.0086
14	0.0111	0.0025	0.0086
15	0.0112	0.0025	0.0087
16	0.0112	0.0025	0.0087
17	0.0112	0.0025	0.0087
18	0.0112	0.0025	0.0087
19	0.0113	0.0025	0.0088
20	0.0113	0.0025	0.0088
21	0.0113	0.0025	0.0088
22	0.0114	0.0026	0.0088
23	0.0114	0.0026	0.0089
24	0.0114	0.0026	0.0089
25	0.0115	0.0026	0.0089
26	0.0115	0.0026	0.0089
27	0.0116	0.0026	0.0090
28	0.0116	0.0026	0.0090
29	0.0116	0.0026	0.0090
30	0.0117	0.0026	0.0090
31	0.0117	0.0026	0.0091
32	0.0117	0.0026	0.0091
33	0.0118	0.0026	0.0091
34	0.0118	0.0026	0.0092
35	0.0119	0.0027	0.0092
36	0.0119	0.0027	0.0092
37	0.0119	0.0027	0.0093
38	0.0120	0.0027	0.0093
39	0.0120	0.0027	0.0093
40	0.0120	0.0027	0.0093
41	0.0121	0.0027	0.0094
42	0.0121	0.0027	0.0094
43	0.0122	0.0027	0.0094
44	0.0122	0.0027	0.0095
45	0.0123	0.0027	0.0095
46	0.0123	0.0028	0.0095
47	0.0123	0.0028	0.0096
48	0.0124	0.0028	0.0096
49	0.0124	0.0028	0.0096
50	0.0125	0.0028	0.0097
51	0.0125	0.0028	0.0097
52	0.0126	0.0028	0.0097
53	0.0126	0.0028	0.0098
54	0.0126	0.0028	0.0098
55	0.0127	0.0029	0.0099
56	0.0127	0.0029	0.0099
57	0.0128	0.0029	0.0099
58	0.0128	0.0029	0.0100
59	0.0129	0.0029	0.0100
60	0.0129	0.0029	0.0100
61	0.0130	0.0029	0.0101
62	0.0130	0.0029	0.0101
63	0.0131	0.0029	0.0102
64	0.0131	0.0029	0.0102
65	0.0132	0.0030	0.0102
66	0.0132	0.0030	0.0103
67	0.0133	0.0030	0.0103
68	0.0134	0.0030	0.0104

69	0.0134	0.0030	0.0104
70	0.0135	0.0030	0.0104
71	0.0135	0.0030	0.0105
72	0.0136	0.0030	0.0105
73	0.0137	0.0031	0.0106
74	0.0137	0.0031	0.0106
75	0.0138	0.0031	0.0107
76	0.0138	0.0031	0.0107
77	0.0139	0.0031	0.0108
78	0.0139	0.0031	0.0108
79	0.0140	0.0031	0.0109
80	0.0141	0.0032	0.0109
81	0.0141	0.0032	0.0110
82	0.0142	0.0032	0.0110
83	0.0143	0.0032	0.0111
84	0.0143	0.0032	0.0111
85	0.0144	0.0032	0.0112
86	0.0145	0.0032	0.0112
87	0.0146	0.0033	0.0113
88	0.0146	0.0033	0.0113
89	0.0147	0.0033	0.0114
90	0.0147	0.0033	0.0114
91	0.0148	0.0033	0.0115
92	0.0149	0.0033	0.0116
93	0.0150	0.0034	0.0116
94	0.0150	0.0034	0.0117
95	0.0152	0.0034	0.0118
96	0.0152	0.0034	0.0118
97	0.0153	0.0034	0.0119
98	0.0154	0.0034	0.0119
99	0.0155	0.0035	0.0120
100	0.0155	0.0035	0.0121
101	0.0157	0.0035	0.0121
102	0.0157	0.0035	0.0122
103	0.0158	0.0036	0.0123
104	0.0159	0.0036	0.0123
105	0.0160	0.0036	0.0124
106	0.0161	0.0036	0.0125
107	0.0162	0.0036	0.0126
108	0.0163	0.0036	0.0126
109	0.0164	0.0037	0.0127
110	0.0165	0.0037	0.0128
111	0.0166	0.0037	0.0129
112	0.0167	0.0037	0.0129
113	0.0168	0.0038	0.0130
114	0.0169	0.0038	0.0131
115	0.0170	0.0038	0.0132
116	0.0171	0.0038	0.0133
117	0.0173	0.0039	0.0134
118	0.0173	0.0039	0.0135
119	0.0175	0.0039	0.0136
120	0.0176	0.0039	0.0136
121	0.0178	0.0040	0.0138
122	0.0178	0.0040	0.0138
123	0.0180	0.0040	0.0140
124	0.0181	0.0041	0.0140
125	0.0183	0.0041	0.0142
126	0.0184	0.0041	0.0143
127	0.0186	0.0042	0.0144

128	0.0187	0.0042	0.0145
129	0.0189	0.0042	0.0146
130	0.0190	0.0043	0.0147
131	0.0192	0.0043	0.0149
132	0.0193	0.0043	0.0150
133	0.0195	0.0044	0.0151
134	0.0196	0.0044	0.0152
135	0.0198	0.0045	0.0154
136	0.0200	0.0045	0.0155
137	0.0202	0.0045	0.0157
138	0.0203	0.0046	0.0158
139	0.0206	0.0046	0.0160
140	0.0207	0.0046	0.0161
141	0.0210	0.0047	0.0163
142	0.0211	0.0047	0.0164
143	0.0214	0.0048	0.0166
144	0.0216	0.0048	0.0167
145	0.0241	0.0054	0.0187
146	0.0243	0.0054	0.0188
147	0.0246	0.0055	0.0191
148	0.0247	0.0056	0.0192
149	0.0251	0.0056	0.0195
150	0.0253	0.0057	0.0196
151	0.0256	0.0058	0.0199
152	0.0258	0.0058	0.0200
153	0.0262	0.0059	0.0204
154	0.0264	0.0059	0.0205
155	0.0269	0.0060	0.0208
156	0.0271	0.0061	0.0210
157	0.0276	0.0062	0.0214
158	0.0278	0.0062	0.0216
159	0.0283	0.0063	0.0220
160	0.0286	0.0064	0.0222
161	0.0291	0.0065	0.0226
162	0.0294	0.0066	0.0228
163	0.0300	0.0067	0.0233
164	0.0303	0.0068	0.0235
165	0.0310	0.0070	0.0240
166	0.0314	0.0070	0.0243
167	0.0321	0.0072	0.0249
168	0.0325	0.0073	0.0252
169	0.0333	0.0075	0.0259
170	0.0338	0.0076	0.0262
171	0.0347	0.0078	0.0269
172	0.0352	0.0079	0.0273
173	0.0363	0.0081	0.0282
174	0.0369	0.0083	0.0286
175	0.0382	0.0086	0.0296
176	0.0388	0.0087	0.0301
177	0.0403	0.0090	0.0313
178	0.0412	0.0092	0.0319
179	0.0430	0.0096	0.0333
180	0.0440	0.0099	0.0341
181	0.0462	0.0104	0.0359
182	0.0475	0.0107	0.0369
183	0.0504	0.0113	0.0391
184	0.0521	0.0117	0.0404
185	0.0421	0.0094	0.0326
186	0.0444	0.0100	0.0345

187	0.0504	0.0113	0.0391
188	0.0544	0.0122	0.0422
189	0.0656	0.0147	0.0509
190	0.0740	0.0163	0.0577
191	0.1058	0.0163	0.0895
192	0.1454	0.0163	0.1291
193	0.4552	0.0163	0.4389
194	0.0861	0.0163	0.0699
195	0.0593	0.0133	0.0460
196	0.0472	0.0106	0.0366
197	0.0540	0.0121	0.0419
198	0.0489	0.0110	0.0379
199	0.0451	0.0101	0.0350
200	0.0420	0.0094	0.0326
201	0.0396	0.0089	0.0307
202	0.0375	0.0084	0.0291
203	0.0358	0.0080	0.0277
204	0.0342	0.0077	0.0266
205	0.0329	0.0074	0.0255
206	0.0317	0.0071	0.0246
207	0.0307	0.0069	0.0238
208	0.0297	0.0067	0.0230
209	0.0288	0.0065	0.0224
210	0.0281	0.0063	0.0218
211	0.0273	0.0061	0.0212
212	0.0267	0.0060	0.0207
213	0.0260	0.0058	0.0202
214	0.0255	0.0057	0.0197
215	0.0249	0.0056	0.0193
216	0.0244	0.0055	0.0189
217	0.0217	0.0049	0.0169
218	0.0213	0.0048	0.0165
219	0.0209	0.0047	0.0162
220	0.0205	0.0046	0.0159
221	0.0201	0.0045	0.0156
222	0.0197	0.0044	0.0153
223	0.0194	0.0043	0.0150
224	0.0191	0.0043	0.0148
225	0.0188	0.0042	0.0146
226	0.0185	0.0041	0.0143
227	0.0182	0.0041	0.0141
228	0.0179	0.0040	0.0139
229	0.0177	0.0040	0.0137
230	0.0174	0.0039	0.0135
231	0.0172	0.0039	0.0133
232	0.0170	0.0038	0.0132
233	0.0167	0.0038	0.0130
234	0.0165	0.0037	0.0128
235	0.0163	0.0037	0.0127
236	0.0161	0.0036	0.0125
237	0.0160	0.0036	0.0124
238	0.0158	0.0035	0.0122
239	0.0156	0.0035	0.0121
240	0.0154	0.0035	0.0120
241	0.0153	0.0034	0.0118
242	0.0151	0.0034	0.0117
243	0.0149	0.0034	0.0116
244	0.0148	0.0033	0.0115
245	0.0146	0.0033	0.0114

246	0.0145	0.0033	0.0113
247	0.0144	0.0032	0.0111
248	0.0142	0.0032	0.0110
249	0.0141	0.0032	0.0109
250	0.0140	0.0031	0.0108
251	0.0139	0.0031	0.0107
252	0.0137	0.0031	0.0107
253	0.0136	0.0031	0.0106
254	0.0135	0.0030	0.0105
255	0.0134	0.0030	0.0104
256	0.0133	0.0030	0.0103
257	0.0132	0.0030	0.0102
258	0.0131	0.0029	0.0101
259	0.0130	0.0029	0.0101
260	0.0129	0.0029	0.0100
261	0.0128	0.0029	0.0099
262	0.0127	0.0028	0.0098
263	0.0126	0.0028	0.0098
264	0.0125	0.0028	0.0097
265	0.0124	0.0028	0.0096
266	0.0123	0.0028	0.0096
267	0.0122	0.0027	0.0095
268	0.0121	0.0027	0.0094
269	0.0121	0.0027	0.0094
270	0.0120	0.0027	0.0093
271	0.0119	0.0027	0.0092
272	0.0118	0.0027	0.0092
273	0.0118	0.0026	0.0091
274	0.0117	0.0026	0.0091
275	0.0116	0.0026	0.0090
276	0.0115	0.0026	0.0089
277	0.0115	0.0026	0.0089
278	0.0114	0.0026	0.0088
279	0.0113	0.0025	0.0088
280	0.0113	0.0025	0.0087
281	0.0112	0.0025	0.0087
282	0.0111	0.0025	0.0086
283	0.0111	0.0025	0.0086
284	0.0110	0.0025	0.0085
285	0.0109	0.0025	0.0085
286	0.0109	0.0024	0.0084
287	0.0108	0.0024	0.0084
288	0.0108	0.0024	0.0084

Total soil rain loss = 1.31(In)
Total effective rainfall = 5.02(In)
Peak flow rate in flood hydrograph = 6.96(CFS)

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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0003	0.05	Q	|	|	|	|

0+10	0.0015	0.17	Q	|	|	|	|
0+15	0.0028	0.19	Q	|	|	|	|
0+20	0.0040	0.19	Q	|	|	|	|
0+25	0.0053	0.19	Q	|	|	|	|
0+30	0.0066	0.19	Q	|	|	|	|
0+35	0.0079	0.19	Q	|	|	|	|
0+40	0.0092	0.19	Q	|	|	|	|
0+45	0.0105	0.19	Q	|	|	|	|
0+50	0.0118	0.19	Q	|	|	|	|
0+55	0.0131	0.19	Q	|	|	|	|
1+ 0	0.0144	0.19	Q	|	|	|	|
1+ 5	0.0157	0.19	Q	|	|	|	|
1+10	0.0171	0.19	Q	|	|	|	|
1+15	0.0184	0.19	Q	|	|	|	|
1+20	0.0197	0.19	QV	|	|	|	|
1+25	0.0210	0.19	QV	|	|	|	|
1+30	0.0224	0.19	QV	|	|	|	|
1+35	0.0237	0.19	QV	|	|	|	|
1+40	0.0250	0.19	QV	|	|	|	|
1+45	0.0264	0.20	QV	|	|	|	|
1+50	0.0277	0.20	QV	|	|	|	|
1+55	0.0291	0.20	QV	|	|	|	|
2+ 0	0.0305	0.20	QV	|	|	|	|
2+ 5	0.0318	0.20	QV	|	|	|	|
2+10	0.0332	0.20	QV	|	|	|	|
2+15	0.0346	0.20	QV	|	|	|	|
2+20	0.0359	0.20	QV	|	|	|	|
2+25	0.0373	0.20	QV	|	|	|	|
2+30	0.0387	0.20	Q V	|	|	|	|
2+35	0.0401	0.20	Q V	|	|	|	|
2+40	0.0415	0.20	Q V	|	|	|	|
2+45	0.0429	0.20	Q V	|	|	|	|
2+50	0.0443	0.20	Q V	|	|	|	|
2+55	0.0457	0.20	Q V	|	|	|	|
3+ 0	0.0471	0.20	Q V	|	|	|	|
3+ 5	0.0485	0.21	Q V	|	|	|	|
3+10	0.0499	0.21	Q V	|	|	|	|
3+15	0.0513	0.21	Q V	|	|	|	|
3+20	0.0528	0.21	Q V	|	|	|	|
3+25	0.0542	0.21	Q V	|	|	|	|
3+30	0.0556	0.21	Q V	|	|	|	|
3+35	0.0571	0.21	Q V	|	|	|	|
3+40	0.0585	0.21	Q V	|	|	|	|
3+45	0.0600	0.21	Q V	|	|	|	|
3+50	0.0614	0.21	Q V	|	|	|	|
3+55	0.0629	0.21	Q V	|	|	|	|
4+ 0	0.0644	0.21	Q V	|	|	|	|
4+ 5	0.0658	0.21	Q V	|	|	|	|
4+10	0.0673	0.21	Q V	|	|	|	|
4+15	0.0688	0.22	Q V	|	|	|	|
4+20	0.0703	0.22	Q V	|	|	|	|
4+25	0.0718	0.22	Q V	|	|	|	|
4+30	0.0733	0.22	Q V	|	|	|	|
4+35	0.0748	0.22	Q V	|	|	|	|
4+40	0.0763	0.22	Q V	|	|	|	|
4+45	0.0778	0.22	Q V	|	|	|	|
4+50	0.0793	0.22	Q V	|	|	|	|
4+55	0.0809	0.22	Q V	|	|	|	|
5+ 0	0.0824	0.22	Q V	|	|	|	|

```
5+ 5       0.0839      0.22  Q   V     |          |          |          |
5+10       0.0855      0.22  Q   V     |          |          |          |
5+15       0.0870      0.23  Q   V     |          |          |          |
5+20       0.0886      0.23  Q   V     |          |          |          |
5+25       0.0902      0.23  Q   V     |          |          |          |
5+30       0.0917      0.23  Q   V     |          |          |          |
5+35       0.0933      0.23  Q   V     |          |          |          |
5+40       0.0949      0.23  Q   V     |          |          |          |
5+45       0.0965      0.23  Q    V    |          |          |          |
5+50       0.0981      0.23  Q    V    |          |          |          |
5+55       0.0997      0.23  Q    V    |          |          |          |
6+ 0       0.1013      0.23  Q    V    |          |          |          |
6+ 5       0.1029      0.23  Q    V    |          |          |          |
6+10       0.1045      0.24  Q    V    |          |          |          |
6+15       0.1061      0.24  Q    V    |          |          |          |
6+20       0.1078      0.24  Q    V    |          |          |          |
6+25       0.1094      0.24  Q    V    |          |          |          |
6+30       0.1111      0.24  Q    V    |          |          |          |
6+35       0.1127      0.24  Q    V    |          |          |          |
6+40       0.1144      0.24  Q    V    |          |          |          |
6+45       0.1161      0.24  Q     V   |          |          |          |
6+50       0.1178      0.24  Q     V   |          |          |          |
6+55       0.1195      0.25  Q     V   |          |          |          |
7+ 0       0.1212      0.25  Q     V   |          |          |          |
7+ 5       0.1229      0.25  Q     V   |          |          |          |
7+10       0.1246      0.25  Q     V   |          |          |          |
7+15       0.1263      0.25  Q     V   |          |          |          |
7+20       0.1280      0.25  |Q    V   |          |          |          |
7+25       0.1298      0.25  |Q    V   |          |          |          |
7+30       0.1315      0.25  |Q    V   |          |          |          |
7+35       0.1333      0.25  |Q    V   |          |          |          |
7+40       0.1350      0.26  |Q     V  |          |          |          |
7+45       0.1368      0.26  |Q     V  |          |          |          |
7+50       0.1386      0.26  |Q     V  |          |          |          |
7+55       0.1404      0.26  |Q     V  |          |          |          |
8+ 0       0.1422      0.26  |Q     V  |          |          |          |
8+ 5       0.1440      0.26  |Q     V  |          |          |          |
8+10       0.1458      0.26  |Q     V  |          |          |          |
8+15       0.1476      0.27  |Q     V  |          |          |          |
8+20       0.1495      0.27  |Q     V  |          |          |          |
8+25       0.1513      0.27  |Q     V  |          |          |          |
8+30       0.1532      0.27  |Q     V  |          |          |          |
8+35       0.1551      0.27  |Q      V |          |          |          |
8+40       0.1569      0.27  |Q      V |          |          |          |
8+45       0.1588      0.27  |Q      V |          |          |          |
8+50       0.1607      0.28  |Q      V |          |          |          |
8+55       0.1627      0.28  |Q      V |          |          |          |
9+ 0       0.1646      0.28  |Q      V |          |          |          |
9+ 5       0.1665      0.28  |Q      V |          |          |          |
9+10       0.1685      0.28  |Q      V |          |          |          |
9+15       0.1704      0.28  |Q      V |          |          |          |
9+20       0.1724      0.29  |Q      V |          |          |          |
9+25       0.1744      0.29  |Q       V|          |          |          |
9+30       0.1764      0.29  |Q       V|          |          |          |
9+35       0.1784      0.29  |Q       V|          |          |          |
9+40       0.1804      0.29  |Q       V|          |          |          |
9+45       0.1825      0.30  |Q       V|          |          |          |
9+50       0.1845      0.30  |Q       V|          |          |          |
9+55       0.1866      0.30  |Q       V|          |          |          |
```

```
10+ 0       0.1887      0.30  |Q       V|          |          |          |
10+ 5       0.1908      0.30  |Q       V|          |          |          |
10+10       0.1929      0.31  |Q        V          |          |          |
10+15       0.1950      0.31  |Q        V          |          |          |
10+20       0.1971      0.31  |Q        V          |          |          |
10+25       0.1993      0.31  |Q        V          |          |          |
10+30       0.2015      0.32  |Q        V          |          |          |
10+35       0.2037      0.32  |Q        V          |          |          |
10+40       0.2059      0.32  |Q        V          |          |          |
10+45       0.2081      0.32  |Q        V          |          |          |
10+50       0.2103      0.33  |Q        V          |          |          |
10+55       0.2126      0.33  |Q        |V         |          |          |
11+ 0       0.2149      0.33  |Q        |V         |          |          |
11+ 5       0.2172      0.33  |Q        |V         |          |          |
11+10       0.2195      0.34  |Q        |V         |          |          |
11+15       0.2218      0.34  |Q        |V         |          |          |
11+20       0.2242      0.34  |Q        |V         |          |          |
11+25       0.2266      0.35  |Q        |V         |          |          |
11+30       0.2290      0.35  |Q        |V         |          |          |
11+35       0.2314      0.35  |Q        | V        |          |          |
11+40       0.2339      0.36  |Q        | V        |          |          |
11+45       0.2363      0.36  |Q        | V        |          |          |
11+50       0.2388      0.36  |Q        | V        |          |          |
11+55       0.2414      0.37  |Q        | V        |          |          |
12+ 0       0.2439      0.37  |Q        | V        |          |          |
12+ 5       0.2465      0.38  |Q        | V        |          |          |
12+10       0.2494      0.41  |Q        | V        |          |          |
12+15       0.2523      0.42  |Q        |  V       |          |          |
12+20       0.2552      0.42  |Q        |  V       |          |          |
12+25       0.2581      0.43  |Q        |  V       |          |          |
12+30       0.2611      0.43  |Q        |  V       |          |          |
12+35       0.2641      0.44  |Q        |  V       |          |          |
12+40       0.2672      0.44  |Q        |  V       |          |          |
12+45       0.2703      0.45  |Q        |   V      |          |          |
12+50       0.2734      0.45  |Q        |   V      |          |          |
12+55       0.2766      0.46  |Q        |   V      |          |          |
13+ 0       0.2798      0.46  |Q        |   V      |          |          |
13+ 5       0.2830      0.47  |Q        |   V      |          |          |
13+10       0.2863      0.48  |Q        |   V      |          |          |
13+15       0.2896      0.48  |Q        |    V     |          |          |
13+20       0.2929      0.49  |Q        |    V     |          |          |
13+25       0.2964      0.50  |Q        |    V     |          |          |
13+30       0.2998      0.50  | Q       |    V     |          |          |
13+35       0.3033      0.51  | Q       |    V     |          |          |
13+40       0.3069      0.52  | Q       |    V     |          |          |
13+45       0.3105      0.53  | Q       |     V    |          |          |
13+50       0.3142      0.54  | Q       |     V    |          |          |
13+55       0.3180      0.54  | Q       |     V    |          |          |
14+ 0       0.3218      0.55  | Q       |     V    |          |          |
14+ 5       0.3257      0.56  | Q       |     V    |          |          |
14+10       0.3296      0.58  | Q       |      V   |          |          |
14+15       0.3337      0.59  | Q       |      V   |          |          |
14+20       0.3378      0.60  | Q       |      V   |          |          |
14+25       0.3420      0.61  | Q       |      V   |          |          |
14+30       0.3463      0.63  | Q       |      V   |          |          |
14+35       0.3508      0.64  | Q       |       V  |          |          |
14+40       0.3553      0.66  | Q       |       V  |          |          |
14+45       0.3600      0.68  | Q       |       V  |          |          |
14+50       0.3648      0.70  | Q       |       V  |          |          |
```

```
14+55       0.3697      0.72  | Q       |        V|         |         |
15+ 0       0.3748      0.74  | Q       |        V|         |         |
15+ 5       0.3801      0.77  |  Q      |        V|         |         |
15+10       0.3856      0.80  |  Q      |         V         |         |
15+15       0.3913      0.83  |  Q      |         V         |         |
15+20       0.3974      0.87  |  Q      |         V         |         |
15+25       0.4032      0.85  |  Q      |         V         |         |
15+30       0.4084      0.75  |  Q      |         |V        |         |
15+35       0.4139      0.79  |  Q      |         |V        |         |
15+40       0.4199      0.88  |  Q      |         |V        |         |
15+45       0.4267      0.98  |  Q      |         | V       |         |
15+50       0.4346      1.15  |   Q     |         | V       |         |
15+55       0.4446      1.45  |    Q    |         |  V      |         |
16+ 0       0.4594      2.15  |       Q |         |  V      |         |
16+ 5       0.4910      4.58  |         |       Q |    V    |         |
16+10       0.5389      6.96  |         |         |      QV |         |
16+15       0.5542      2.21  |       Q |         |       V |         |
16+20       0.5612      1.02  |   Q     |         |        V|         |
16+25       0.5672      0.87  |  Q      |         |        V|         |
16+30       0.5734      0.90  |  Q      |         |        V|         |
16+35       0.5791      0.84  |  Q      |         |         V         |
16+40       0.5844      0.77  |  Q      |         |         V         |
16+45       0.5894      0.72  | Q       |         |         V         |
16+50       0.5940      0.68  | Q       |         |         V         |
16+55       0.5985      0.64  | Q       |         |         |V        |
17+ 0       0.6027      0.61  | Q       |         |         |V        |
17+ 5       0.6067      0.59  | Q       |         |         |V        |
17+10       0.6106      0.56  | Q       |         |         |V        |
17+15       0.6144      0.54  | Q       |         |         |V        |
17+20       0.6180      0.53  | Q       |         |         | V       |
17+25       0.6215      0.51  | Q       |         |         | V       |
17+30       0.6249      0.50  |Q        |         |         | V       |
17+35       0.6283      0.48  |Q        |         |         | V       |
17+40       0.6315      0.47  |Q        |         |         | V       |
17+45       0.6346      0.46  |Q        |         |         | V       |
17+50       0.6377      0.45  |Q        |         |         |  V      |
17+55       0.6408      0.44  |Q        |         |         |  V      |
18+ 0       0.6437      0.43  |Q        |         |         |  V      |
18+ 5       0.6465      0.41  |Q        |         |         |  V      |
18+10       0.6491      0.38  |Q        |         |         |  V      |
18+15       0.6517      0.37  |Q        |         |         |  V      |
18+20       0.6541      0.36  |Q        |         |         |  V      |
18+25       0.6565      0.35  |Q        |         |         |   V     |
18+30       0.6589      0.35  |Q        |         |         |   V     |
18+35       0.6613      0.34  |Q        |         |         |   V     |
18+40       0.6636      0.33  |Q        |         |         |   V     |
18+45       0.6658      0.33  |Q        |         |         |   V     |
18+50       0.6681      0.32  |Q        |         |         |   V     |
18+55       0.6702      0.32  |Q        |         |         |   V     |
19+ 0       0.6724      0.31  |Q        |         |         |   V     |
19+ 5       0.6745      0.31  |Q        |         |         |    V    |
19+10       0.6766      0.30  |Q        |         |         |    V    |
19+15       0.6787      0.30  |Q        |         |         |    V    |
19+20       0.6807      0.30  |Q        |         |         |    V    |
19+25       0.6827      0.29  |Q        |         |         |    V    |
19+30       0.6847      0.29  |Q        |         |         |    V    |
19+35       0.6867      0.28  |Q        |         |         |    V    |
19+40       0.6886      0.28  |Q        |         |         |    V    |
19+45       0.6906      0.28  |Q        |         |         |    V    |
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```
   19+50       0.6924      0.27  |Q        |          |          |    V     |
   19+55       0.6943      0.27  |Q        |          |          |     V    |
   20+ 0       0.6962      0.27  |Q        |          |          |     V    |
   20+ 5       0.6980      0.27  |Q        |          |          |     V    |
   20+10       0.6998      0.26  |Q        |          |          |     V    |
   20+15       0.7016      0.26  |Q        |          |          |     V    |
   20+20       0.7034      0.26  |Q        |          |          |     V    |
   20+25       0.7051      0.25  |Q        |          |          |     V    |
   20+30       0.7069      0.25  |Q        |          |          |     V    |
   20+35       0.7086      0.25  |Q        |          |          |     V    |
   20+40       0.7103      0.25  Q         |          |          |     V    |
   20+45       0.7120      0.25  Q         |          |          |     V    |
   20+50       0.7137      0.24  Q         |          |          |      V   |
   20+55       0.7153      0.24  Q         |          |          |      V   |
   21+ 0       0.7170      0.24  Q         |          |          |      V   |
   21+ 5       0.7186      0.24  Q         |          |          |      V   |
   21+10       0.7202      0.23  Q         |          |          |      V   |
   21+15       0.7218      0.23  Q         |          |          |      V   |
   21+20       0.7234      0.23  Q         |          |          |      V   |
   21+25       0.7250      0.23  Q         |          |          |      V   |
   21+30       0.7265      0.23  Q         |          |          |      V   |
   21+35       0.7281      0.23  Q         |          |          |      V   |
   21+40       0.7296      0.22  Q         |          |          |      V   |
   21+45       0.7312      0.22  Q         |          |          |      V   |
   21+50       0.7327      0.22  Q         |          |          |       V  |
   21+55       0.7342      0.22  Q         |          |          |       V  |
   22+ 0       0.7357      0.22  Q         |          |          |       V  |
   22+ 5       0.7372      0.22  Q         |          |          |       V  |
   22+10       0.7386      0.21  Q         |          |          |       V  |
   22+15       0.7401      0.21  Q         |          |          |       V  |
   22+20       0.7416      0.21  Q         |          |          |       V  |
   22+25       0.7430      0.21  Q         |          |          |       V  |
   22+30       0.7444      0.21  Q         |          |          |       V  |
   22+35       0.7459      0.21  Q         |          |          |       V  |
   22+40       0.7473      0.21  Q         |          |          |       V  |
   22+45       0.7487      0.20  Q         |          |          |       V  |
   22+50       0.7501      0.20  Q         |          |          |       V  |
   22+55       0.7515      0.20  Q         |          |          |        V |
   23+ 0       0.7528      0.20  Q         |          |          |        V |
   23+ 5       0.7542      0.20  Q         |          |          |        V |
   23+10       0.7556      0.20  Q         |          |          |        V |
   23+15       0.7569      0.20  Q         |          |          |        V |
   23+20       0.7583      0.20  Q         |          |          |        V |
   23+25       0.7596      0.19  Q         |          |          |        V |
   23+30       0.7609      0.19  Q         |          |          |        V |
   23+35       0.7622      0.19  Q         |          |          |        V |
   23+40       0.7636      0.19  Q         |          |          |        V |
   23+45       0.7649      0.19  Q         |          |          |        V |
   23+50       0.7662      0.19  Q         |          |          |        V |
   23+55       0.7675      0.19  Q         |          |          |        V |
   24+ 0       0.7687      0.19  Q         |          |          |        V |
   24+ 5       0.7697      0.14  Q         |          |          |        V |
   24+10       0.7698      0.02  Q         |          |          |        V |
-------------------------------------------------------------------------
```

APPENDIX C.8: UNIT HYDROGRAPH ANALYSIS, AREA B, 100-YEAR

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2014, Version 9.0

Study date 04/28/25

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6279

320.05 BUFFALO GROVE
UNIT HYDROGRAPH; AREA B
POST-PROJECT
100-YR, 24-HR

Storm Event Year = 100

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 100		
1.84	1	1.61
Rainfall data for year 100		
1.84	6	4.16
Rainfall data for year 100		
1.84	24	8.26

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 3)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
32.0	52.0	1.84	1.000	0.785	0.200	0.157

Area-averaged adjusted loss rate Fm (In/Hr) = 0.157

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
0.37	0.200	32.0	52.0	9.23	0.318
1.47	0.800	98.0	98.0	0.20	0.971

Area-averaged catchment yield fraction, Y = 0.840
Area-averaged low loss fraction, Yb = 0.160
User entry of time of concentration = 0.083 (hours)
++
Watershed area = 1.84(Ac.)
Catchment Lag time = 0.066 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 125.5020
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.157(In/Hr)
Average low loss rate fraction (Yb) = 0.160 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.596(In)
Computed peak 30-minute rainfall = 1.220(In)
Specified peak 1-hour rainfall = 1.610(In)
Computed peak 3-hour rainfall = 2.881(In)
Specified peak 6-hour rainfall = 4.160(In)
Specified peak 24-hour rainfall = 8.260(In)

Rainfall depth area reduction factors:
Using a total area of 1.84(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.596(In)
30-minute factor = 1.000 Adjusted rainfall = 1.220(In)
1-hour factor = 1.000 Adjusted rainfall = 1.610(In)
3-hour factor = 1.000 Adjusted rainfall = 2.881(In)
6-hour factor = 1.000 Adjusted rainfall = 4.160(In)
24-hour factor = 1.000 Adjusted rainfall = 8.260(In)

U n i t H y d r o g r a p h
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Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 22.25 (CFS))	
1	26.066	5.800
2	90.306	14.295
3	100.000	2.157

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.5958	0.5958
2	0.7862	0.1904
3	0.9246	0.1384
4	1.0374	0.1128
5	1.1342	0.0969
6	1.2200	0.0858
7	1.2976	0.0776

8	1.3688	0.0712
9	1.4349	0.0660
10	1.4966	0.0618
11	1.5548	0.0582
12	1.6099	0.0551
13	1.6796	0.0697
14	1.7469	0.0673
15	1.8119	0.0650
16	1.8750	0.0630
17	1.9362	0.0612
18	1.9957	0.0595
19	2.0537	0.0580
20	2.1103	0.0566
21	2.1655	0.0553
22	2.2196	0.0540
23	2.2725	0.0529
24	2.3243	0.0518
25	2.3751	0.0508
26	2.4250	0.0499
27	2.4740	0.0490
28	2.5221	0.0481
29	2.5695	0.0473
30	2.6160	0.0466
31	2.6619	0.0458
32	2.7071	0.0452
33	2.7516	0.0445
34	2.7954	0.0439
35	2.8387	0.0433
36	2.8814	0.0427
37	2.9235	0.0421
38	2.9651	0.0416
39	3.0062	0.0411
40	3.0468	0.0406
41	3.0869	0.0401
42	3.1266	0.0397
43	3.1658	0.0392
44	3.2046	0.0388
45	3.2430	0.0384
46	3.2810	0.0380
47	3.3186	0.0376
48	3.3558	0.0372
49	3.3927	0.0369
50	3.4292	0.0365
51	3.4653	0.0362
52	3.5012	0.0358
53	3.5367	0.0355
54	3.5719	0.0352
55	3.6068	0.0349
56	3.6414	0.0346
57	3.6757	0.0343
58	3.7097	0.0340
59	3.7435	0.0338
60	3.7769	0.0335
61	3.8102	0.0332
62	3.8431	0.0330
63	3.8758	0.0327
64	3.9083	0.0325
65	3.9406	0.0322
66	3.9726	0.0320

67	4.0043	0.0318
68	4.0359	0.0316
69	4.0672	0.0313
70	4.0983	0.0311
71	4.1293	0.0309
72	4.1600	0.0307
73	4.1885	0.0285
74	4.2168	0.0283
75	4.2449	0.0281
76	4.2728	0.0279
77	4.3005	0.0277
78	4.3280	0.0275
79	4.3554	0.0274
80	4.3826	0.0272
81	4.4096	0.0270
82	4.4365	0.0269
83	4.4631	0.0267
84	4.4897	0.0265
85	4.5160	0.0264
86	4.5423	0.0262
87	4.5683	0.0261
88	4.5942	0.0259
89	4.6200	0.0258
90	4.6456	0.0256
91	4.6711	0.0255
92	4.6964	0.0253
93	4.7216	0.0252
94	4.7466	0.0251
95	4.7715	0.0249
96	4.7963	0.0248
97	4.8210	0.0247
98	4.8455	0.0245
99	4.8699	0.0244
100	4.8942	0.0243
101	4.9183	0.0242
102	4.9424	0.0240
103	4.9663	0.0239
104	4.9901	0.0238
105	5.0138	0.0237
106	5.0373	0.0236
107	5.0608	0.0235
108	5.0841	0.0233
109	5.1074	0.0232
110	5.1305	0.0231
111	5.1535	0.0230
112	5.1765	0.0229
113	5.1993	0.0228
114	5.2220	0.0227
115	5.2446	0.0226
116	5.2671	0.0225
117	5.2895	0.0224
118	5.3119	0.0223
119	5.3341	0.0222
120	5.3562	0.0221
121	5.3782	0.0220
122	5.4002	0.0219
123	5.4220	0.0219
124	5.4438	0.0218
125	5.4655	0.0217

126	5.4871	0.0216
127	5.5086	0.0215
128	5.5300	0.0214
129	5.5513	0.0213
130	5.5726	0.0213
131	5.5938	0.0212
132	5.6148	0.0211
133	5.6359	0.0210
134	5.6568	0.0209
135	5.6776	0.0208
136	5.6984	0.0208
137	5.7191	0.0207
138	5.7397	0.0206
139	5.7602	0.0205
140	5.7807	0.0205
141	5.8011	0.0204
142	5.8214	0.0203
143	5.8417	0.0202
144	5.8619	0.0202
145	5.8820	0.0201
146	5.9020	0.0200
147	5.9220	0.0200
148	5.9419	0.0199
149	5.9617	0.0198
150	5.9815	0.0198
151	6.0012	0.0197
152	6.0208	0.0196
153	6.0403	0.0196
154	6.0599	0.0195
155	6.0793	0.0194
156	6.0987	0.0194
157	6.1180	0.0193
158	6.1372	0.0192
159	6.1564	0.0192
160	6.1755	0.0191
161	6.1946	0.0191
162	6.2136	0.0190
163	6.2326	0.0189
164	6.2515	0.0189
165	6.2703	0.0188
166	6.2891	0.0188
167	6.3078	0.0187
168	6.3264	0.0187
169	6.3450	0.0186
170	6.3636	0.0185
171	6.3821	0.0185
172	6.4005	0.0184
173	6.4189	0.0184
174	6.4372	0.0183
175	6.4555	0.0183
176	6.4737	0.0182
177	6.4919	0.0182
178	6.5100	0.0181
179	6.5281	0.0181
180	6.5461	0.0180
181	6.5641	0.0180
182	6.5820	0.0179
183	6.5999	0.0179
184	6.6177	0.0178

185	6.6355	0.0178
186	6.6532	0.0177
187	6.6709	0.0177
188	6.6885	0.0176
189	6.7061	0.0176
190	6.7236	0.0175
191	6.7411	0.0175
192	6.7585	0.0174
193	6.7759	0.0174
194	6.7933	0.0173
195	6.8106	0.0173
196	6.8278	0.0173
197	6.8450	0.0172
198	6.8622	0.0172
199	6.8793	0.0171
200	6.8964	0.0171
201	6.9135	0.0170
202	6.9305	0.0170
203	6.9474	0.0170
204	6.9643	0.0169
205	6.9812	0.0169
206	6.9980	0.0168
207	7.0148	0.0168
208	7.0316	0.0167
209	7.0483	0.0167
210	7.0649	0.0167
211	7.0816	0.0166
212	7.0981	0.0166
213	7.1147	0.0165
214	7.1312	0.0165
215	7.1477	0.0165
216	7.1641	0.0164
217	7.1805	0.0164
218	7.1968	0.0164
219	7.2132	0.0163
220	7.2294	0.0163
221	7.2457	0.0162
222	7.2619	0.0162
223	7.2780	0.0162
224	7.2942	0.0161
225	7.3103	0.0161
226	7.3263	0.0161
227	7.3424	0.0160
228	7.3583	0.0160
229	7.3743	0.0160
230	7.3902	0.0159
231	7.4061	0.0159
232	7.4219	0.0158
233	7.4377	0.0158
234	7.4535	0.0158
235	7.4693	0.0157
236	7.4850	0.0157
237	7.5006	0.0157
238	7.5163	0.0156
239	7.5319	0.0156
240	7.5475	0.0156
241	7.5630	0.0155
242	7.5785	0.0155
243	7.5940	0.0155

244	7.6095	0.0154
245	7.6249	0.0154
246	7.6403	0.0154
247	7.6556	0.0154
248	7.6709	0.0153
249	7.6862	0.0153
250	7.7015	0.0153
251	7.7167	0.0152
252	7.7319	0.0152
253	7.7471	0.0152
254	7.7622	0.0151
255	7.7773	0.0151
256	7.7924	0.0151
257	7.8074	0.0150
258	7.8224	0.0150
259	7.8374	0.0150
260	7.8524	0.0150
261	7.8673	0.0149
262	7.8822	0.0149
263	7.8971	0.0149
264	7.9119	0.0148
265	7.9267	0.0148
266	7.9415	0.0148
267	7.9563	0.0148
268	7.9710	0.0147
269	7.9857	0.0147
270	8.0004	0.0147
271	8.0150	0.0146
272	8.0297	0.0146
273	8.0442	0.0146
274	8.0588	0.0146
275	8.0734	0.0145
276	8.0879	0.0145
277	8.1023	0.0145
278	8.1168	0.0145
279	8.1312	0.0144
280	8.1456	0.0144
281	8.1600	0.0144
282	8.1744	0.0144
283	8.1887	0.0143
284	8.2030	0.0143
285	8.2173	0.0143
286	8.2315	0.0143
287	8.2458	0.0142
288	8.2600	0.0142

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0142	0.0023	0.0119
2	0.0142	0.0023	0.0120
3	0.0143	0.0023	0.0120
4	0.0143	0.0023	0.0120
5	0.0144	0.0023	0.0121
6	0.0144	0.0023	0.0121
7	0.0144	0.0023	0.0121
8	0.0145	0.0023	0.0122
9	0.0145	0.0023	0.0122

10	0.0145	0.0023	0.0122
11	0.0146	0.0023	0.0123
12	0.0146	0.0023	0.0123
13	0.0147	0.0023	0.0123
14	0.0147	0.0023	0.0124
15	0.0148	0.0024	0.0124
16	0.0148	0.0024	0.0124
17	0.0148	0.0024	0.0125
18	0.0149	0.0024	0.0125
19	0.0149	0.0024	0.0125
20	0.0150	0.0024	0.0126
21	0.0150	0.0024	0.0126
22	0.0150	0.0024	0.0126
23	0.0151	0.0024	0.0127
24	0.0151	0.0024	0.0127
25	0.0152	0.0024	0.0128
26	0.0152	0.0024	0.0128
27	0.0153	0.0024	0.0128
28	0.0153	0.0024	0.0129
29	0.0154	0.0025	0.0129
30	0.0154	0.0025	0.0130
31	0.0155	0.0025	0.0130
32	0.0155	0.0025	0.0130
33	0.0156	0.0025	0.0131
34	0.0156	0.0025	0.0131
35	0.0157	0.0025	0.0132
36	0.0157	0.0025	0.0132
37	0.0158	0.0025	0.0133
38	0.0158	0.0025	0.0133
39	0.0159	0.0025	0.0133
40	0.0159	0.0025	0.0134
41	0.0160	0.0026	0.0134
42	0.0160	0.0026	0.0135
43	0.0161	0.0026	0.0135
44	0.0161	0.0026	0.0136
45	0.0162	0.0026	0.0136
46	0.0162	0.0026	0.0136
47	0.0163	0.0026	0.0137
48	0.0164	0.0026	0.0137
49	0.0164	0.0026	0.0138
50	0.0165	0.0026	0.0138
51	0.0165	0.0026	0.0139
52	0.0166	0.0026	0.0139
53	0.0167	0.0027	0.0140
54	0.0167	0.0027	0.0140
55	0.0168	0.0027	0.0141
56	0.0168	0.0027	0.0141
57	0.0169	0.0027	0.0142
58	0.0170	0.0027	0.0142
59	0.0170	0.0027	0.0143
60	0.0171	0.0027	0.0144
61	0.0172	0.0027	0.0144
62	0.0172	0.0027	0.0145
63	0.0173	0.0028	0.0145
64	0.0173	0.0028	0.0146
65	0.0174	0.0028	0.0147
66	0.0175	0.0028	0.0147
67	0.0176	0.0028	0.0148
68	0.0176	0.0028	0.0148

69	0.0177	0.0028	0.0149
70	0.0178	0.0028	0.0149
71	0.0179	0.0029	0.0150
72	0.0179	0.0029	0.0151
73	0.0180	0.0029	0.0151
74	0.0181	0.0029	0.0152
75	0.0182	0.0029	0.0153
76	0.0182	0.0029	0.0153
77	0.0183	0.0029	0.0154
78	0.0184	0.0029	0.0155
79	0.0185	0.0030	0.0155
80	0.0185	0.0030	0.0156
81	0.0187	0.0030	0.0157
82	0.0187	0.0030	0.0157
83	0.0188	0.0030	0.0158
84	0.0189	0.0030	0.0159
85	0.0190	0.0030	0.0160
86	0.0191	0.0030	0.0160
87	0.0192	0.0031	0.0161
88	0.0192	0.0031	0.0162
89	0.0194	0.0031	0.0163
90	0.0194	0.0031	0.0163
91	0.0196	0.0031	0.0164
92	0.0196	0.0031	0.0165
93	0.0198	0.0032	0.0166
94	0.0198	0.0032	0.0167
95	0.0200	0.0032	0.0168
96	0.0200	0.0032	0.0168
97	0.0202	0.0032	0.0170
98	0.0202	0.0032	0.0170
99	0.0204	0.0033	0.0171
100	0.0205	0.0033	0.0172
101	0.0206	0.0033	0.0173
102	0.0207	0.0033	0.0174
103	0.0208	0.0033	0.0175
104	0.0209	0.0033	0.0176
105	0.0211	0.0034	0.0177
106	0.0212	0.0034	0.0178
107	0.0213	0.0034	0.0179
108	0.0214	0.0034	0.0180
109	0.0216	0.0034	0.0181
110	0.0217	0.0035	0.0182
111	0.0219	0.0035	0.0184
112	0.0219	0.0035	0.0184
113	0.0221	0.0035	0.0186
114	0.0222	0.0035	0.0187
115	0.0224	0.0036	0.0188
116	0.0225	0.0036	0.0189
117	0.0227	0.0036	0.0191
118	0.0228	0.0036	0.0192
119	0.0230	0.0037	0.0194
120	0.0231	0.0037	0.0194
121	0.0233	0.0037	0.0196
122	0.0235	0.0037	0.0197
123	0.0237	0.0038	0.0199
124	0.0238	0.0038	0.0200
125	0.0240	0.0038	0.0202
126	0.0242	0.0039	0.0203
127	0.0244	0.0039	0.0205

128	0.0245	0.0039	0.0206
129	0.0248	0.0040	0.0208
130	0.0249	0.0040	0.0209
131	0.0252	0.0040	0.0212
132	0.0253	0.0040	0.0213
133	0.0256	0.0041	0.0215
134	0.0258	0.0041	0.0216
135	0.0261	0.0042	0.0219
136	0.0262	0.0042	0.0220
137	0.0265	0.0042	0.0223
138	0.0267	0.0043	0.0224
139	0.0270	0.0043	0.0227
140	0.0272	0.0043	0.0229
141	0.0275	0.0044	0.0231
142	0.0277	0.0044	0.0233
143	0.0281	0.0045	0.0236
144	0.0283	0.0045	0.0238
145	0.0307	0.0049	0.0258
146	0.0309	0.0049	0.0260
147	0.0313	0.0050	0.0263
148	0.0316	0.0050	0.0265
149	0.0320	0.0051	0.0269
150	0.0322	0.0051	0.0271
151	0.0327	0.0052	0.0275
152	0.0330	0.0053	0.0277
153	0.0335	0.0053	0.0281
154	0.0338	0.0054	0.0284
155	0.0343	0.0055	0.0288
156	0.0346	0.0055	0.0291
157	0.0352	0.0056	0.0296
158	0.0355	0.0057	0.0298
159	0.0362	0.0058	0.0304
160	0.0365	0.0058	0.0307
161	0.0372	0.0059	0.0313
162	0.0376	0.0060	0.0316
163	0.0384	0.0061	0.0323
164	0.0388	0.0062	0.0326
165	0.0397	0.0063	0.0333
166	0.0401	0.0064	0.0337
167	0.0411	0.0066	0.0345
168	0.0416	0.0066	0.0350
169	0.0427	0.0068	0.0359
170	0.0433	0.0069	0.0364
171	0.0445	0.0071	0.0374
172	0.0452	0.0072	0.0380
173	0.0466	0.0074	0.0391
174	0.0473	0.0076	0.0398
175	0.0490	0.0078	0.0412
176	0.0499	0.0080	0.0419
177	0.0518	0.0083	0.0436
178	0.0529	0.0084	0.0445
179	0.0553	0.0088	0.0464
180	0.0566	0.0090	0.0476
181	0.0595	0.0095	0.0500
182	0.0612	0.0098	0.0514
183	0.0650	0.0104	0.0547
184	0.0673	0.0107	0.0565
185	0.0551	0.0088	0.0463
186	0.0582	0.0093	0.0489

187	0.0660	0.0105	0.0555
188	0.0712	0.0114	0.0598
189	0.0858	0.0131	0.0727
190	0.0969	0.0131	0.0838
191	0.1384	0.0131	0.1253
192	0.1904	0.0131	0.1773
193	0.5958	0.0131	0.5827
194	0.1128	0.0131	0.0997
195	0.0776	0.0124	0.0652
196	0.0618	0.0099	0.0519
197	0.0697	0.0111	0.0586
198	0.0630	0.0101	0.0530
199	0.0580	0.0093	0.0487
200	0.0540	0.0086	0.0454
201	0.0508	0.0081	0.0427
202	0.0481	0.0077	0.0405
203	0.0458	0.0073	0.0385
204	0.0439	0.0070	0.0369
205	0.0421	0.0067	0.0354
206	0.0406	0.0065	0.0341
207	0.0392	0.0063	0.0330
208	0.0380	0.0061	0.0319
209	0.0369	0.0059	0.0310
210	0.0358	0.0057	0.0301
211	0.0349	0.0056	0.0293
212	0.0340	0.0054	0.0286
213	0.0332	0.0053	0.0279
214	0.0325	0.0052	0.0273
215	0.0318	0.0051	0.0267
216	0.0311	0.0050	0.0262
217	0.0285	0.0045	0.0239
218	0.0279	0.0045	0.0235
219	0.0274	0.0044	0.0230
220	0.0269	0.0043	0.0226
221	0.0264	0.0042	0.0222
222	0.0259	0.0041	0.0218
223	0.0255	0.0041	0.0214
224	0.0251	0.0040	0.0211
225	0.0247	0.0039	0.0207
226	0.0243	0.0039	0.0204
227	0.0239	0.0038	0.0201
228	0.0236	0.0038	0.0198
229	0.0232	0.0037	0.0195
230	0.0229	0.0037	0.0193
231	0.0226	0.0036	0.0190
232	0.0223	0.0036	0.0188
233	0.0220	0.0035	0.0185
234	0.0218	0.0035	0.0183
235	0.0215	0.0034	0.0181
236	0.0213	0.0034	0.0179
237	0.0210	0.0034	0.0177
238	0.0208	0.0033	0.0175
239	0.0205	0.0033	0.0173
240	0.0203	0.0032	0.0171
241	0.0201	0.0032	0.0169
242	0.0199	0.0032	0.0167
243	0.0197	0.0031	0.0166
244	0.0195	0.0031	0.0164
245	0.0193	0.0031	0.0162

246	0.0191	0.0031	0.0161
247	0.0189	0.0030	0.0159
248	0.0188	0.0030	0.0158
249	0.0186	0.0030	0.0156
250	0.0184	0.0029	0.0155
251	0.0183	0.0029	0.0154
252	0.0181	0.0029	0.0152
253	0.0180	0.0029	0.0151
254	0.0178	0.0028	0.0150
255	0.0177	0.0028	0.0149
256	0.0175	0.0028	0.0147
257	0.0174	0.0028	0.0146
258	0.0173	0.0028	0.0145
259	0.0171	0.0027	0.0144
260	0.0170	0.0027	0.0143
261	0.0169	0.0027	0.0142
262	0.0167	0.0027	0.0141
263	0.0166	0.0027	0.0140
264	0.0165	0.0026	0.0139
265	0.0164	0.0026	0.0138
266	0.0163	0.0026	0.0137
267	0.0162	0.0026	0.0136
268	0.0161	0.0026	0.0135
269	0.0160	0.0025	0.0134
270	0.0158	0.0025	0.0133
271	0.0157	0.0025	0.0132
272	0.0156	0.0025	0.0131
273	0.0155	0.0025	0.0131
274	0.0154	0.0025	0.0130
275	0.0154	0.0024	0.0129
276	0.0153	0.0024	0.0128
277	0.0152	0.0024	0.0127
278	0.0151	0.0024	0.0127
279	0.0150	0.0024	0.0126
280	0.0149	0.0024	0.0125
281	0.0148	0.0024	0.0125
282	0.0147	0.0024	0.0124
283	0.0146	0.0023	0.0123
284	0.0146	0.0023	0.0122
285	0.0145	0.0023	0.0122
286	0.0144	0.0023	0.0121
287	0.0143	0.0023	0.0120
288	0.0143	0.0023	0.0120

Total soil rain loss = 1.20(In)
Total effective rainfall = 7.06(In)
Peak flow rate in flood hydrograph = 9.29(CFS)

++

24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

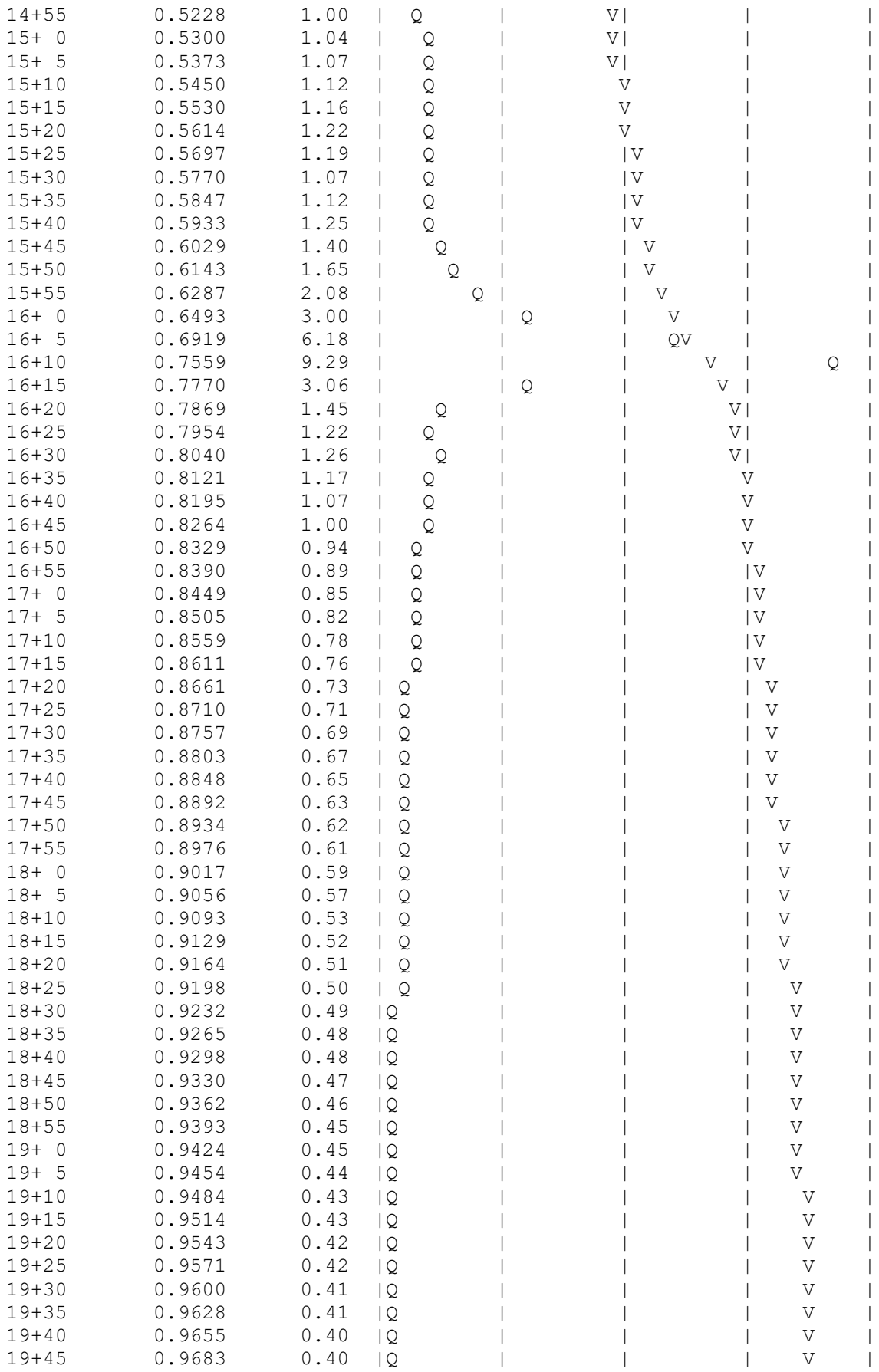
Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0005	0.07	Q	|	|	|	|

```
0+10       0.0021      0.24  Q          |          |          |          |
0+15       0.0040      0.27  VQ         |          |          |          |
0+20       0.0058      0.27  VQ         |          |          |          |
0+25       0.0076      0.27  VQ         |          |          |          |
0+30       0.0095      0.27  VQ         |          |          |          |
0+35       0.0113      0.27  VQ         |          |          |          |
0+40       0.0132      0.27  VQ         |          |          |          |
0+45       0.0151      0.27  VQ         |          |          |          |
0+50       0.0169      0.27  VQ         |          |          |          |
0+55       0.0188      0.27  VQ         |          |          |          |
1+ 0       0.0207      0.27  VQ         |          |          |          |
1+ 5       0.0226      0.27  VQ         |          |          |          |
1+10       0.0245      0.27  VQ         |          |          |          |
1+15       0.0264      0.28  VQ         |          |          |          |
1+20       0.0283      0.28  |Q         |          |          |          |
1+25       0.0302      0.28  |Q         |          |          |          |
1+30       0.0321      0.28  |Q         |          |          |          |
1+35       0.0340      0.28  |Q         |          |          |          |
1+40       0.0359      0.28  |Q         |          |          |          |
1+45       0.0379      0.28  |Q         |          |          |          |
1+50       0.0398      0.28  |Q         |          |          |          |
1+55       0.0417      0.28  |Q         |          |          |          |
2+ 0       0.0437      0.28  |Q         |          |          |          |
2+ 5       0.0456      0.28  |Q         |          |          |          |
2+10       0.0476      0.28  |Q         |          |          |          |
2+15       0.0495      0.29  |Q         |          |          |          |
2+20       0.0515      0.29  |Q         |          |          |          |
2+25       0.0535      0.29  |Q         |          |          |          |
2+30       0.0555      0.29  |QV        |          |          |          |
2+35       0.0575      0.29  |QV        |          |          |          |
2+40       0.0595      0.29  |QV        |          |          |          |
2+45       0.0615      0.29  |QV        |          |          |          |
2+50       0.0635      0.29  |QV        |          |          |          |
2+55       0.0655      0.29  |QV        |          |          |          |
3+ 0       0.0675      0.29  |QV        |          |          |          |
3+ 5       0.0695      0.29  |QV        |          |          |          |
3+10       0.0715      0.30  |QV        |          |          |          |
3+15       0.0736      0.30  |QV        |          |          |          |
3+20       0.0756      0.30  |QV        |          |          |          |
3+25       0.0777      0.30  |QV        |          |          |          |
3+30       0.0797      0.30  |QV        |          |          |          |
3+35       0.0818      0.30  |Q V       |          |          |          |
3+40       0.0839      0.30  |Q V       |          |          |          |
3+45       0.0860      0.30  |Q V       |          |          |          |
3+50       0.0880      0.30  |Q V       |          |          |          |
3+55       0.0901      0.30  |Q V       |          |          |          |
4+ 0       0.0922      0.31  |Q V       |          |          |          |
4+ 5       0.0944      0.31  |Q V       |          |          |          |
4+10       0.0965      0.31  |Q V       |          |          |          |
4+15       0.0986      0.31  |Q V       |          |          |          |
4+20       0.1007      0.31  |Q V       |          |          |          |
4+25       0.1029      0.31  |Q V       |          |          |          |
4+30       0.1050      0.31  |Q V       |          |          |          |
4+35       0.1072      0.31  |Q V       |          |          |          |
4+40       0.1093      0.31  |Q  V      |          |          |          |
4+45       0.1115      0.32  |Q  V      |          |          |          |
4+50       0.1137      0.32  |Q  V      |          |          |          |
4+55       0.1159      0.32  |Q  V      |          |          |          |
5+ 0       0.1181      0.32  |Q  V      |          |          |          |
```

```
5+ 5       0.1203      0.32  |Q  V     |          |          |          |
5+10       0.1225      0.32  |Q  V     |          |          |          |
5+15       0.1247      0.32  |Q  V     |          |          |          |
5+20       0.1269      0.32  |Q  V     |          |          |          |
5+25       0.1292      0.32  |Q  V     |          |          |          |
5+30       0.1314      0.33  |Q  V     |          |          |          |
5+35       0.1337      0.33  |Q  V     |          |          |          |
5+40       0.1359      0.33  |Q   V    |          |          |          |
5+45       0.1382      0.33  |Q   V    |          |          |          |
5+50       0.1405      0.33  |Q   V    |          |          |          |
5+55       0.1428      0.33  |Q   V    |          |          |          |
6+ 0       0.1451      0.33  |Q   V    |          |          |          |
6+ 5       0.1474      0.34  |Q   V    |          |          |          |
6+10       0.1497      0.34  |Q   V    |          |          |          |
6+15       0.1520      0.34  |Q   V    |          |          |          |
6+20       0.1544      0.34  |Q   V    |          |          |          |
6+25       0.1567      0.34  |Q   V    |          |          |          |
6+30       0.1591      0.34  |Q   V    |          |          |          |
6+35       0.1615      0.34  |Q   V    |          |          |          |
6+40       0.1638      0.35  |Q    V   |          |          |          |
6+45       0.1662      0.35  |Q    V   |          |          |          |
6+50       0.1686      0.35  |Q    V   |          |          |          |
6+55       0.1710      0.35  |Q    V   |          |          |          |
7+ 0       0.1735      0.35  |Q    V   |          |          |          |
7+ 5       0.1759      0.35  |Q    V   |          |          |          |
7+10       0.1784      0.36  |Q    V   |          |          |          |
7+15       0.1808      0.36  |Q    V   |          |          |          |
7+20       0.1833      0.36  |Q    V   |          |          |          |
7+25       0.1858      0.36  |Q    V   |          |          |          |
7+30       0.1883      0.36  |Q    V   |          |          |          |
7+35       0.1908      0.36  |Q     V  |          |          |          |
7+40       0.1933      0.37  |Q     V  |          |          |          |
7+45       0.1958      0.37  |Q     V  |          |          |          |
7+50       0.1984      0.37  |Q     V  |          |          |          |
7+55       0.2009      0.37  |Q     V  |          |          |          |
8+ 0       0.2035      0.37  |Q     V  |          |          |          |
8+ 5       0.2061      0.38  |Q     V  |          |          |          |
8+10       0.2087      0.38  |Q     V  |          |          |          |
8+15       0.2113      0.38  |Q     V  |          |          |          |
8+20       0.2139      0.38  |Q     V  |          |          |          |
8+25       0.2166      0.38  |Q      V |          |          |          |
8+30       0.2192      0.39  |Q      V |          |          |          |
8+35       0.2219      0.39  |Q      V |          |          |          |
8+40       0.2246      0.39  |Q      V |          |          |          |
8+45       0.2273      0.39  |Q      V |          |          |          |
8+50       0.2300      0.39  |Q      V |          |          |          |
8+55       0.2327      0.40  |Q      V |          |          |          |
9+ 0       0.2355      0.40  |Q      V |          |          |          |
9+ 5       0.2382      0.40  |Q      V |          |          |          |
9+10       0.2410      0.40  |Q      V |          |          |          |
9+15       0.2438      0.41  |Q       V|          |          |          |
9+20       0.2466      0.41  |Q       V|          |          |          |
9+25       0.2495      0.41  |Q       V|          |          |          |
9+30       0.2523      0.41  |Q       V|          |          |          |
9+35       0.2552      0.42  |Q       V|          |          |          |
9+40       0.2581      0.42  |Q       V|          |          |          |
9+45       0.2610      0.42  |Q       V|          |          |          |
9+50       0.2639      0.42  |Q       V|          |          |          |
9+55       0.2668      0.43  |Q       V|          |          |          |
```

```
10+ 0       0.2698      0.43  |Q       V|          |          |          |
10+ 5       0.2728      0.43  |Q        V          |          |          |
10+10       0.2758      0.44  |Q        V          |          |          |
10+15       0.2788      0.44  |Q        V          |          |          |
10+20       0.2819      0.44  |Q        V          |          |          |
10+25       0.2850      0.45  |Q        V          |          |          |
10+30       0.2881      0.45  |Q        V          |          |          |
10+35       0.2912      0.45  |Q        V          |          |          |
10+40       0.2943      0.46  |Q        V          |          |          |
10+45       0.2975      0.46  |Q        |V         |          |          |
10+50       0.3007      0.46  |Q        |V         |          |          |
10+55       0.3039      0.47  |Q        |V         |          |          |
11+ 0       0.3071      0.47  |Q        |V         |          |          |
11+ 5       0.3104      0.47  |Q        |V         |          |          |
11+10       0.3137      0.48  |Q        |V         |          |          |
11+15       0.3170      0.48  |Q        |V         |          |          |
11+20       0.3204      0.49  |Q        |V         |          |          |
11+25       0.3238      0.49  |Q        |V         |          |          |
11+30       0.3272      0.50  |Q        | V        |          |          |
11+35       0.3306      0.50  | Q       | V        |          |          |
11+40       0.3341      0.51  | Q       | V        |          |          |
11+45       0.3376      0.51  | Q       | V        |          |          |
11+50       0.3412      0.52  | Q       | V        |          |          |
11+55       0.3448      0.52  | Q       | V        |          |          |
12+ 0       0.3484      0.53  | Q       | V        |          |          |
12+ 5       0.3521      0.54  | Q       |  V       |          |          |
12+10       0.3560      0.57  | Q       |  V       |          |          |
12+15       0.3600      0.58  | Q       |  V       |          |          |
12+20       0.3641      0.59  | Q       |  V       |          |          |
12+25       0.3682      0.59  | Q       |  V       |          |          |
12+30       0.3723      0.60  | Q       |  V       |          |          |
12+35       0.3764      0.60  | Q       |  V       |          |          |
12+40       0.3807      0.61  | Q       |   V      |          |          |
12+45       0.3849      0.62  | Q       |   V      |          |          |
12+50       0.3892      0.63  | Q       |   V      |          |          |
12+55       0.3936      0.63  | Q       |   V      |          |          |
13+ 0       0.3980      0.64  | Q       |   V      |          |          |
13+ 5       0.4025      0.65  | Q       |   V      |          |          |
13+10       0.4070      0.66  | Q       |    V     |          |          |
13+15       0.4116      0.67  | Q       |    V     |          |          |
13+20       0.4163      0.68  | Q       |    V     |          |          |
13+25       0.4210      0.69  | Q       |    V     |          |          |
13+30       0.4258      0.70  | Q       |    V     |          |          |
13+35       0.4307      0.71  | Q       |    V     |          |          |
13+40       0.4356      0.72  | Q       |     V    |          |          |
13+45       0.4406      0.73  | Q       |     V    |          |          |
13+50       0.4457      0.74  | Q       |     V    |          |          |
13+55       0.4509      0.75  |  Q      |     V    |          |          |
14+ 0       0.4562      0.77  |  Q      |     V    |          |          |
14+ 5       0.4616      0.78  |  Q      |      V   |          |          |
14+10       0.4671      0.80  |  Q      |      V   |          |          |
14+15       0.4727      0.81  |  Q      |      V   |          |          |
14+20       0.4785      0.83  |  Q      |      V   |          |          |
14+25       0.4843      0.85  |  Q      |      V   |          |          |
14+30       0.4903      0.87  |  Q      |       V  |          |          |
14+35       0.4965      0.89  |  Q      |       V  |          |          |
14+40       0.5028      0.92  |  Q      |       V  |          |          |
14+45       0.5093      0.94  |  Q      |       V  |          |          |
14+50       0.5160      0.97  |  Q      |        V |          |          |
```


14+55 0.5228 1.00
15+ 0 0.5300 1.04
15+ 5 0.5373 1.07
15+10 0.5450 1.12
15+15 0.5530 1.16
15+20 0.5614 1.22
15+25 0.5697 1.19
15+30 0.5770 1.07
15+35 0.5847 1.12
15+40 0.5933 1.25
15+45 0.6029 1.40
15+50 0.6143 1.65
15+55 0.6287 2.08
16+ 0 0.6493 3.00
16+ 5 0.6919 6.18
16+10 0.7559 9.29
16+15 0.7770 3.06
16+20 0.7869 1.45
16+25 0.7954 1.22
16+30 0.8040 1.26
16+35 0.8121 1.17
16+40 0.8195 1.07
16+45 0.8264 1.00
16+50 0.8329 0.94
16+55 0.8390 0.89
17+ 0 0.8449 0.85
17+ 5 0.8505 0.82
17+10 0.8559 0.78
17+15 0.8611 0.76
17+20 0.8661 0.73
17+25 0.8710 0.71
17+30 0.8757 0.69
17+35 0.8803 0.67
17+40 0.8848 0.65
17+45 0.8892 0.63
17+50 0.8934 0.62
17+55 0.8976 0.61
18+ 0 0.9017 0.59
18+ 5 0.9056 0.57
18+10 0.9093 0.53
18+15 0.9129 0.52
18+20 0.9164 0.51
18+25 0.9198 0.50
18+30 0.9232 0.49
18+35 0.9265 0.48
18+40 0.9298 0.48
18+45 0.9330 0.47
18+50 0.9362 0.46
18+55 0.9393 0.45
19+ 0 0.9424 0.45
19+ 5 0.9454 0.44
19+10 0.9484 0.43
19+15 0.9514 0.43
19+20 0.9543 0.42
19+25 0.9571 0.42
19+30 0.9600 0.41
19+35 0.9628 0.41
19+40 0.9655 0.40
19+45 0.9683 0.40

```
19+50       0.9710      0.39  |Q        |          |          |    V     |
19+55       0.9736      0.39  |Q        |          |          |     V    |
20+ 0       0.9763      0.38  |Q        |          |          |     V    |
20+ 5       0.9789      0.38  |Q        |          |          |     V    |
20+10       0.9815      0.38  |Q        |          |          |     V    |
20+15       0.9840      0.37  |Q        |          |          |     V    |
20+20       0.9866      0.37  |Q        |          |          |     V    |
20+25       0.9891      0.36  |Q        |          |          |     V    |
20+30       0.9916      0.36  |Q        |          |          |     V    |
20+35       0.9940      0.36  |Q        |          |          |     V    |
20+40       0.9965      0.35  |Q        |          |          |     V    |
20+45       0.9989      0.35  |Q        |          |          |     V    |
20+50       1.0013      0.35  |Q        |          |          |      V   |
20+55       1.0036      0.34  |Q        |          |          |      V   |
21+ 0       1.0060      0.34  |Q        |          |          |      V   |
21+ 5       1.0083      0.34  |Q        |          |          |      V   |
21+10       1.0106      0.34  |Q        |          |          |      V   |
21+15       1.0129      0.33  |Q        |          |          |      V   |
21+20       1.0152      0.33  |Q        |          |          |      V   |
21+25       1.0174      0.33  |Q        |          |          |      V   |
21+30       1.0197      0.32  |Q        |          |          |      V   |
21+35       1.0219      0.32  |Q        |          |          |      V   |
21+40       1.0241      0.32  |Q        |          |          |      V   |
21+45       1.0263      0.32  |Q        |          |          |      V   |
21+50       1.0285      0.32  |Q        |          |          |       V  |
21+55       1.0306      0.31  |Q        |          |          |       V  |
22+ 0       1.0328      0.31  |Q        |          |          |       V  |
22+ 5       1.0349      0.31  |Q        |          |          |       V  |
22+10       1.0370      0.31  |Q        |          |          |       V  |
22+15       1.0391      0.30  |Q        |          |          |       V  |
22+20       1.0412      0.30  |Q        |          |          |       V  |
22+25       1.0432      0.30  |Q        |          |          |       V  |
22+30       1.0453      0.30  |Q        |          |          |       V  |
22+35       1.0473      0.30  |Q        |          |          |       V  |
22+40       1.0493      0.29  |Q        |          |          |       V  |
22+45       1.0514      0.29  |Q        |          |          |       V  |
22+50       1.0534      0.29  |Q        |          |          |       V  |
22+55       1.0553      0.29  |Q        |          |          |        V |
23+ 0       1.0573      0.29  |Q        |          |          |        V |
23+ 5       1.0593      0.29  |Q        |          |          |        V |
23+10       1.0612      0.28  |Q        |          |          |        V |
23+15       1.0632      0.28  |Q        |          |          |        V |
23+20       1.0651      0.28  |Q        |          |          |        V |
23+25       1.0670      0.28  |Q        |          |          |        V |
23+30       1.0689      0.28  |Q        |          |          |        V |
23+35       1.0708      0.28  |Q        |          |          |        V |
23+40       1.0727      0.27  |Q        |          |          |        V |
23+45       1.0746      0.27  |Q        |          |          |        V |
23+50       1.0764      0.27  |Q        |          |          |        V |
23+55       1.0783      0.27  |Q        |          |          |        V |
24+ 0       1.0801      0.27  |Q        |          |          |        V |
24+ 5       1.0815      0.20  Q         |          |          |        V |
24+10       1.0817      0.03  Q         |          |          |        V |
-------------------------------------------------------------------------
```

APPENDIX D: PRELIMINARY PIPE SIZING

APPENDIX D.1: CAPACITY CALCULATION FOR 18" PIPE

Worksheet for Circular Pipe - 75% for 18"

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.005 ft/ft
Diameter	18.0 in
Discharge	6.70 cfs

Results	
Normal Depth	13.4 in
Flow Area	1.4 ft²
Wetted Perimeter	3.1 ft
Hydraulic Radius	5.4 in
Top Width	1.31 ft
Critical Depth	12.0 in
Percent Full	74.3 %
Critical Slope	0.007 ft/ft
Velocity	4.76 ft/s
Velocity Head	0.35 ft
Specific Energy	1.47 ft
Froude Number	0.809
Maximum Discharge	7.99 cfs
Discharge Full	7.43 cfs
Slope Full	0.004 ft/ft
Flow Type	Subcritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	74.3 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	13.4 in
Critical Depth	12.0 in
Channel Slope	0.005 ft/ft
Critical Slope	0.007 ft/ft

APPENDIX D.2: CAPACITY CALCULATION FOR 24" PIPE

Worksheet for Circular Pipe - 75% for 24"

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data		
Roughness Coefficient	0.013	
Channel Slope	0.005	ft/ft
Diameter	24.0	in
Discharge	14.50	cfs

Results		
Normal Depth	17.9	in
Flow Area	2.5	ft²
Wetted Perimeter	4.2	ft
Hydraulic Radius	7.2	in
Top Width	1.74	ft
Critical Depth	16.5	in
Percent Full	74.6	%
Critical Slope	0.006	ft/ft
Velocity	5.77	ft/s
Velocity Head	0.52	ft
Specific Energy	2.01	ft
Froude Number	0.846	
Maximum Discharge	17.21	cfs
Discharge Full	16.00	cfs
Slope Full	0.004	ft/ft
Flow Type	Subcritical	

GVF Input Data		
Downstream Depth	0.0	in
Length	0.0	ft
Number Of Steps	0	

GVF Output Data		
Upstream Depth	0.0	in
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.0	%
Normal Depth Over Rise	74.6	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	17.9	in
Critical Depth	16.5	in
Channel Slope	0.005	ft/ft
Critical Slope	0.006	ft/ft

APPENDIX D.3: CAPACITY CALCULATION FOR 30" PIPE

Worksheet for Circular Pipe - 75% for 30"

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data		
Roughness Coefficient	0.013	
Channel Slope	0.005	ft/ft
Diameter	30.0	in
Discharge	26.40	cfs

Results		
Normal Depth	22.5	in
Flow Area	3.9	ft²
Wetted Perimeter	5.2	ft
Hydraulic Radius	9.0	in
Top Width	2.17	ft
Critical Depth	21.0	in
Percent Full	74.9	%
Critical Slope	0.006	ft/ft
Velocity	6.69	ft/s
Velocity Head	0.70	ft
Specific Energy	2.57	ft
Froude Number	0.875	
Maximum Discharge	31.20	cfs
Discharge Full	29.00	cfs
Slope Full	0.004	ft/ft
Flow Type	Subcritical	

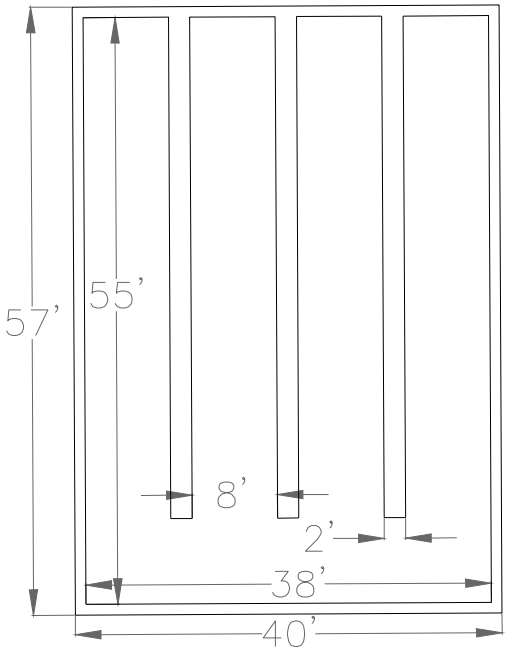
GVF Input Data		
Downstream Depth	0.0	in
Length	0.0	ft
Number Of Steps	0	

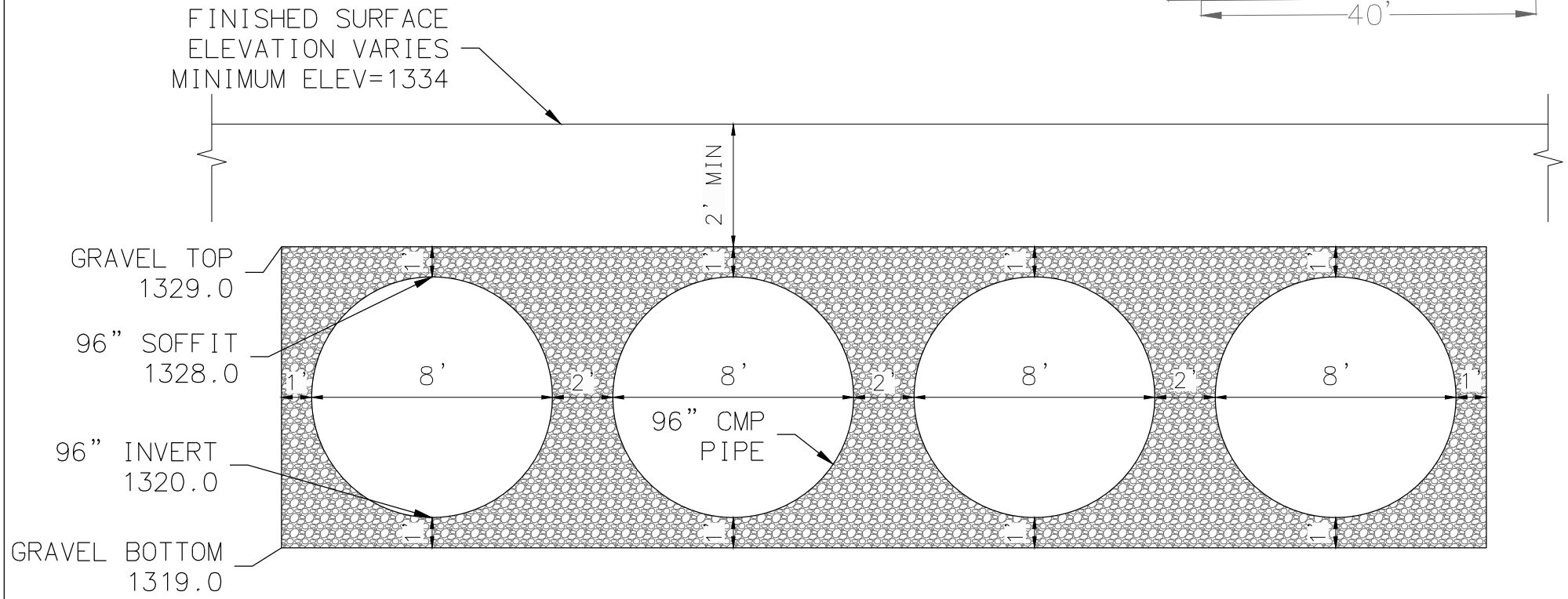
GVF Output Data		
Upstream Depth	0.0	in
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.0	%
Normal Depth Over Rise	74.9	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	22.5	in
Critical Depth	21.0	in
Channel Slope	0.005	ft/ft
Critical Slope	0.006	ft/ft

APPENDIX E: BASIN A CALCULATIONS

APPENDIX E.1: SUBSURFACE SYSTEM GRAPHIC

BASIN A
96" SUBSURFACE STORAGE CROSS SECTION
SYSTEM LENGTH=55', 4-BARREL





APPENDIX E.2: STAGE-STORAGE-OUTFLOW TABLES

320.05 - Buffalo Grove
Subsurface System A
Stage-Storage-Outflow Summary Table

Elevation	Stage (ft)	Storage (ac-ft)	Infiltration Outflow (cfs)	Orifice Outflow (cfs)	Total Outflow (cfs)	
1319	**0**	**0**	0	0	**0.00**	GRAVEL BOTTOM=1319
1319.5	**0.5**	**0.01**	0.09	0.00	**0.09**	
1320	**1**	**0.02**	0.09	0.00	**0.09**	PIPE INV=1320
1320.5	**1.5**	**0.034**	0.09	0.00	**0.09**	
1321	**2**	**0.051**	0.09	0.00	**0.09**	
1321.5	**2.5**	**0.07**	0.09	0.00	**0.09**	
1322	**3**	**0.090**	0.09	0.00	**0.09**	
1322.5	**3.5**	**0.111**	0.09	0.00	**0.09**	
1323	**4**	**0.133**	0.09	0.00	**0.09**	
1323.5	**4.5**	**0.155**	0.09	0.00	**0.09**	
1324	**5**	**0.177**	0.09	0.00	**0.09**	
1324.5	**5.5**	**0.199**	0.09	0.00	**0.09**	WQ PONDING=1324.7
1325	**6**	**0.221**	0.09	0.00	**0.09**	
1325.5	**6.5**	**0.243**	0.09	1.34	**1.43**	
1326	**7**	**0.264**	0.09	2.67	**2.76**	
1326.5	**7.5**	**0.284**	0.09	3.78	**3.87**	
1327	**8**	**0.303**	0.09	4.63	**4.72**	
1327.5	**8.5**	**0.320**	0.09	5.35	**5.44**	
1328	**9**	**0.334**	0.09	5.98	**6.07**	PIPE SOFFIT=1328
1328.5	**9.5**	**0.344**	0.09	6.55	**6.64**	
1329	**10**	**0.354**	0.09	7.07	**7.16**	GRAVEL TOP=1329

BASIN A SUBSURFACE SYSTEM

320.05 Buffalo Grove

4 Barrel 96-Inch Subsurface Infiltration Basin Volume Calculations

LENGTH OF SUBSURFACE SYSTEM (FT) = 55 **NUMBER OF CELLS 4**

Elevation	Depth	Pipe Depth	Pipe Area Each (ft^2)	Pipe Area Total (ft^2)	Pipe Total Gross Volume at Elev. (ft^3)	Gross Cross Sectional Area of System (ft^2)	Net Gravel Area (ft^2)	Gravel Volume (ft^3)	Cumulative Subsurface System Volume (ft^3)	Cumulative Subsurface System Volume (ac-ft)	Incremental Increase in Subsurface System Volume (ac-ft)	Effective Storage (ac-ft)
1319	0	0	0.00	0.00	0.00	0	0.00	0.00	0.00	0.000	-	0.000
1319.5	0.5	0	0.00	0.00	0.00	20	20.00	440.00	440.00	0.010	0.010	0.010
1320	1	0	0.00	0.00	0.00	40	40.00	880.00	880.00	0.020	0.010	0.020
1320.5	1.5	0.5	1.31	5.23	287.77	60	54.77	1204.89	1492.66	0.034	0.014	0.034
1321	2	1	3.63	14.51	797.83	80	65.49	1440.87	2238.70	0.051	0.017	0.051
1321.5	2.5	1.5	6.52	26.10	1435.37	100	73.90	1625.85	3061.22	0.070	0.019	0.070
1322	3	2	9.83	39.31	2161.93	120	80.69	1775.23	3937.16	0.090	0.020	0.090
1322.5	3.5	2.5	13.42	53.68	2952.45	140	86.32	1899.02	4851.47	0.111	0.021	0.111
1323	4	3	17.22	68.87	3787.71	160	91.13	2004.92	5792.63	0.133	0.022	0.133
1323.5	4.5	3.5	21.14	84.57	4651.50	180	95.43	2099.40	6750.90	0.155	0.022	0.155
1324	5	4	25.13	100.53	5529.20	200	99.47	2188.32	7717.52	0.177	0.022	0.177
1324.5	5.5	4.5	29.12	116.49	6406.91	220	103.51	2277.24	8684.14	0.199	0.022	0.199
1325	6	5	33.05	132.19	7270.69	240	107.81	2371.72	9642.42	0.221	0.022	0.221
1325.5	6.5	5.5	36.85	147.38	8105.95	260	112.62	2477.62	10583.57	0.243	0.022	0.243
1326	7	6	40.44	161.75	8896.48	280	118.25	2601.41	11497.89	0.264	0.021	0.264
1326.5	7.5	6.5	43.74	174.96	9623.04	300	125.04	2750.78	12373.82	0.284	0.020	0.284
1327	8	7	46.64	186.56	10260.58	320	133.44	2935.77	13196.35	0.303	0.019	0.303
1327.5	8.5	7.5	48.96	195.83	10770.64	340	144.17	3171.75	13942.38	0.320	0.017	0.320
1328	9	8	50.27	201.06	11058.41	360	158.94	3496.64	14555.04	0.334	0.014	0.334
1328.5	9.5	8	50.27	201.06	11058.41	380	178.94	3936.64	14995.04	0.344	0.010	0.344
1329	10	8	50.27	201.06	11058.41	400	198.94	4376.64	15435.04	0.354	0.010	0.354

wq volume

INPUT DATA		
SUBSURFACE SYSTEM NAME	A	-
DIAMETER OF SUBSURFACE SYSTEM	8	FT
NUMBER OF BARRELS	4	EA
LENGTH OF SUBSURFACE SYSTEM	55	FT
BOTTOM INVERT OF GRAVEL BED	1319	FT
EFFECTIVE STORAGE ELEVATION	1319	FT
PIPE SPACING	2	FT
EDGE THICKNESS	1	FT
TOP CLEARANCE, THICKNESS	1	FT
BOTTOM CLEARANCE, THICKNESS	1	FT
GRAVEL POROSITY, N	0.4	-
FT2 -> AC	43560	FT^2/AC

OPTIONAL INPUT DATA		
WATER QUALITY VOLUME TO RETAIN	9000	FT^3
	0.21	AC-FT

320.05 - Buffalo Grove
Subsurface System A
Infiltration Outflow Calculation

VALUE	*UNITS*	*DESCRIPTION*	*EQUATION*
3.48	IN/HR	MEASURED INFILTRATION RATE	[A] PER TESTING
2		SAFEY FACTOR	[B] PER WORKSHEET
1.74	IN/HR	DESIGN INFILTRATION RATE	[C] = [A] / [B]
0.145	FT/HR	DESIGN INFILTRATION RATE	[D] = [C] / 12
220	FT	INFILTRATION LENGTH	[E] PER DESIGN [55*4]
10	FT	INFILTRATION WIDTH	[F] PER DESIGN
2200	SF	INFILTRATION AREA	[G] = [E] * [F]
319	CF/HR	INFILTRATION RATE	[H] = [D] * [G]
0.09	CF/S	INFILTRATION RATE	[I] = [H] / 60 / 60

320.05 - Buffalo Grove
Subsurface System A
Orifice Outflow Calculation

DIAMETER	12	INCHES
DIAMETER	1.00	FEET
INVERT ELEV.	1325	
CENTER ELEV.	1325.50	
SOFFIT ELEV.	1326.00	
NO. OPENINGS	1	

ORIFICE EQUATION	
Q=CA√(2gh)	
Q =	FLOW RATE (FT^3/S)
C =	DISCHARGE COEFFICIENT
A =	AREA OF ORIFICE (FT^2)
g =	ACCELERATION FROM GRAVITY (
h =	HEAD ACTING ON THE CENTERLI

CALCULATIONS USING THE ORIFICE EQUATION FOR THE ORIFICE CONDITION

ORIFICE DESIGN		CONSTANTS		STAGE INFORMATION		CALCULATED
RADIUS (FT)	AREA (SF)	C	GRAVITY (FT/S2)	ELEVATION	HEIGHT (FT)	SINGLE ORIFICE FLOW RATE (CFS)
0.500	0.785	0.6	32.2	1325	N/A	0.00
0.500	0.785	0.6	32.2	1325.5	0.00	1.34
0.500	0.785	0.6	32.2	1326	0.50	2.67
0.500	0.785	0.6	32.2	1326.5	1.00	3.78
0.500	0.785	0.6	32.2	1327	1.50	4.63
0.500	0.785	0.6	32.2	1327.5	2.00	5.35
0.500	0.785	0.6	32.2	1328	2.50	5.98
0.500	0.785	0.6	32.2	1328.5	3.00	6.55
0.500	0.785	0.6	32.2	1329	3.50	7.07

**THE OUTFLOW RATE FOR ELEVATION 1325.5 IS HALF THE VALUE FOR ELEVATION 1326.0

APPENDIX E.3: 2-YEAR BASIN ROUTING CALCULATION

FLOOD HYDROGRAPH ROUTING PROGRAM
Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2014
Study date: 04/25/25

320.05 BUFFALO GROVE
BASIN ROUTING; BASIN A
2-YR, 24-HR STORM

Program License Serial Number 6279

********** HYDROGRAPH INFORMATION **********

From study/file name: UPA2.rte
**********HYDROGRAPH DATA**********
Number of intervals = 290
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 4.520 (CFS)
Total volume = 0.475 (Ac.Ft)
Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

++
Process from Point/Station 101.000 to Point/Station 102.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 290
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.500	0.010	0.090	0.010	0.010
1.000	0.020	0.090	0.020	0.020

1.500	0.034	0.090	0.034	0.034
2.000	0.051	0.090	0.051	0.051
2.500	0.070	0.090	0.070	0.070
3.000	0.090	0.090	0.090	0.090
3.500	0.111	0.090	0.111	0.111
4.000	0.133	0.090	0.133	0.133
4.500	0.155	0.090	0.155	0.155
5.000	0.177	0.090	0.177	0.177
5.500	0.199	0.090	0.199	0.199
6.000	0.221	0.090	0.221	0.221
6.500	0.243	1.430	0.238	0.248
7.000	0.264	2.760	0.254	0.274
7.500	0.284	3.870	0.271	0.297
8.000	0.303	4.720	0.287	0.319
8.500	0.320	5.440	0.301	0.339
9.000	0.334	6.070	0.313	0.355
9.500	0.344	6.640	0.321	0.367

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	1.1	2.26	3.39	4.52	Depth (Ft.)
0.083	0.03	0.00	0.000	O	|	|	|	|	0.00
0.167	0.09	0.00	0.000	O	|	|	|	|	0.02
0.250	0.11	0.01	0.001	O	|	|	|	|	0.06
0.333	0.11	0.02	0.002	O	|	|	|	|	0.09
0.417	0.11	0.02	0.002	O	|	|	|	|	0.12
0.500	0.11	0.03	0.003	O	|	|	|	|	0.15
0.583	0.11	0.03	0.004	O	|	|	|	|	0.18
0.667	0.11	0.04	0.004	O	|	|	|	|	0.20
0.750	0.11	0.04	0.005	O	|	|	|	|	0.23
0.833	0.11	0.04	0.005	O	|	|	|	|	0.25
0.917	0.11	0.05	0.005	O	|	|	|	|	0.27
1.000	0.11	0.05	0.006	O	|	|	|	|	0.29
1.083	0.11	0.06	0.006	O	|	|	|	|	0.31
1.167	0.11	0.06	0.007	O	|	|	|	|	0.33
1.250	0.11	0.06	0.007	O	|	|	|	|	0.35
1.333	0.11	0.07	0.007	O	|	|	|	|	0.36
1.417	0.11	0.07	0.008	O	|	|	|	|	0.38
1.500	0.11	0.07	0.008	O	|	|	|	|	0.39
1.583	0.11	0.07	0.008	O	|	|	|	|	0.41
1.667	0.11	0.08	0.008	O	|	|	|	|	0.42
1.750	0.11	0.08	0.009	O	|	|	|	|	0.43
1.833	0.11	0.08	0.009	O	|	|	|	|	0.45
1.917	0.11	0.08	0.009	O	|	|	|	|	0.46
2.000	0.11	0.08	0.009	O	|	|	|	|	0.47
2.083	0.12	0.09	0.010	O	|	|	|	|	0.48
2.167	0.12	0.09	0.010	O	|	|	|	|	0.49
2.250	0.12	0.09	0.010	O	|	|	|	|	0.50
2.333	0.12	0.09	0.010	O	|	|	|	|	0.51
2.417	0.12	0.09	0.010	O	|	|	|	|	0.52
2.500	0.12	0.09	0.010	O	|	|	|	|	0.52
2.583	0.12	0.09	0.011	O	|	|	|	|	0.53
2.667	0.12	0.09	0.011	O	|	|	|	|	0.54
2.750	0.12	0.09	0.011	O	|	|	|	|	0.55
2.833	0.12	0.09	0.011	O	|	|	|	|	0.56

2.917	0.12	0.09	0.011	O					0.57
3.000	0.12	0.09	0.012	O					0.58
3.083	0.12	0.09	0.012	O					0.59
3.167	0.12	0.09	0.012	O					0.60
3.250	0.12	0.09	0.012	O					0.61
3.333	0.12	0.09	0.013	O					0.63
3.417	0.12	0.09	0.013	O					0.64
3.500	0.12	0.09	0.013	O					0.65
3.583	0.12	0.09	0.013	O					0.66
3.667	0.12	0.09	0.013	O					0.67
3.750	0.12	0.09	0.014	O					0.68
3.833	0.12	0.09	0.014	O					0.69
3.917	0.12	0.09	0.014	O					0.70
4.000	0.12	0.09	0.014	O					0.72
4.083	0.13	0.09	0.015	O					0.73
4.167	0.13	0.09	0.015	O					0.74
4.250	0.13	0.09	0.015	O					0.75
4.333	0.13	0.09	0.015	O					0.76
4.417	0.13	0.09	0.016	O					0.78
4.500	0.13	0.09	0.016	O					0.79
4.583	0.13	0.09	0.016	O					0.80
4.667	0.13	0.09	0.016	O					0.82
4.750	0.13	0.09	0.017	O					0.83
4.833	0.13	0.09	0.017	O					0.84
4.917	0.13	0.09	0.017	O					0.86
5.000	0.13	0.09	0.017	O					0.87
5.083	0.13	0.09	0.018	O					0.89
5.167	0.13	0.09	0.018	O					0.90
5.250	0.13	0.09	0.018	O					0.91
5.333	0.13	0.09	0.019	O					0.93
5.417	0.13	0.09	0.019	O					0.94
5.500	0.13	0.09	0.019	O					0.96
5.583	0.13	0.09	0.019	O					0.97
5.667	0.14	0.09	0.020	O					0.99
5.750	0.14	0.09	0.020	O					1.00
5.833	0.14	0.09	0.020	O					1.01
5.917	0.14	0.09	0.021	O					1.03
6.000	0.14	0.09	0.021	O					1.04
6.083	0.14	0.09	0.021	O					1.05
6.167	0.14	0.09	0.022	O					1.06
6.250	0.14	0.09	0.022	O					1.07
6.333	0.14	0.09	0.022	O					1.09
6.417	0.14	0.09	0.023	O					1.10
6.500	0.14	0.09	0.023	OI					1.11
6.583	0.14	0.09	0.023	OI					1.12
6.667	0.14	0.09	0.024	OI					1.14
6.750	0.14	0.09	0.024	OI					1.15
6.833	0.14	0.09	0.025	OI					1.16
6.917	0.14	0.09	0.025	OI					1.18
7.000	0.15	0.09	0.025	OI					1.19
7.083	0.15	0.09	0.026	OI					1.20
7.167	0.15	0.09	0.026	OI					1.22
7.250	0.15	0.09	0.026	OI					1.23
7.333	0.15	0.09	0.027	OI					1.25
7.417	0.15	0.09	0.027	OI					1.26
7.500	0.15	0.09	0.028	OI					1.27
7.583	0.15	0.09	0.028	OI					1.29
7.667	0.15	0.09	0.029	OI					1.30
7.750	0.15	0.09	0.029	OI					1.32

7.833	0.15	0.09	0.029	OI					1.33
7.917	0.15	0.09	0.030	OI					1.35
8.000	0.15	0.09	0.030	OI					1.37
8.083	0.16	0.09	0.031	OI					1.38
8.167	0.16	0.09	0.031	OI					1.40
8.250	0.16	0.09	0.032	OI					1.41
8.333	0.16	0.09	0.032	OI					1.43
8.417	0.16	0.09	0.033	OI					1.45
8.500	0.16	0.09	0.033	OI					1.47
8.583	0.16	0.09	0.034	OI					1.48
8.667	0.16	0.09	0.034	OI					1.50
8.750	0.16	0.09	0.035	OI					1.52
8.833	0.16	0.09	0.035	OI					1.53
8.917	0.17	0.09	0.036	OI					1.55
9.000	0.17	0.09	0.036	OI					1.56
9.083	0.17	0.09	0.037	OI					1.58
9.167	0.17	0.09	0.037	OI					1.59
9.250	0.17	0.09	0.038	OI					1.61
9.333	0.17	0.09	0.038	OI					1.62
9.417	0.17	0.09	0.039	OI					1.64
9.500	0.17	0.09	0.039	OI					1.66
9.583	0.17	0.09	0.040	OI					1.67
9.667	0.18	0.09	0.041	OI					1.69
9.750	0.18	0.09	0.041	OI					1.71
9.833	0.18	0.09	0.042	OI					1.73
9.917	0.18	0.09	0.042	OI					1.74
10.000	0.18	0.09	0.043	OI					1.76
10.083	0.18	0.09	0.044	OI					1.78
10.167	0.18	0.09	0.044	OI					1.80
10.250	0.18	0.09	0.045	OI					1.82
10.333	0.19	0.09	0.045	OI					1.84
10.417	0.19	0.09	0.046	OI					1.86
10.500	0.19	0.09	0.047	OI					1.88
10.583	0.19	0.09	0.048	OI					1.90
10.667	0.19	0.09	0.048	OI					1.92
10.750	0.19	0.09	0.049	OI					1.94
10.833	0.20	0.09	0.050	OI					1.96
10.917	0.20	0.09	0.050	OI					1.98
11.000	0.20	0.09	0.051	OI					2.00
11.083	0.20	0.09	0.052	OI					2.02
11.167	0.20	0.09	0.053	OI					2.04
11.250	0.20	0.09	0.053	OI					2.06
11.333	0.21	0.09	0.054	OI					2.08
11.417	0.21	0.09	0.055	OI					2.11
11.500	0.21	0.09	0.056	OI					2.13
11.583	0.21	0.09	0.057	OI					2.15
11.667	0.21	0.09	0.057	OI					2.17
11.750	0.22	0.09	0.058	OI					2.19
11.833	0.22	0.09	0.059	OI					2.22
11.917	0.22	0.09	0.060	OI					2.24
12.000	0.22	0.09	0.061	OI					2.26
12.083	0.24	0.09	0.062	OI					2.29
12.167	0.27	0.09	0.063	OI					2.32
12.250	0.28	0.09	0.064	OI					2.35
12.333	0.28	0.09	0.066	OI					2.39
12.417	0.28	0.09	0.067	O I					2.42
12.500	0.29	0.09	0.068	O I					2.46
12.583	0.29	0.09	0.070	O I					2.49
12.667	0.29	0.09	0.071	O I					2.53

12.750	0.30	0.09	0.073	O I	|	|	|	2.56
12.833	0.30	0.09	0.074	O I	|	|	|	2.60
12.917	0.30	0.09	0.075	O I	|	|	|	2.64
13.000	0.31	0.09	0.077	O I	|	|	|	2.67
13.083	0.31	0.09	0.078	O I	|	|	|	2.71
13.167	0.32	0.09	0.080	O I	|	|	|	2.75
13.250	0.32	0.09	0.082	O I	|	|	|	2.79
13.333	0.32	0.09	0.083	O I	|	|	|	2.83
13.417	0.33	0.09	0.085	O I	|	|	|	2.87
13.500	0.33	0.09	0.086	O I	|	|	|	2.91
13.583	0.34	0.09	0.088	O I	|	|	|	2.95
13.667	0.34	0.09	0.090	O I	|	|	|	3.00
13.750	0.35	0.09	0.092	O I	|	|	|	3.04
13.833	0.35	0.09	0.093	O I	|	|	|	3.08
13.917	0.36	0.09	0.095	O I	|	|	|	3.12
14.000	0.36	0.09	0.097	O I	|	|	|	3.17
14.083	0.37	0.09	0.099	O I	|	|	|	3.21
14.167	0.38	0.09	0.101	O I	|	|	|	3.26
14.250	0.38	0.09	0.103	O I	|	|	|	3.31
14.333	0.39	0.09	0.105	O I	|	|	|	3.36
14.417	0.40	0.09	0.107	O I	|	|	|	3.41
14.500	0.41	0.09	0.109	O I	|	|	|	3.46
14.583	0.42	0.09	0.112	O I	|	|	|	3.51
14.667	0.43	0.09	0.114	O I	|	|	|	3.56
14.750	0.44	0.09	0.116	O I	|	|	|	3.62
14.833	0.45	0.09	0.119	O I	|	|	|	3.67
14.917	0.47	0.09	0.121	O I	|	|	|	3.73
15.000	0.48	0.09	0.124	O I	|	|	|	3.79
15.083	0.50	0.09	0.127	O I	|	|	|	3.85
15.167	0.52	0.09	0.129	O I	|	|	|	3.92
15.250	0.54	0.09	0.133	O I	|	|	|	3.99
15.333	0.56	0.09	0.136	O I	|	|	|	4.06
15.417	0.55	0.09	0.139	O I	|	|	|	4.13
15.500	0.47	0.09	0.142	O I	|	|	|	4.20
15.583	0.49	0.09	0.144	O I	|	|	|	4.26
15.667	0.54	0.09	0.147	O I	|	|	|	4.33
15.750	0.60	0.09	0.151	O I	|	|	|	4.40
15.833	0.71	0.09	0.155	O I	|	|	|	4.49
15.917	0.86	0.09	0.159	O I	|	|	|	4.60
16.000	1.20	0.09	0.166	O I	|	|	|	4.75
16.083	2.67	0.09	0.179	O |	|	I |	|	5.04
16.167	4.52	0.09	0.203	O |	|	|	I	5.58
16.250	1.50	0.18	0.223	|O |	I |	|	|	6.03
16.333	0.64	0.49	0.228	| OI	|	|	|	6.15
16.417	0.54	0.52	0.228	| O	|	|	|	6.16
16.500	0.58	0.54	0.228	| OI	|	|	|	6.17
16.583	0.54	0.54	0.228	| O	|	|	|	6.17
16.667	0.50	0.54	0.228	| O	|	|	|	6.17
16.750	0.47	0.52	0.228	| O	|	|	|	6.16
16.833	0.44	0.50	0.228	| O	|	|	|	6.15
16.917	0.42	0.47	0.227	| IO	|	|	|	6.14
17.000	0.40	0.45	0.227	| IO	|	|	|	6.14
17.083	0.39	0.43	0.227	| IO	|	|	|	6.13
17.167	0.37	0.41	0.226	| O	|	|	|	6.12
17.250	0.36	0.40	0.226	| O	|	|	|	6.11
17.333	0.35	0.38	0.226	| O	|	|	|	6.11
17.417	0.34	0.37	0.226	| O	|	|	|	6.10
17.500	0.33	0.36	0.225	| O	|	|	|	6.10
17.583	0.32	0.34	0.225	| O	|	|	|	6.10

17.667	0.31	0.33	0.225	| O	|	|	|	6.09
17.750	0.30	0.33	0.225	| O	|	|	|	6.09
17.833	0.30	0.32	0.225	| O	|	|	|	6.08
17.917	0.29	0.31	0.225	| O	|	|	|	6.08
18.000	0.29	0.30	0.224	| O	|	|	|	6.08
18.083	0.27	0.29	0.224	|IO	|	|	|	6.08
18.167	0.23	0.28	0.224	|O	|	|	|	6.07
18.250	0.22	0.26	0.224	|O	|	|	|	6.06
18.333	0.22	0.25	0.224	|O	|	|	|	6.06
18.417	0.21	0.24	0.223	|O	|	|	|	6.05
18.500	0.21	0.23	0.223	|O	|	|	|	6.05
18.583	0.20	0.22	0.223	|O	|	|	|	6.05
18.667	0.20	0.21	0.223	|O	|	|	|	6.05
18.750	0.20	0.21	0.223	|O	|	|	|	6.04
18.833	0.19	0.20	0.223	|O	|	|	|	6.04
18.917	0.19	0.20	0.223	|O	|	|	|	6.04
19.000	0.19	0.20	0.223	|O	|	|	|	6.04
19.083	0.18	0.19	0.223	|O	|	|	|	6.04
19.167	0.18	0.19	0.223	|O	|	|	|	6.04
19.250	0.18	0.19	0.223	|O	|	|	|	6.04
19.333	0.18	0.18	0.223	|O	|	|	|	6.03
19.417	0.17	0.18	0.222	|O	|	|	|	6.03
19.500	0.17	0.18	0.222	|O	|	|	|	6.03
19.583	0.17	0.18	0.222	|O	|	|	|	6.03
19.667	0.17	0.17	0.222	|O	|	|	|	6.03
19.750	0.17	0.17	0.222	|O	|	|	|	6.03
19.833	0.16	0.17	0.222	|O	|	|	|	6.03
19.917	0.16	0.17	0.222	|O	|	|	|	6.03
20.000	0.16	0.16	0.222	|O	|	|	|	6.03
20.083	0.16	0.16	0.222	|O	|	|	|	6.03
20.167	0.16	0.16	0.222	|O	|	|	|	6.03
20.250	0.15	0.16	0.222	|O	|	|	|	6.03
20.333	0.15	0.16	0.222	|O	|	|	|	6.02
20.417	0.15	0.15	0.222	|O	|	|	|	6.02
20.500	0.15	0.15	0.222	|O	|	|	|	6.02
20.583	0.15	0.15	0.222	|O	|	|	|	6.02
20.667	0.15	0.15	0.222	|O	|	|	|	6.02
20.750	0.14	0.15	0.222	|O	|	|	|	6.02
20.833	0.14	0.15	0.222	|O	|	|	|	6.02
20.917	0.14	0.15	0.222	|O	|	|	|	6.02
21.000	0.14	0.14	0.222	IO	|	|	|	6.02
21.083	0.14	0.14	0.222	IO	|	|	|	6.02
21.167	0.14	0.14	0.222	IO	|	|	|	6.02
21.250	0.14	0.14	0.222	O	|	|	|	6.02
21.333	0.14	0.14	0.222	O	|	|	|	6.02
21.417	0.13	0.14	0.222	O	|	|	|	6.02
21.500	0.13	0.14	0.222	O	|	|	|	6.02
21.583	0.13	0.14	0.222	O	|	|	|	6.02
21.667	0.13	0.13	0.222	O	|	|	|	6.02
21.750	0.13	0.13	0.222	O	|	|	|	6.02
21.833	0.13	0.13	0.222	O	|	|	|	6.02
21.917	0.13	0.13	0.222	O	|	|	|	6.02
22.000	0.13	0.13	0.222	O	|	|	|	6.01
22.083	0.13	0.13	0.222	O	|	|	|	6.01
22.167	0.13	0.13	0.222	O	|	|	|	6.01
22.250	0.12	0.13	0.222	O	|	|	|	6.01
22.333	0.12	0.13	0.222	O	|	|	|	6.01
22.417	0.12	0.12	0.222	O	|	|	|	6.01
22.500	0.12	0.12	0.222	O	|	|	|	6.01

22.583	0.12	0.12	0.222	O	|	|	|	|	6.01
22.667	0.12	0.12	0.222	O	|	|	|	|	6.01
22.750	0.12	0.12	0.222	O	|	|	|	|	6.01
22.833	0.12	0.12	0.221	O	|	|	|	|	6.01
22.917	0.12	0.12	0.221	O	|	|	|	|	6.01
23.000	0.12	0.12	0.221	O	|	|	|	|	6.01
23.083	0.12	0.12	0.221	O	|	|	|	|	6.01
23.167	0.12	0.12	0.221	O	|	|	|	|	6.01
23.250	0.11	0.12	0.221	O	|	|	|	|	6.01
23.333	0.11	0.12	0.221	O	|	|	|	|	6.01
23.417	0.11	0.11	0.221	O	|	|	|	|	6.01
23.500	0.11	0.11	0.221	O	|	|	|	|	6.01
23.583	0.11	0.11	0.221	O	|	|	|	|	6.01
23.667	0.11	0.11	0.221	O	|	|	|	|	6.01
23.750	0.11	0.11	0.221	O	|	|	|	|	6.01
23.833	0.11	0.11	0.221	O	|	|	|	|	6.01
23.917	0.11	0.11	0.221	O	|	|	|	|	6.01
24.000	0.11	0.11	0.221	O	|	|	|	|	6.01
24.083	0.08	0.10	0.221	O	|	|	|	|	6.01
24.167	0.01	0.09	0.221	O	|	|	|	|	6.00
24.250	0.00	0.09	0.220	O	|	|	|	|	5.98
24.333	0.00	0.09	0.220	O	|	|	|	|	5.97
24.417	0.00	0.09	0.219	O	|	|	|	|	5.96
24.500	0.00	0.09	0.218	O	|	|	|	|	5.94
24.583	0.00	0.09	0.218	O	|	|	|	|	5.93
24.667	0.00	0.09	0.217	O	|	|	|	|	5.91
24.750	0.00	0.09	0.217	O	|	|	|	|	5.90
24.833	0.00	0.09	0.216	O	|	|	|	|	5.89
24.917	0.00	0.09	0.215	O	|	|	|	|	5.87
25.000	0.00	0.09	0.215	O	|	|	|	|	5.86
25.083	0.00	0.09	0.214	O	|	|	|	|	5.84
25.167	0.00	0.09	0.214	O	|	|	|	|	5.83
25.250	0.00	0.09	0.213	O	|	|	|	|	5.82
25.333	0.00	0.09	0.212	O	|	|	|	|	5.80
25.417	0.00	0.09	0.212	O	|	|	|	|	5.79
25.500	0.00	0.09	0.211	O	|	|	|	|	5.77
25.583	0.00	0.09	0.210	O	|	|	|	|	5.76
25.667	0.00	0.09	0.210	O	|	|	|	|	5.75
25.750	0.00	0.09	0.209	O	|	|	|	|	5.73
25.833	0.00	0.09	0.209	O	|	|	|	|	5.72
25.917	0.00	0.09	0.208	O	|	|	|	|	5.70
26.000	0.00	0.09	0.207	O	|	|	|	|	5.69
26.083	0.00	0.09	0.207	O	|	|	|	|	5.67
26.167	0.00	0.09	0.206	O	|	|	|	|	5.66
26.250	0.00	0.09	0.205	O	|	|	|	|	5.65
26.333	0.00	0.09	0.205	O	|	|	|	|	5.63
26.417	0.00	0.09	0.204	O	|	|	|	|	5.62
26.500	0.00	0.09	0.204	O	|	|	|	|	5.60
26.583	0.00	0.09	0.203	O	|	|	|	|	5.59
26.667	0.00	0.09	0.202	O	|	|	|	|	5.58
26.750	0.00	0.09	0.202	O	|	|	|	|	5.56
26.833	0.00	0.09	0.201	O	|	|	|	|	5.55
26.917	0.00	0.09	0.200	O	|	|	|	|	5.53
27.000	0.00	0.09	0.200	O	|	|	|	|	5.52
27.083	0.00	0.09	0.199	O	|	|	|	|	5.51
27.167	0.00	0.09	0.199	O	|	|	|	|	5.49
27.250	0.00	0.09	0.198	O	|	|	|	|	5.48
27.333	0.00	0.09	0.197	O	|	|	|	|	5.46
27.417	0.00	0.09	0.197	O	|	|	|	|	5.45

27.500	0.00	0.09	0.196	O	|	|	|	|	5.44
27.583	0.00	0.09	0.196	O	|	|	|	|	5.42
27.667	0.00	0.09	0.195	O	|	|	|	|	5.41
27.750	0.00	0.09	0.194	O	|	|	|	|	5.39
27.833	0.00	0.09	0.194	O	|	|	|	|	5.38
27.917	0.00	0.09	0.193	O	|	|	|	|	5.36
28.000	0.00	0.09	0.192	O	|	|	|	|	5.35
28.083	0.00	0.09	0.192	O	|	|	|	|	5.34
28.167	0.00	0.09	0.191	O	|	|	|	|	5.32
28.250	0.00	0.09	0.191	O	|	|	|	|	5.31
28.333	0.00	0.09	0.190	O	|	|	|	|	5.29
28.417	0.00	0.09	0.189	O	|	|	|	|	5.28
28.500	0.00	0.09	0.189	O	|	|	|	|	5.27
28.583	0.00	0.09	0.188	O	|	|	|	|	5.25
28.667	0.00	0.09	0.187	O	|	|	|	|	5.24
28.750	0.00	0.09	0.187	O	|	|	|	|	5.22
28.833	0.00	0.09	0.186	O	|	|	|	|	5.21
28.917	0.00	0.09	0.186	O	|	|	|	|	5.20
29.000	0.00	0.09	0.185	O	|	|	|	|	5.18
29.083	0.00	0.09	0.184	O	|	|	|	|	5.17
29.167	0.00	0.09	0.184	O	|	|	|	|	5.15
29.250	0.00	0.09	0.183	O	|	|	|	|	5.14
29.333	0.00	0.09	0.183	O	|	|	|	|	5.13
29.417	0.00	0.09	0.182	O	|	|	|	|	5.11
29.500	0.00	0.09	0.181	O	|	|	|	|	5.10
29.583	0.00	0.09	0.181	O	|	|	|	|	5.08
29.667	0.00	0.09	0.180	O	|	|	|	|	5.07
29.750	0.00	0.09	0.179	O	|	|	|	|	5.05
29.833	0.00	0.09	0.179	O	|	|	|	|	5.04
29.917	0.00	0.09	0.178	O	|	|	|	|	5.03
30.000	0.00	0.09	0.178	O	|	|	|	|	5.01
30.083	0.00	0.09	0.177	O	|	|	|	|	5.00
30.167	0.00	0.09	0.176	O	|	|	|	|	4.98
30.250	0.00	0.09	0.176	O	|	|	|	|	4.97
30.333	0.00	0.09	0.175	O	|	|	|	|	4.96
30.417	0.00	0.09	0.174	O	|	|	|	|	4.94
30.500	0.00	0.09	0.174	O	|	|	|	|	4.93
30.583	0.00	0.09	0.173	O	|	|	|	|	4.91
30.667	0.00	0.09	0.173	O	|	|	|	|	4.90
30.750	0.00	0.09	0.172	O	|	|	|	|	4.89
30.833	0.00	0.09	0.171	O	|	|	|	|	4.87
30.917	0.00	0.09	0.171	O	|	|	|	|	4.86
31.000	0.00	0.09	0.170	O	|	|	|	|	4.84
31.083	0.00	0.09	0.170	O	|	|	|	|	4.83
31.167	0.00	0.09	0.169	O	|	|	|	|	4.82
31.250	0.00	0.09	0.168	O	|	|	|	|	4.80
31.333	0.00	0.09	0.168	O	|	|	|	|	4.79
31.417	0.00	0.09	0.167	O	|	|	|	|	4.77
31.500	0.00	0.09	0.166	O	|	|	|	|	4.76
31.583	0.00	0.09	0.166	O	|	|	|	|	4.75
31.667	0.00	0.09	0.165	O	|	|	|	|	4.73
31.750	0.00	0.09	0.165	O	|	|	|	|	4.72
31.833	0.00	0.09	0.164	O	|	|	|	|	4.70
31.917	0.00	0.09	0.163	O	|	|	|	|	4.69
32.000	0.00	0.09	0.163	O	|	|	|	|	4.67
32.083	0.00	0.09	0.162	O	|	|	|	|	4.66
32.167	0.00	0.09	0.161	O	|	|	|	|	4.65
32.250	0.00	0.09	0.161	O	|	|	|	|	4.63
32.333	0.00	0.09	0.160	O	|	|	|	|	4.62

32.417	0.00	0.09	0.160	O					4.60
32.500	0.00	0.09	0.159	O					4.59
32.583	0.00	0.09	0.158	O					4.58
32.667	0.00	0.09	0.158	O					4.56
32.750	0.00	0.09	0.157	O					4.55
32.833	0.00	0.09	0.156	O					4.53
32.917	0.00	0.09	0.156	O					4.52
33.000	0.00	0.09	0.155	O					4.51
33.083	0.00	0.09	0.155	O					4.49
33.167	0.00	0.09	0.154	O					4.48
33.250	0.00	0.09	0.153	O					4.46
33.333	0.00	0.09	0.153	O					4.45
33.417	0.00	0.09	0.152	O					4.44
33.500	0.00	0.09	0.152	O					4.42
33.583	0.00	0.09	0.151	O					4.41
33.667	0.00	0.09	0.150	O					4.39
33.750	0.00	0.09	0.150	O					4.38
33.833	0.00	0.09	0.149	O					4.36
33.917	0.00	0.09	0.148	O					4.35
34.000	0.00	0.09	0.148	O					4.34
34.083	0.00	0.09	0.147	O					4.32
34.167	0.00	0.09	0.147	O					4.31
34.250	0.00	0.09	0.146	O					4.29
34.333	0.00	0.09	0.145	O					4.28
34.417	0.00	0.09	0.145	O					4.27
34.500	0.00	0.09	0.144	O					4.25
34.583	0.00	0.09	0.143	O					4.24
34.667	0.00	0.09	0.143	O					4.22
34.750	0.00	0.09	0.142	O					4.21
34.833	0.00	0.09	0.142	O					4.20
34.917	0.00	0.09	0.141	O					4.18
35.000	0.00	0.09	0.140	O					4.17
35.083	0.00	0.09	0.140	O					4.15
35.167	0.00	0.09	0.139	O					4.14
35.250	0.00	0.09	0.139	O					4.13
35.333	0.00	0.09	0.138	O					4.11
35.417	0.00	0.09	0.137	O					4.10
35.500	0.00	0.09	0.137	O					4.08
35.583	0.00	0.09	0.136	O					4.07
35.667	0.00	0.09	0.135	O					4.05
35.750	0.00	0.09	0.135	O					4.04
35.833	0.00	0.09	0.134	O					4.03
35.917	0.00	0.09	0.134	O					4.01
36.000	0.00	0.09	0.133	O					4.00
36.083	0.00	0.09	0.132	O					3.98
36.167	0.00	0.09	0.132	O					3.97
36.250	0.00	0.09	0.131	O					3.96
36.333	0.00	0.09	0.130	O					3.94
36.417	0.00	0.09	0.130	O					3.93
36.500	0.00	0.09	0.129	O					3.91
36.583	0.00	0.09	0.129	O					3.90
36.667	0.00	0.09	0.128	O					3.89
36.750	0.00	0.09	0.127	O					3.87
36.833	0.00	0.09	0.127	O					3.86
36.917	0.00	0.09	0.126	O					3.84
37.000	0.00	0.09	0.125	O					3.83
37.083	0.00	0.09	0.125	O					3.82
37.167	0.00	0.09	0.124	O					3.80
37.250	0.00	0.09	0.124	O					3.79

37.333	0.00	0.09	0.123	O	|	|	|	|	3.77
37.417	0.00	0.09	0.122	O	|	|	|	|	3.76
37.500	0.00	0.09	0.122	O	|	|	|	|	3.74
37.583	0.00	0.09	0.121	O	|	|	|	|	3.73
37.667	0.00	0.09	0.121	O	|	|	|	|	3.72
37.750	0.00	0.09	0.120	O	|	|	|	|	3.70
37.833	0.00	0.09	0.119	O	|	|	|	|	3.69
37.917	0.00	0.09	0.119	O	|	|	|	|	3.67
38.000	0.00	0.09	0.118	O	|	|	|	|	3.66
38.083	0.00	0.09	0.117	O	|	|	|	|	3.65
38.167	0.00	0.09	0.117	O	|	|	|	|	3.63
38.250	0.00	0.09	0.116	O	|	|	|	|	3.62
38.333	0.00	0.09	0.116	O	|	|	|	|	3.60
38.417	0.00	0.09	0.115	O	|	|	|	|	3.59
38.500	0.00	0.09	0.114	O	|	|	|	|	3.58
38.583	0.00	0.09	0.114	O	|	|	|	|	3.56
38.667	0.00	0.09	0.113	O	|	|	|	|	3.55
38.750	0.00	0.09	0.112	O	|	|	|	|	3.53
38.833	0.00	0.09	0.112	O	|	|	|	|	3.52
38.917	0.00	0.09	0.111	O	|	|	|	|	3.51
39.000	0.00	0.09	0.111	O	|	|	|	|	3.49
39.083	0.00	0.09	0.110	O	|	|	|	|	3.48
39.167	0.00	0.09	0.109	O	|	|	|	|	3.46
39.250	0.00	0.09	0.109	O	|	|	|	|	3.45
39.333	0.00	0.09	0.108	O	|	|	|	|	3.43
39.417	0.00	0.09	0.108	O	|	|	|	|	3.42
39.500	0.00	0.09	0.107	O	|	|	|	|	3.40
39.583	0.00	0.09	0.106	O	|	|	|	|	3.39
39.667	0.00	0.09	0.106	O	|	|	|	|	3.37
39.750	0.00	0.09	0.105	O	|	|	|	|	3.36
39.833	0.00	0.09	0.104	O	|	|	|	|	3.34
39.917	0.00	0.09	0.104	O	|	|	|	|	3.33
40.000	0.00	0.09	0.103	O	|	|	|	|	3.31
40.083	0.00	0.09	0.103	O	|	|	|	|	3.30
40.167	0.00	0.09	0.102	O	|	|	|	|	3.28
40.250	0.00	0.09	0.101	O	|	|	|	|	3.27
40.333	0.00	0.09	0.101	O	|	|	|	|	3.25
40.417	0.00	0.09	0.100	O	|	|	|	|	3.24
40.500	0.00	0.09	0.099	O	|	|	|	|	3.23
40.583	0.00	0.09	0.099	O	|	|	|	|	3.21
40.667	0.00	0.09	0.098	O	|	|	|	|	3.20
40.750	0.00	0.09	0.098	O	|	|	|	|	3.18
40.833	0.00	0.09	0.097	O	|	|	|	|	3.17
40.917	0.00	0.09	0.096	O	|	|	|	|	3.15
41.000	0.00	0.09	0.096	O	|	|	|	|	3.14
41.083	0.00	0.09	0.095	O	|	|	|	|	3.12
41.167	0.00	0.09	0.095	O	|	|	|	|	3.11
41.250	0.00	0.09	0.094	O	|	|	|	|	3.09
41.333	0.00	0.09	0.093	O	|	|	|	|	3.08
41.417	0.00	0.09	0.093	O	|	|	|	|	3.06
41.500	0.00	0.09	0.092	O	|	|	|	|	3.05
41.583	0.00	0.09	0.091	O	|	|	|	|	3.03
41.667	0.00	0.09	0.091	O	|	|	|	|	3.02
41.750	0.00	0.09	0.090	O	|	|	|	|	3.00
41.833	0.00	0.09	0.090	O	|	|	|	|	2.99
41.917	0.00	0.09	0.089	O	|	|	|	|	2.97
42.000	0.00	0.09	0.088	O	|	|	|	|	2.96
42.083	0.00	0.09	0.088	O	|	|	|	|	2.94
42.167	0.00	0.09	0.087	O	|	|	|	|	2.93

42.250	0.00	0.09	0.086	O					2.91
42.333	0.00	0.09	0.086	O					2.90
42.417	0.00	0.09	0.085	O					2.88
42.500	0.00	0.09	0.085	O					2.86
42.583	0.00	0.09	0.084	O					2.85
42.667	0.00	0.09	0.083	O					2.83
42.750	0.00	0.09	0.083	O					2.82
42.833	0.00	0.09	0.082	O					2.80
42.917	0.00	0.09	0.081	O					2.79
43.000	0.00	0.09	0.081	O					2.77
43.083	0.00	0.09	0.080	O					2.76
43.167	0.00	0.09	0.080	O					2.74
43.250	0.00	0.09	0.079	O					2.73
43.333	0.00	0.09	0.078	O					2.71
43.417	0.00	0.09	0.078	O					2.69
43.500	0.00	0.09	0.077	O					2.68
43.583	0.00	0.09	0.077	O					2.66
43.667	0.00	0.09	0.076	O					2.65
43.750	0.00	0.09	0.075	O					2.63
43.833	0.00	0.09	0.075	O					2.62
43.917	0.00	0.09	0.074	O					2.60
44.000	0.00	0.09	0.073	O					2.59
44.083	0.00	0.09	0.073	O					2.57
44.167	0.00	0.09	0.072	O					2.55
44.250	0.00	0.09	0.072	O					2.54
44.333	0.00	0.09	0.071	O					2.52
44.417	0.00	0.09	0.070	O					2.51
44.500	0.00	0.09	0.070	O					2.49
44.583	0.00	0.09	0.069	O					2.48
44.667	0.00	0.09	0.068	O					2.46
44.750	0.00	0.09	0.068	O					2.44
44.833	0.00	0.09	0.067	O					2.43
44.917	0.00	0.09	0.067	O					2.41
45.000	0.00	0.09	0.066	O					2.39
45.083	0.00	0.09	0.065	O					2.38
45.167	0.00	0.09	0.065	O					2.36
45.250	0.00	0.09	0.064	O					2.35
45.333	0.00	0.09	0.064	O					2.33
45.417	0.00	0.09	0.063	O					2.31
45.500	0.00	0.09	0.062	O					2.30
45.583	0.00	0.09	0.062	O					2.28
45.667	0.00	0.09	0.061	O					2.26
45.750	0.00	0.09	0.060	O					2.25
45.833	0.00	0.09	0.060	O					2.23
45.917	0.00	0.09	0.059	O					2.22
46.000	0.00	0.09	0.059	O					2.20
46.083	0.00	0.09	0.058	O					2.18
46.167	0.00	0.09	0.057	O					2.17
46.250	0.00	0.09	0.057	O					2.15
46.333	0.00	0.09	0.056	O					2.13
46.417	0.00	0.09	0.055	O					2.12
46.500	0.00	0.09	0.055	O					2.10
46.583	0.00	0.09	0.054	O					2.08
46.667	0.00	0.09	0.054	O					2.07
46.750	0.00	0.09	0.053	O					2.05
46.833	0.00	0.09	0.052	O					2.04
46.917	0.00	0.09	0.052	O					2.02
47.000	0.00	0.09	0.051	O					2.00
47.083	0.00	0.09	0.050	O					1.99

47.167	0.00	0.09	0.050	O					1.97
47.250	0.00	0.09	0.049	O					1.95
47.333	0.00	0.09	0.049	O					1.93
47.417	0.00	0.09	0.048	O					1.91
47.500	0.00	0.09	0.047	O					1.89
47.583	0.00	0.09	0.047	O					1.88
47.667	0.00	0.09	0.046	O					1.86
47.750	0.00	0.09	0.046	O					1.84
47.833	0.00	0.09	0.045	O					1.82
47.917	0.00	0.09	0.044	O					1.80
48.000	0.00	0.09	0.044	O					1.78
48.083	0.00	0.09	0.043	O					1.77
48.167	0.00	0.09	0.042	O					1.75
48.250	0.00	0.09	0.042	O					1.73
48.333	0.00	0.09	0.041	O					1.71
48.417	0.00	0.09	0.041	O					1.69
48.500	0.00	0.09	0.040	O					1.68
48.583	0.00	0.09	0.039	O					1.66
48.667	0.00	0.09	0.039	O					1.64
48.750	0.00	0.09	0.038	O					1.62
48.833	0.00	0.09	0.037	O					1.60
48.917	0.00	0.09	0.037	O					1.58
49.000	0.00	0.09	0.036	O					1.57
49.083	0.00	0.09	0.036	O					1.55
49.167	0.00	0.09	0.035	O					1.53
49.250	0.00	0.09	0.034	O					1.51
49.333	0.00	0.09	0.034	O					1.49
49.417	0.00	0.09	0.033	O					1.47
49.500	0.00	0.09	0.033	O					1.45
49.583	0.00	0.09	0.032	O					1.42
49.667	0.00	0.09	0.031	O					1.40
49.750	0.00	0.09	0.031	O					1.38
49.833	0.00	0.09	0.030	O					1.36
49.917	0.00	0.09	0.029	O					1.34
50.000	0.00	0.09	0.029	O					1.31
50.083	0.00	0.09	0.028	O					1.29
50.167	0.00	0.09	0.028	O					1.27
50.250	0.00	0.09	0.027	O					1.25
50.333	0.00	0.09	0.026	O					1.23
50.417	0.00	0.09	0.026	O					1.20
50.500	0.00	0.09	0.025	O					1.18
50.583	0.00	0.09	0.024	O					1.16
50.667	0.00	0.09	0.024	O					1.14
50.750	0.00	0.09	0.023	O					1.12
50.833	0.00	0.09	0.023	O					1.09
50.917	0.00	0.09	0.022	O					1.07
51.000	0.00	0.09	0.021	O					1.05
51.083	0.00	0.09	0.021	O					1.03
51.167	0.00	0.09	0.020	O					1.00
51.250	0.00	0.09	0.020	O					0.98
51.333	0.00	0.09	0.019	O					0.94
51.417	0.00	0.09	0.018	O					0.91
51.500	0.00	0.09	0.018	O					0.88
51.583	0.00	0.09	0.017	O					0.85
51.667	0.00	0.09	0.016	O					0.82
51.750	0.00	0.09	0.016	O					0.79
51.833	0.00	0.09	0.015	O					0.76
51.917	0.00	0.09	0.015	O					0.73
52.000	0.00	0.09	0.014	O					0.70

52.083	0.00	0.09	0.013	O	|	|	|	0.67
52.167	0.00	0.09	0.013	O	|	|	|	0.63
52.250	0.00	0.09	0.012	O	|	|	|	0.60
52.333	0.00	0.09	0.011	O	|	|	|	0.57
52.417	0.00	0.09	0.011	O	|	|	|	0.54
52.500	0.00	0.09	0.010	O	|	|	|	0.51
52.583	0.00	0.09	0.010	O	|	|	|	0.48
52.667	0.00	0.08	0.009	O	|	|	|	0.45
52.750	0.00	0.08	0.008	O	|	|	|	0.42
52.833	0.00	0.07	0.008	O	|	|	|	0.40
52.917	0.00	0.07	0.007	O	|	|	|	0.37
53.000	0.00	0.06	0.007	O	|	|	|	0.35
53.083	0.00	0.06	0.007	O	|	|	|	0.33
53.167	0.00	0.06	0.006	O	|	|	|	0.31
53.250	0.00	0.05	0.006	O	|	|	|	0.29
53.333	0.00	0.05	0.005	O	|	|	|	0.27
53.417	0.00	0.05	0.005	O	|	|	|	0.26
53.500	0.00	0.04	0.005	O	|	|	|	0.24
53.583	0.00	0.04	0.005	O	|	|	|	0.23
53.667	0.00	0.04	0.004	O	|	|	|	0.21
53.750	0.00	0.04	0.004	O	|	|	|	0.20
53.833	0.00	0.03	0.004	O	|	|	|	0.19
53.917	0.00	0.03	0.004	O	|	|	|	0.18
54.000	0.00	0.03	0.003	O	|	|	|	0.17
54.083	0.00	0.03	0.003	O	|	|	|	0.16
54.167	0.00	0.03	0.003	O	|	|	|	0.15
54.250	0.00	0.02	0.003	O	|	|	|	0.14
54.333	0.00	0.02	0.003	O	|	|	|	0.13
54.417	0.00	0.02	0.002	O	|	|	|	0.12
54.500	0.00	0.02	0.002	O	|	|	|	0.12
54.583	0.00	0.02	0.002	O	|	|	|	0.11
54.667	0.00	0.02	0.002	O	|	|	|	0.10
54.750	0.00	0.02	0.002	O	|	|	|	0.10
54.833	0.00	0.02	0.002	O	|	|	|	0.09
54.917	0.00	0.02	0.002	O	|	|	|	0.08
55.000	0.00	0.01	0.002	O	|	|	|	0.08
55.083	0.00	0.01	0.001	O	|	|	|	0.07
55.167	0.00	0.01	0.001	O	|	|	|	0.07
55.250	0.00	0.01	0.001	O	|	|	|	0.07
55.333	0.00	0.01	0.001	O	|	|	|	0.06
55.417	0.00	0.01	0.001	O	|	|	|	0.06
55.500	0.00	0.01	0.001	O	|	|	|	0.05
55.583	0.00	0.01	0.001	O	|	|	|	0.05
55.667	0.00	0.01	0.001	O	|	|	|	0.05
55.750	0.00	0.01	0.001	O	|	|	|	0.05
55.833	0.00	0.01	0.001	O	|	|	|	0.04
55.917	0.00	0.01	0.001	O	|	|	|	0.04
56.000	0.00	0.01	0.001	O	|	|	|	0.04
56.083	0.00	0.01	0.001	O	|	|	|	0.04
56.167	0.00	0.01	0.001	O	|	|	|	0.03
56.250	0.00	0.01	0.001	O	|	|	|	0.03
56.333	0.00	0.01	0.001	O	|	|	|	0.03
56.417	0.00	0.00	0.001	O	|	|	|	0.03
56.500	0.00	0.00	0.001	O	|	|	|	0.03
56.583	0.00	0.00	0.000	O	|	|	|	0.02
56.667	0.00	0.00	0.000	O	|	|	|	0.02
56.750	0.00	0.00	0.000	O	|	|	|	0.02
56.833	0.00	0.00	0.000	O	|	|	|	0.02
56.917	0.00	0.00	0.000	O	|	|	|	0.02

57.000	0.00	0.00	0.000	O	|	|	|	0.02
57.083	0.00	0.00	0.000	O	|	|	|	0.02
57.167	0.00	0.00	0.000	O	|	|	|	0.02
57.250	0.00	0.00	0.000	O	|	|	|	0.01
57.333	0.00	0.00	0.000	O	|	|	|	0.01
57.417	0.00	0.00	0.000	O	|	|	|	0.01
57.500	0.00	0.00	0.000	O	|	|	|	0.01
57.583	0.00	0.00	0.000	O	|	|	|	0.01
57.667	0.00	0.00	0.000	O	|	|	|	0.01
57.750	0.00	0.00	0.000	O	|	|	|	0.01
57.833	0.00	0.00	0.000	O	|	|	|	0.01
57.917	0.00	0.00	0.000	O	|	|	|	0.01
58.000	0.00	0.00	0.000	O	|	|	|	0.01
58.083	0.00	0.00	0.000	O	|	|	|	0.01
58.167	0.00	0.00	0.000	O	|	|	|	0.01
58.250	0.00	0.00	0.000	O	|	|	|	0.01
58.333	0.00	0.00	0.000	O	|	|	|	0.01
58.417	0.00	0.00	0.000	O	|	|	|	0.01
58.500	0.00	0.00	0.000	O	|	|	|	0.01
58.583	0.00	0.00	0.000	O	|	|	|	0.01

**********HYDROGRAPH DATA**********

Number of intervals = 703
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 0.544 (CFS)
Total volume = 0.475 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

APPENDIX E.4: 10-YEAR BASIN ROUTING CALCULATION

FLOOD HYDROGRAPH ROUTING PROGRAM
Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2014
Study date: 04/25/25

320.05 BUFFALO GROVE
BASIN ROUTING; BASIN A
10-YR, 24-HR STORM

Program License Serial Number 6279

********** HYDROGRAPH INFORMATION **********

From study/file name: UPA10.rte
**********HYDROGRAPH DATA**********
Number of intervals = 290
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 7.484 (CFS)
Total volume = 0.783 (Ac.Ft)
Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

++
Process from Point/Station 101.000 to Point/Station 102.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 290
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.500	0.010	0.090	0.010	0.010
1.000	0.020	0.090	0.020	0.020

1.500	0.034	0.090	0.034	0.034
2.000	0.051	0.090	0.051	0.051
2.500	0.070	0.090	0.070	0.070
3.000	0.090	0.090	0.090	0.090
3.500	0.111	0.090	0.111	0.111
4.000	0.133	0.090	0.133	0.133
4.500	0.155	0.090	0.155	0.155
5.000	0.177	0.090	0.177	0.177
5.500	0.199	0.090	0.199	0.199
6.000	0.221	0.090	0.221	0.221
6.500	0.243	1.430	0.238	0.248
7.000	0.264	2.760	0.254	0.274
7.500	0.284	3.870	0.271	0.297
8.000	0.303	4.720	0.287	0.319
8.500	0.320	5.440	0.301	0.339
9.000	0.334	6.070	0.313	0.355
9.500	0.344	6.640	0.321	0.367

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	1.9	3.74	5.61	7.48	Depth (Ft.)
0.083	0.04	0.00	0.000	O	|	|	|	|	0.01
0.167	0.16	0.01	0.001	O	|	|	|	|	0.04
0.250	0.18	0.02	0.002	O	|	|	|	|	0.10
0.333	0.19	0.03	0.003	O	|	|	|	|	0.15
0.417	0.19	0.04	0.004	O	|	|	|	|	0.21
0.500	0.19	0.05	0.005	O	|	|	|	|	0.26
0.583	0.19	0.05	0.006	O	|	|	|	|	0.30
0.667	0.19	0.06	0.007	O	|	|	|	|	0.35
0.750	0.19	0.07	0.008	O	|	|	|	|	0.39
0.833	0.19	0.08	0.009	O	|	|	|	|	0.43
0.917	0.19	0.08	0.009	O	|	|	|	|	0.47
1.000	0.19	0.09	0.010	O	|	|	|	|	0.50
1.083	0.19	0.09	0.011	O	|	|	|	|	0.53
1.167	0.19	0.09	0.011	O	|	|	|	|	0.57
1.250	0.19	0.09	0.012	O	|	|	|	|	0.60
1.333	0.19	0.09	0.013	O	|	|	|	|	0.64
1.417	0.19	0.09	0.013	O	|	|	|	|	0.67
1.500	0.19	0.09	0.014	O	|	|	|	|	0.71
1.583	0.19	0.09	0.015	O	|	|	|	|	0.75
1.667	0.19	0.09	0.016	O	|	|	|	|	0.78
1.750	0.19	0.09	0.016	O	|	|	|	|	0.82
1.833	0.20	0.09	0.017	O	|	|	|	|	0.85
1.917	0.20	0.09	0.018	O	|	|	|	|	0.89
2.000	0.20	0.09	0.019	O	|	|	|	|	0.93
2.083	0.20	0.09	0.019	O	|	|	|	|	0.96
2.167	0.20	0.09	0.020	O	|	|	|	|	1.00
2.250	0.20	0.09	0.021	O	|	|	|	|	1.03
2.333	0.20	0.09	0.021	O	|	|	|	|	1.05
2.417	0.20	0.09	0.022	O	|	|	|	|	1.08
2.500	0.20	0.09	0.023	O	|	|	|	|	1.11
2.583	0.20	0.09	0.024	O	|	|	|	|	1.13
2.667	0.20	0.09	0.025	O	|	|	|	|	1.16
2.750	0.20	0.09	0.025	O	|	|	|	|	1.19
2.833	0.20	0.09	0.026	O	|	|	|	|	1.22

2.917	0.20	0.09	0.027	O					1.24
3.000	0.20	0.09	0.028	O					1.27
3.083	0.20	0.09	0.028	O					1.30
3.167	0.21	0.09	0.029	O					1.33
3.250	0.21	0.09	0.030	O					1.36
3.333	0.21	0.09	0.031	O					1.39
3.417	0.21	0.09	0.032	O					1.41
3.500	0.21	0.09	0.032	O					1.44
3.583	0.21	0.09	0.033	O					1.47
3.667	0.21	0.09	0.034	O					1.50
3.750	0.21	0.09	0.035	O					1.53
3.833	0.21	0.09	0.036	O					1.55
3.917	0.21	0.09	0.037	O					1.57
4.000	0.21	0.09	0.037	O					1.60
4.083	0.21	0.09	0.038	O					1.62
4.167	0.21	0.09	0.039	O					1.65
4.250	0.21	0.09	0.040	O					1.67
4.333	0.22	0.09	0.041	O					1.70
4.417	0.22	0.09	0.042	O					1.73
4.500	0.22	0.09	0.043	O					1.75
4.583	0.22	0.09	0.043	O					1.78
4.667	0.22	0.09	0.044	O					1.80
4.750	0.22	0.09	0.045	O					1.83
4.833	0.22	0.09	0.046	O					1.86
4.917	0.22	0.09	0.047	O					1.88
5.000	0.22	0.09	0.048	O					1.91
5.083	0.22	0.09	0.049	O					1.94
5.167	0.22	0.09	0.050	O					1.96
5.250	0.22	0.09	0.051	O					1.99
5.333	0.23	0.09	0.052	O					2.02
5.417	0.23	0.09	0.053	O					2.04
5.500	0.23	0.09	0.053	O					2.07
5.583	0.23	0.09	0.054	O					2.09
5.667	0.23	0.09	0.055	O					2.12
5.750	0.23	0.09	0.056	O					2.14
5.833	0.23	0.09	0.057	O					2.17
5.917	0.23	0.09	0.058	O					2.19
6.000	0.23	0.09	0.059	O					2.22
6.083	0.23	0.09	0.060	OI					2.24
6.167	0.24	0.09	0.061	OI					2.27
6.250	0.24	0.09	0.062	OI					2.30
6.333	0.24	0.09	0.063	OI					2.32
6.417	0.24	0.09	0.064	OI					2.35
6.500	0.24	0.09	0.065	OI					2.38
6.583	0.24	0.09	0.066	OI					2.41
6.667	0.24	0.09	0.067	OI					2.43
6.750	0.24	0.09	0.068	OI					2.46
6.833	0.24	0.09	0.070	OI					2.49
6.917	0.25	0.09	0.071	OI					2.52
7.000	0.25	0.09	0.072	OI					2.54
7.083	0.25	0.09	0.073	OI					2.57
7.167	0.25	0.09	0.074	OI					2.60
7.250	0.25	0.09	0.075	OI					2.62
7.333	0.25	0.09	0.076	OI					2.65
7.417	0.25	0.09	0.077	OI					2.68
7.500	0.25	0.09	0.078	OI					2.71
7.583	0.26	0.09	0.079	OI					2.74
7.667	0.26	0.09	0.081	OI					2.76
7.750	0.26	0.09	0.082	OI					2.79

7.833	0.26	0.09	0.083	OI					2.82
7.917	0.26	0.09	0.084	OI					2.85
8.000	0.26	0.09	0.085	OI					2.88
8.083	0.26	0.09	0.086	OI					2.91
8.167	0.26	0.09	0.088	OI					2.94
8.250	0.27	0.09	0.089	OI					2.97
8.333	0.27	0.09	0.090	OI					3.00
8.417	0.27	0.09	0.091	OI					3.03
8.500	0.27	0.09	0.093	OI					3.06
8.583	0.27	0.09	0.094	OI					3.09
8.667	0.27	0.09	0.095	OI					3.12
8.750	0.28	0.09	0.096	OI					3.15
8.833	0.28	0.09	0.098	OI					3.18
8.917	0.28	0.09	0.099	OI					3.21
9.000	0.28	0.09	0.100	OI					3.24
9.083	0.28	0.09	0.101	OI					3.27
9.167	0.28	0.09	0.103	OI					3.31
9.250	0.29	0.09	0.104	OI					3.34
9.333	0.29	0.09	0.106	OI					3.37
9.417	0.29	0.09	0.107	OI					3.40
9.500	0.29	0.09	0.108	OI					3.43
9.583	0.29	0.09	0.110	OI					3.47
9.667	0.30	0.09	0.111	OI					3.50
9.750	0.30	0.09	0.112	OI					3.53
9.833	0.30	0.09	0.114	OI					3.57
9.917	0.30	0.09	0.115	OI					3.60
10.000	0.30	0.09	0.117	OI					3.63
10.083	0.31	0.09	0.118	OI					3.67
10.167	0.31	0.09	0.120	OI					3.70
10.250	0.31	0.09	0.121	OI					3.73
10.333	0.31	0.09	0.123	OI					3.77
10.417	0.31	0.09	0.124	OI					3.80
10.500	0.32	0.09	0.126	OI					3.84
10.583	0.32	0.09	0.127	OI					3.87
10.667	0.32	0.09	0.129	OI					3.91
10.750	0.32	0.09	0.131	OI					3.95
10.833	0.33	0.09	0.132	OI					3.98
10.917	0.33	0.09	0.134	OI					4.02
11.000	0.33	0.09	0.136	OI					4.06
11.083	0.34	0.09	0.137	OI					4.10
11.167	0.34	0.09	0.139	OI					4.14
11.250	0.34	0.09	0.141	OI					4.17
11.333	0.34	0.09	0.142	OI					4.21
11.417	0.35	0.09	0.144	OI					4.25
11.500	0.35	0.09	0.146	OI					4.30
11.583	0.35	0.09	0.148	OI					4.34
11.667	0.36	0.09	0.150	OI					4.38
11.750	0.36	0.09	0.151	OI					4.42
11.833	0.36	0.09	0.153	OI					4.46
11.917	0.37	0.09	0.155	OI					4.51
12.000	0.37	0.09	0.157	OI					4.55
12.083	0.39	0.09	0.159	OI					4.60
12.167	0.42	0.09	0.161	OI					4.64
12.250	0.43	0.09	0.164	OI					4.70
12.333	0.44	0.09	0.166	OI					4.75
12.417	0.44	0.09	0.168	OI					4.81
12.500	0.45	0.09	0.171	OI					4.86
12.583	0.45	0.09	0.173	OI					4.92
12.667	0.46	0.09	0.176	OI					4.98

12.750	0.46	0.09	0.178	OI				5.03
12.833	0.47	0.09	0.181	O I				5.09
12.917	0.47	0.09	0.184	O I				5.15
13.000	0.48	0.09	0.186	O I				5.21
13.083	0.48	0.09	0.189	O I				5.27
13.167	0.49	0.09	0.192	O I				5.34
13.250	0.50	0.09	0.195	O I				5.40
13.333	0.50	0.09	0.197	O I				5.46
13.417	0.51	0.09	0.200	O I				5.53
13.500	0.52	0.09	0.203	O I				5.60
13.583	0.53	0.09	0.206	O I				5.66
13.667	0.53	0.09	0.209	O I				5.73
13.750	0.54	0.09	0.212	O I				5.80
13.833	0.55	0.09	0.215	O I				5.87
13.917	0.56	0.09	0.219	O I				5.95
14.000	0.57	0.14	0.222	O I				6.02
14.083	0.58	0.29	0.224	OI				6.07
14.167	0.59	0.39	0.226	OI				6.11
14.250	0.60	0.46	0.227	OI				6.14
14.333	0.62	0.51	0.228	O				6.16
14.417	0.63	0.55	0.229	O				6.17
14.500	0.65	0.58	0.229	O				6.18
14.583	0.66	0.61	0.229	O				6.19
14.667	0.68	0.63	0.230	O				6.20
14.750	0.69	0.65	0.230	O				6.21
14.833	0.72	0.67	0.230	OI				6.22
14.917	0.74	0.69	0.231	OI				6.22
15.000	0.76	0.71	0.231	O				6.23
15.083	0.79	0.73	0.232	O				6.24
15.167	0.82	0.76	0.232	O				6.25
15.250	0.85	0.78	0.232	O				6.26
15.333	0.89	0.82	0.233	O				6.27
15.417	0.88	0.84	0.233	O				6.28
15.500	0.77	0.83	0.233	O				6.28
15.583	0.80	0.82	0.233	O				6.27
15.667	0.89	0.83	0.233	O				6.27
15.750	0.99	0.87	0.234	OI				6.29
15.833	1.16	0.94	0.235	O				6.32
15.917	1.44	1.06	0.237	O I				6.36
16.000	2.12	1.31	0.241	O	I			6.46
16.083	4.60	2.04	0.253	O		I		6.73
16.167	7.48	3.40	0.276		O		I	7.29
16.250	2.47	3.90	0.285		I O			7.52
16.333	1.05	3.22	0.272	I	O			7.21
16.417	0.88	2.47	0.259	I	O			6.89
16.500	0.92	1.91	0.251	I	O			6.68
16.583	0.86	1.54	0.245	I O				6.54
16.667	0.79	1.29	0.241	I O				6.45
16.750	0.74	1.11	0.238	IO				6.38
16.833	0.70	0.97	0.236	I O				6.33
16.917	0.66	0.87	0.234	IO				6.29
17.000	0.63	0.80	0.233	IO				6.26
17.083	0.61	0.73	0.232	IO				6.24
17.167	0.58	0.69	0.231	O				6.22
17.250	0.56	0.65	0.230	O				6.21
17.333	0.54	0.61	0.230	O				6.20
17.417	0.53	0.59	0.229	O				6.19
17.500	0.51	0.56	0.229	O				6.18
17.583	0.50	0.54	0.228	O				6.17

17.667	0.49	0.53	0.228	| O	|	|	|	6.16
17.750	0.47	0.51	0.228	| O	|	|	|	6.16
17.833	0.46	0.50	0.228	|IO	|	|	|	6.15
17.917	0.45	0.48	0.227	|IO	|	|	|	6.15
18.000	0.44	0.47	0.227	|IO	|	|	|	6.14
18.083	0.42	0.46	0.227	|O	|	|	|	6.14
18.167	0.38	0.44	0.227	|O	|	|	|	6.13
18.250	0.37	0.42	0.226	|O	|	|	|	6.12
18.333	0.36	0.40	0.226	|O	|	|	|	6.12
18.417	0.35	0.38	0.226	|O	|	|	|	6.11
18.500	0.35	0.37	0.226	|O	|	|	|	6.11
18.583	0.34	0.36	0.225	|O	|	|	|	6.10
18.667	0.34	0.35	0.225	|O	|	|	|	6.10
18.750	0.33	0.35	0.225	|O	|	|	|	6.10
18.833	0.32	0.34	0.225	|O	|	|	|	6.09
18.917	0.32	0.33	0.225	|O	|	|	|	6.09
19.000	0.31	0.33	0.225	|O	|	|	|	6.09
19.083	0.31	0.32	0.225	|O	|	|	|	6.09
19.167	0.31	0.32	0.225	|O	|	|	|	6.08
19.250	0.30	0.31	0.225	|O	|	|	|	6.08
19.333	0.30	0.31	0.225	|O	|	|	|	6.08
19.417	0.29	0.30	0.225	|O	|	|	|	6.08
19.500	0.29	0.30	0.224	|O	|	|	|	6.08
19.583	0.29	0.30	0.224	|O	|	|	|	6.08
19.667	0.28	0.29	0.224	|O	|	|	|	6.08
19.750	0.28	0.29	0.224	|O	|	|	|	6.07
19.833	0.28	0.28	0.224	|O	|	|	|	6.07
19.917	0.27	0.28	0.224	|O	|	|	|	6.07
20.000	0.27	0.28	0.224	|O	|	|	|	6.07
20.083	0.27	0.27	0.224	|O	|	|	|	6.07
20.167	0.26	0.27	0.224	|O	|	|	|	6.07
20.250	0.26	0.27	0.224	|O	|	|	|	6.07
20.333	0.26	0.26	0.224	|O	|	|	|	6.07
20.417	0.26	0.26	0.224	|O	|	|	|	6.06
20.500	0.25	0.26	0.224	|O	|	|	|	6.06
20.583	0.25	0.26	0.224	|O	|	|	|	6.06
20.667	0.25	0.25	0.224	|O	|	|	|	6.06
20.750	0.25	0.25	0.224	|O	|	|	|	6.06
20.833	0.24	0.25	0.224	|O	|	|	|	6.06
20.917	0.24	0.25	0.224	|O	|	|	|	6.06
21.000	0.24	0.24	0.224	|O	|	|	|	6.06
21.083	0.24	0.24	0.223	|O	|	|	|	6.06
21.167	0.23	0.24	0.223	|O	|	|	|	6.06
21.250	0.23	0.24	0.223	IO	|	|	|	6.06
21.333	0.23	0.24	0.223	IO	|	|	|	6.05
21.417	0.23	0.23	0.223	O	|	|	|	6.05
21.500	0.23	0.23	0.223	O	|	|	|	6.05
21.583	0.23	0.23	0.223	O	|	|	|	6.05
21.667	0.22	0.23	0.223	O	|	|	|	6.05
21.750	0.22	0.23	0.223	O	|	|	|	6.05
21.833	0.22	0.22	0.223	O	|	|	|	6.05
21.917	0.22	0.22	0.223	O	|	|	|	6.05
22.000	0.22	0.22	0.223	O	|	|	|	6.05
22.083	0.22	0.22	0.223	O	|	|	|	6.05
22.167	0.21	0.22	0.223	O	|	|	|	6.05
22.250	0.21	0.22	0.223	O	|	|	|	6.05
22.333	0.21	0.21	0.223	O	|	|	|	6.05
22.417	0.21	0.21	0.223	O	|	|	|	6.05
22.500	0.21	0.21	0.223	O	|	|	|	6.05

22.583	0.21	0.21	0.223	O					6.04
22.667	0.20	0.21	0.223	O					6.04
22.750	0.20	0.21	0.223	O					6.04
22.833	0.20	0.21	0.223	O					6.04
22.917	0.20	0.20	0.223	O					6.04
23.000	0.20	0.20	0.223	O					6.04
23.083	0.20	0.20	0.223	O					6.04
23.167	0.20	0.20	0.223	O					6.04
23.250	0.20	0.20	0.223	O					6.04
23.333	0.19	0.20	0.223	O					6.04
23.417	0.19	0.20	0.223	O					6.04
23.500	0.19	0.20	0.223	O					6.04
23.583	0.19	0.19	0.223	O					6.04
23.667	0.19	0.19	0.223	O					6.04
23.750	0.19	0.19	0.223	O					6.04
23.833	0.19	0.19	0.223	O					6.04
23.917	0.19	0.19	0.223	O					6.04
24.000	0.19	0.19	0.223	O					6.04
24.083	0.14	0.18	0.222	O					6.03
24.167	0.02	0.15	0.222	O					6.02
24.250	0.00	0.10	0.221	O					6.00
24.333	0.00	0.09	0.220	O					5.99
24.417	0.00	0.09	0.220	O					5.97
24.500	0.00	0.09	0.219	O					5.96
24.583	0.00	0.09	0.219	O					5.95
24.667	0.00	0.09	0.218	O					5.93
24.750	0.00	0.09	0.217	O					5.92
24.833	0.00	0.09	0.217	O					5.90
24.917	0.00	0.09	0.216	O					5.89
25.000	0.00	0.09	0.216	O					5.88
25.083	0.00	0.09	0.215	O					5.86
25.167	0.00	0.09	0.214	O					5.85
25.250	0.00	0.09	0.214	O					5.83
25.333	0.00	0.09	0.213	O					5.82
25.417	0.00	0.09	0.212	O					5.81
25.500	0.00	0.09	0.212	O					5.79
25.583	0.00	0.09	0.211	O					5.78
25.667	0.00	0.09	0.211	O					5.76
25.750	0.00	0.09	0.210	O					5.75
25.833	0.00	0.09	0.209	O					5.74
25.917	0.00	0.09	0.209	O					5.72
26.000	0.00	0.09	0.208	O					5.71
26.083	0.00	0.09	0.207	O					5.69
26.167	0.00	0.09	0.207	O					5.68
26.250	0.00	0.09	0.206	O					5.66
26.333	0.00	0.09	0.206	O					5.65
26.417	0.00	0.09	0.205	O					5.64
26.500	0.00	0.09	0.204	O					5.62
26.583	0.00	0.09	0.204	O					5.61
26.667	0.00	0.09	0.203	O					5.59
26.750	0.00	0.09	0.203	O					5.58
26.833	0.00	0.09	0.202	O					5.57
26.917	0.00	0.09	0.201	O					5.55
27.000	0.00	0.09	0.201	O					5.54
27.083	0.00	0.09	0.200	O					5.52
27.167	0.00	0.09	0.199	O					5.51
27.250	0.00	0.09	0.199	O					5.50
27.333	0.00	0.09	0.198	O					5.48
27.417	0.00	0.09	0.198	O					5.47

27.500	0.00	0.09	0.197	O	|	|	|	|	5.45
27.583	0.00	0.09	0.196	O	|	|	|	|	5.44
27.667	0.00	0.09	0.196	O	|	|	|	|	5.43
27.750	0.00	0.09	0.195	O	|	|	|	|	5.41
27.833	0.00	0.09	0.194	O	|	|	|	|	5.40
27.917	0.00	0.09	0.194	O	|	|	|	|	5.38
28.000	0.00	0.09	0.193	O	|	|	|	|	5.37
28.083	0.00	0.09	0.193	O	|	|	|	|	5.35
28.167	0.00	0.09	0.192	O	|	|	|	|	5.34
28.250	0.00	0.09	0.191	O	|	|	|	|	5.33
28.333	0.00	0.09	0.191	O	|	|	|	|	5.31
28.417	0.00	0.09	0.190	O	|	|	|	|	5.30
28.500	0.00	0.09	0.190	O	|	|	|	|	5.28
28.583	0.00	0.09	0.189	O	|	|	|	|	5.27
28.667	0.00	0.09	0.188	O	|	|	|	|	5.26
28.750	0.00	0.09	0.188	O	|	|	|	|	5.24
28.833	0.00	0.09	0.187	O	|	|	|	|	5.23
28.917	0.00	0.09	0.186	O	|	|	|	|	5.21
29.000	0.00	0.09	0.186	O	|	|	|	|	5.20
29.083	0.00	0.09	0.185	O	|	|	|	|	5.19
29.167	0.00	0.09	0.185	O	|	|	|	|	5.17
29.250	0.00	0.09	0.184	O	|	|	|	|	5.16
29.333	0.00	0.09	0.183	O	|	|	|	|	5.14
29.417	0.00	0.09	0.183	O	|	|	|	|	5.13
29.500	0.00	0.09	0.182	O	|	|	|	|	5.12
29.583	0.00	0.09	0.181	O	|	|	|	|	5.10
29.667	0.00	0.09	0.181	O	|	|	|	|	5.09
29.750	0.00	0.09	0.180	O	|	|	|	|	5.07
29.833	0.00	0.09	0.180	O	|	|	|	|	5.06
29.917	0.00	0.09	0.179	O	|	|	|	|	5.04
30.000	0.00	0.09	0.178	O	|	|	|	|	5.03
30.083	0.00	0.09	0.178	O	|	|	|	|	5.02
30.167	0.00	0.09	0.177	O	|	|	|	|	5.00
30.250	0.00	0.09	0.176	O	|	|	|	|	4.99
30.333	0.00	0.09	0.176	O	|	|	|	|	4.97
30.417	0.00	0.09	0.175	O	|	|	|	|	4.96
30.500	0.00	0.09	0.175	O	|	|	|	|	4.95
30.583	0.00	0.09	0.174	O	|	|	|	|	4.93
30.667	0.00	0.09	0.173	O	|	|	|	|	4.92
30.750	0.00	0.09	0.173	O	|	|	|	|	4.90
30.833	0.00	0.09	0.172	O	|	|	|	|	4.89
30.917	0.00	0.09	0.172	O	|	|	|	|	4.88
31.000	0.00	0.09	0.171	O	|	|	|	|	4.86
31.083	0.00	0.09	0.170	O	|	|	|	|	4.85
31.167	0.00	0.09	0.170	O	|	|	|	|	4.83
31.250	0.00	0.09	0.169	O	|	|	|	|	4.82
31.333	0.00	0.09	0.168	O	|	|	|	|	4.81
31.417	0.00	0.09	0.168	O	|	|	|	|	4.79
31.500	0.00	0.09	0.167	O	|	|	|	|	4.78
31.583	0.00	0.09	0.167	O	|	|	|	|	4.76
31.667	0.00	0.09	0.166	O	|	|	|	|	4.75
31.750	0.00	0.09	0.165	O	|	|	|	|	4.73
31.833	0.00	0.09	0.165	O	|	|	|	|	4.72
31.917	0.00	0.09	0.164	O	|	|	|	|	4.71
32.000	0.00	0.09	0.163	O	|	|	|	|	4.69
32.083	0.00	0.09	0.163	O	|	|	|	|	4.68
32.167	0.00	0.09	0.162	O	|	|	|	|	4.66
32.250	0.00	0.09	0.162	O	|	|	|	|	4.65
32.333	0.00	0.09	0.161	O	|	|	|	|	4.64

32.417	0.00	0.09	0.160	O	|	|	|	|	4.62
32.500	0.00	0.09	0.160	O	|	|	|	|	4.61
32.583	0.00	0.09	0.159	O	|	|	|	|	4.59
32.667	0.00	0.09	0.159	O	|	|	|	|	4.58
32.750	0.00	0.09	0.158	O	|	|	|	|	4.57
32.833	0.00	0.09	0.157	O	|	|	|	|	4.55
32.917	0.00	0.09	0.157	O	|	|	|	|	4.54
33.000	0.00	0.09	0.156	O	|	|	|	|	4.52
33.083	0.00	0.09	0.155	O	|	|	|	|	4.51
33.167	0.00	0.09	0.155	O	|	|	|	|	4.50
33.250	0.00	0.09	0.154	O	|	|	|	|	4.48
33.333	0.00	0.09	0.154	O	|	|	|	|	4.47
33.417	0.00	0.09	0.153	O	|	|	|	|	4.45
33.500	0.00	0.09	0.152	O	|	|	|	|	4.44
33.583	0.00	0.09	0.152	O	|	|	|	|	4.42
33.667	0.00	0.09	0.151	O	|	|	|	|	4.41
33.750	0.00	0.09	0.150	O	|	|	|	|	4.40
33.833	0.00	0.09	0.150	O	|	|	|	|	4.38
33.917	0.00	0.09	0.149	O	|	|	|	|	4.37
34.000	0.00	0.09	0.149	O	|	|	|	|	4.35
34.083	0.00	0.09	0.148	O	|	|	|	|	4.34
34.167	0.00	0.09	0.147	O	|	|	|	|	4.33
34.250	0.00	0.09	0.147	O	|	|	|	|	4.31
34.333	0.00	0.09	0.146	O	|	|	|	|	4.30
34.417	0.00	0.09	0.145	O	|	|	|	|	4.28
34.500	0.00	0.09	0.145	O	|	|	|	|	4.27
34.583	0.00	0.09	0.144	O	|	|	|	|	4.26
34.667	0.00	0.09	0.144	O	|	|	|	|	4.24
34.750	0.00	0.09	0.143	O	|	|	|	|	4.23
34.833	0.00	0.09	0.142	O	|	|	|	|	4.21
34.917	0.00	0.09	0.142	O	|	|	|	|	4.20
35.000	0.00	0.09	0.141	O	|	|	|	|	4.19
35.083	0.00	0.09	0.141	O	|	|	|	|	4.17
35.167	0.00	0.09	0.140	O	|	|	|	|	4.16
35.250	0.00	0.09	0.139	O	|	|	|	|	4.14
35.333	0.00	0.09	0.139	O	|	|	|	|	4.13
35.417	0.00	0.09	0.138	O	|	|	|	|	4.12
35.500	0.00	0.09	0.137	O	|	|	|	|	4.10
35.583	0.00	0.09	0.137	O	|	|	|	|	4.09
35.667	0.00	0.09	0.136	O	|	|	|	|	4.07
35.750	0.00	0.09	0.136	O	|	|	|	|	4.06
35.833	0.00	0.09	0.135	O	|	|	|	|	4.04
35.917	0.00	0.09	0.134	O	|	|	|	|	4.03
36.000	0.00	0.09	0.134	O	|	|	|	|	4.02
36.083	0.00	0.09	0.133	O	|	|	|	|	4.00
36.167	0.00	0.09	0.132	O	|	|	|	|	3.99
36.250	0.00	0.09	0.132	O	|	|	|	|	3.97
36.333	0.00	0.09	0.131	O	|	|	|	|	3.96
36.417	0.00	0.09	0.131	O	|	|	|	|	3.95
36.500	0.00	0.09	0.130	O	|	|	|	|	3.93
36.583	0.00	0.09	0.129	O	|	|	|	|	3.92
36.667	0.00	0.09	0.129	O	|	|	|	|	3.90
36.750	0.00	0.09	0.128	O	|	|	|	|	3.89
36.833	0.00	0.09	0.128	O	|	|	|	|	3.88
36.917	0.00	0.09	0.127	O	|	|	|	|	3.86
37.000	0.00	0.09	0.126	O	|	|	|	|	3.85
37.083	0.00	0.09	0.126	O	|	|	|	|	3.83
37.167	0.00	0.09	0.125	O	|	|	|	|	3.82
37.250	0.00	0.09	0.124	O	|	|	|	|	3.81

37.333	0.00	0.09	0.124	O	|	|	|	|	3.79
37.417	0.00	0.09	0.123	O	|	|	|	|	3.78
37.500	0.00	0.09	0.123	O	|	|	|	|	3.76
37.583	0.00	0.09	0.122	O	|	|	|	|	3.75
37.667	0.00	0.09	0.121	O	|	|	|	|	3.73
37.750	0.00	0.09	0.121	O	|	|	|	|	3.72
37.833	0.00	0.09	0.120	O	|	|	|	|	3.71
37.917	0.00	0.09	0.119	O	|	|	|	|	3.69
38.000	0.00	0.09	0.119	O	|	|	|	|	3.68
38.083	0.00	0.09	0.118	O	|	|	|	|	3.66
38.167	0.00	0.09	0.118	O	|	|	|	|	3.65
38.250	0.00	0.09	0.117	O	|	|	|	|	3.64
38.333	0.00	0.09	0.116	O	|	|	|	|	3.62
38.417	0.00	0.09	0.116	O	|	|	|	|	3.61
38.500	0.00	0.09	0.115	O	|	|	|	|	3.59
38.583	0.00	0.09	0.115	O	|	|	|	|	3.58
38.667	0.00	0.09	0.114	O	|	|	|	|	3.57
38.750	0.00	0.09	0.113	O	|	|	|	|	3.55
38.833	0.00	0.09	0.113	O	|	|	|	|	3.54
38.917	0.00	0.09	0.112	O	|	|	|	|	3.52
39.000	0.00	0.09	0.111	O	|	|	|	|	3.51
39.083	0.00	0.09	0.111	O	|	|	|	|	3.49
39.167	0.00	0.09	0.110	O	|	|	|	|	3.48
39.250	0.00	0.09	0.110	O	|	|	|	|	3.47
39.333	0.00	0.09	0.109	O	|	|	|	|	3.45
39.417	0.00	0.09	0.108	O	|	|	|	|	3.44
39.500	0.00	0.09	0.108	O	|	|	|	|	3.42
39.583	0.00	0.09	0.107	O	|	|	|	|	3.41
39.667	0.00	0.09	0.106	O	|	|	|	|	3.39
39.750	0.00	0.09	0.106	O	|	|	|	|	3.38
39.833	0.00	0.09	0.105	O	|	|	|	|	3.36
39.917	0.00	0.09	0.105	O	|	|	|	|	3.35
40.000	0.00	0.09	0.104	O	|	|	|	|	3.33
40.083	0.00	0.09	0.103	O	|	|	|	|	3.32
40.167	0.00	0.09	0.103	O	|	|	|	|	3.30
40.250	0.00	0.09	0.102	O	|	|	|	|	3.29
40.333	0.00	0.09	0.101	O	|	|	|	|	3.27
40.417	0.00	0.09	0.101	O	|	|	|	|	3.26
40.500	0.00	0.09	0.100	O	|	|	|	|	3.24
40.583	0.00	0.09	0.100	O	|	|	|	|	3.23
40.667	0.00	0.09	0.099	O	|	|	|	|	3.21
40.750	0.00	0.09	0.098	O	|	|	|	|	3.20
40.833	0.00	0.09	0.098	O	|	|	|	|	3.19
40.917	0.00	0.09	0.097	O	|	|	|	|	3.17
41.000	0.00	0.09	0.097	O	|	|	|	|	3.16
41.083	0.00	0.09	0.096	O	|	|	|	|	3.14
41.167	0.00	0.09	0.095	O	|	|	|	|	3.13
41.250	0.00	0.09	0.095	O	|	|	|	|	3.11
41.333	0.00	0.09	0.094	O	|	|	|	|	3.10
41.417	0.00	0.09	0.093	O	|	|	|	|	3.08
41.500	0.00	0.09	0.093	O	|	|	|	|	3.07
41.583	0.00	0.09	0.092	O	|	|	|	|	3.05
41.667	0.00	0.09	0.092	O	|	|	|	|	3.04
41.750	0.00	0.09	0.091	O	|	|	|	|	3.02
41.833	0.00	0.09	0.090	O	|	|	|	|	3.01
41.917	0.00	0.09	0.090	O	|	|	|	|	2.99
42.000	0.00	0.09	0.089	O	|	|	|	|	2.98
42.083	0.00	0.09	0.088	O	|	|	|	|	2.96
42.167	0.00	0.09	0.088	O	|	|	|	|	2.95

42.250	0.00	0.09	0.087	O	|	|	|	|	2.93
42.333	0.00	0.09	0.087	O	|	|	|	|	2.92
42.417	0.00	0.09	0.086	O	|	|	|	|	2.90
42.500	0.00	0.09	0.085	O	|	|	|	|	2.88
42.583	0.00	0.09	0.085	O	|	|	|	|	2.87
42.667	0.00	0.09	0.084	O	|	|	|	|	2.85
42.750	0.00	0.09	0.084	O	|	|	|	|	2.84
42.833	0.00	0.09	0.083	O	|	|	|	|	2.82
42.917	0.00	0.09	0.082	O	|	|	|	|	2.81
43.000	0.00	0.09	0.082	O	|	|	|	|	2.79
43.083	0.00	0.09	0.081	O	|	|	|	|	2.78
43.167	0.00	0.09	0.080	O	|	|	|	|	2.76
43.250	0.00	0.09	0.080	O	|	|	|	|	2.74
43.333	0.00	0.09	0.079	O	|	|	|	|	2.73
43.417	0.00	0.09	0.079	O	|	|	|	|	2.71
43.500	0.00	0.09	0.078	O	|	|	|	|	2.70
43.583	0.00	0.09	0.077	O	|	|	|	|	2.68
43.667	0.00	0.09	0.077	O	|	|	|	|	2.67
43.750	0.00	0.09	0.076	O	|	|	|	|	2.65
43.833	0.00	0.09	0.075	O	|	|	|	|	2.64
43.917	0.00	0.09	0.075	O	|	|	|	|	2.62
44.000	0.00	0.09	0.074	O	|	|	|	|	2.61
44.083	0.00	0.09	0.074	O	|	|	|	|	2.59
44.167	0.00	0.09	0.073	O	|	|	|	|	2.57
44.250	0.00	0.09	0.072	O	|	|	|	|	2.56
44.333	0.00	0.09	0.072	O	|	|	|	|	2.54
44.417	0.00	0.09	0.071	O	|	|	|	|	2.53
44.500	0.00	0.09	0.070	O	|	|	|	|	2.51
44.583	0.00	0.09	0.070	O	|	|	|	|	2.50
44.667	0.00	0.09	0.069	O	|	|	|	|	2.48
44.750	0.00	0.09	0.069	O	|	|	|	|	2.46
44.833	0.00	0.09	0.068	O	|	|	|	|	2.45
44.917	0.00	0.09	0.067	O	|	|	|	|	2.43
45.000	0.00	0.09	0.067	O	|	|	|	|	2.42
45.083	0.00	0.09	0.066	O	|	|	|	|	2.40
45.167	0.00	0.09	0.066	O	|	|	|	|	2.38
45.250	0.00	0.09	0.065	O	|	|	|	|	2.37
45.333	0.00	0.09	0.064	O	|	|	|	|	2.35
45.417	0.00	0.09	0.064	O	|	|	|	|	2.33
45.500	0.00	0.09	0.063	O	|	|	|	|	2.32
45.583	0.00	0.09	0.062	O	|	|	|	|	2.30
45.667	0.00	0.09	0.062	O	|	|	|	|	2.28
45.750	0.00	0.09	0.061	O	|	|	|	|	2.27
45.833	0.00	0.09	0.061	O	|	|	|	|	2.25
45.917	0.00	0.09	0.060	O	|	|	|	|	2.24
46.000	0.00	0.09	0.059	O	|	|	|	|	2.22
46.083	0.00	0.09	0.059	O	|	|	|	|	2.20
46.167	0.00	0.09	0.058	O	|	|	|	|	2.19
46.250	0.00	0.09	0.057	O	|	|	|	|	2.17
46.333	0.00	0.09	0.057	O	|	|	|	|	2.15
46.417	0.00	0.09	0.056	O	|	|	|	|	2.14
46.500	0.00	0.09	0.056	O	|	|	|	|	2.12
46.583	0.00	0.09	0.055	O	|	|	|	|	2.11
46.667	0.00	0.09	0.054	O	|	|	|	|	2.09
46.750	0.00	0.09	0.054	O	|	|	|	|	2.07
46.833	0.00	0.09	0.053	O	|	|	|	|	2.06
46.917	0.00	0.09	0.053	O	|	|	|	|	2.04
47.000	0.00	0.09	0.052	O	|	|	|	|	2.02
47.083	0.00	0.09	0.051	O	|	|	|	|	2.01

47.167	0.00	0.09	0.051	O	|	|	|	|	1.99
47.250	0.00	0.09	0.050	O	|	|	|	|	1.97
47.333	0.00	0.09	0.049	O	|	|	|	|	1.95
47.417	0.00	0.09	0.049	O	|	|	|	|	1.94
47.500	0.00	0.09	0.048	O	|	|	|	|	1.92
47.583	0.00	0.09	0.048	O	|	|	|	|	1.90
47.667	0.00	0.09	0.047	O	|	|	|	|	1.88
47.750	0.00	0.09	0.046	O	|	|	|	|	1.86
47.833	0.00	0.09	0.046	O	|	|	|	|	1.84
47.917	0.00	0.09	0.045	O	|	|	|	|	1.83
48.000	0.00	0.09	0.044	O	|	|	|	|	1.81
48.083	0.00	0.09	0.044	O	|	|	|	|	1.79
48.167	0.00	0.09	0.043	O	|	|	|	|	1.77
48.250	0.00	0.09	0.043	O	|	|	|	|	1.75
48.333	0.00	0.09	0.042	O	|	|	|	|	1.73
48.417	0.00	0.09	0.041	O	|	|	|	|	1.72
48.500	0.00	0.09	0.041	O	|	|	|	|	1.70
48.583	0.00	0.09	0.040	O	|	|	|	|	1.68
48.667	0.00	0.09	0.040	O	|	|	|	|	1.66
48.750	0.00	0.09	0.039	O	|	|	|	|	1.64
48.833	0.00	0.09	0.038	O	|	|	|	|	1.63
48.917	0.00	0.09	0.038	O	|	|	|	|	1.61
49.000	0.00	0.09	0.037	O	|	|	|	|	1.59
49.083	0.00	0.09	0.036	O	|	|	|	|	1.57
49.167	0.00	0.09	0.036	O	|	|	|	|	1.55
49.250	0.00	0.09	0.035	O	|	|	|	|	1.53
49.333	0.00	0.09	0.035	O	|	|	|	|	1.52
49.417	0.00	0.09	0.034	O	|	|	|	|	1.50
49.500	0.00	0.09	0.033	O	|	|	|	|	1.48
49.583	0.00	0.09	0.033	O	|	|	|	|	1.45
49.667	0.00	0.09	0.032	O	|	|	|	|	1.43
49.750	0.00	0.09	0.031	O	|	|	|	|	1.41
49.833	0.00	0.09	0.031	O	|	|	|	|	1.39
49.917	0.00	0.09	0.030	O	|	|	|	|	1.36
50.000	0.00	0.09	0.030	O	|	|	|	|	1.34
50.083	0.00	0.09	0.029	O	|	|	|	|	1.32
50.167	0.00	0.09	0.028	O	|	|	|	|	1.30
50.250	0.00	0.09	0.028	O	|	|	|	|	1.28
50.333	0.00	0.09	0.027	O	|	|	|	|	1.25
50.417	0.00	0.09	0.026	O	|	|	|	|	1.23
50.500	0.00	0.09	0.026	O	|	|	|	|	1.21
50.583	0.00	0.09	0.025	O	|	|	|	|	1.19
50.667	0.00	0.09	0.025	O	|	|	|	|	1.17
50.750	0.00	0.09	0.024	O	|	|	|	|	1.14
50.833	0.00	0.09	0.023	O	|	|	|	|	1.12
50.917	0.00	0.09	0.023	O	|	|	|	|	1.10
51.000	0.00	0.09	0.022	O	|	|	|	|	1.08
51.083	0.00	0.09	0.022	O	|	|	|	|	1.05
51.167	0.00	0.09	0.021	O	|	|	|	|	1.03
51.250	0.00	0.09	0.020	O	|	|	|	|	1.01
51.333	0.00	0.09	0.020	O	|	|	|	|	0.98
51.417	0.00	0.09	0.019	O	|	|	|	|	0.95
51.500	0.00	0.09	0.018	O	|	|	|	|	0.92
51.583	0.00	0.09	0.018	O	|	|	|	|	0.89
51.667	0.00	0.09	0.017	O	|	|	|	|	0.86
51.750	0.00	0.09	0.017	O	|	|	|	|	0.83
51.833	0.00	0.09	0.016	O	|	|	|	|	0.80
51.917	0.00	0.09	0.015	O	|	|	|	|	0.77
52.000	0.00	0.09	0.015	O	|	|	|	|	0.74

52.083	0.00	0.09	0.014	O	|	|	|	|	0.70
52.167	0.00	0.09	0.013	O	|	|	|	|	0.67
52.250	0.00	0.09	0.013	O	|	|	|	|	0.64
52.333	0.00	0.09	0.012	O	|	|	|	|	0.61
52.417	0.00	0.09	0.012	O	|	|	|	|	0.58
52.500	0.00	0.09	0.011	O	|	|	|	|	0.55
52.583	0.00	0.09	0.010	O	|	|	|	|	0.52
52.667	0.00	0.09	0.010	O	|	|	|	|	0.49
52.750	0.00	0.08	0.009	O	|	|	|	|	0.46
52.833	0.00	0.08	0.009	O	|	|	|	|	0.43
52.917	0.00	0.07	0.008	O	|	|	|	|	0.41
53.000	0.00	0.07	0.008	O	|	|	|	|	0.38
53.083	0.00	0.06	0.007	O	|	|	|	|	0.36
53.167	0.00	0.06	0.007	O	|	|	|	|	0.34
53.250	0.00	0.06	0.006	O	|	|	|	|	0.32
53.333	0.00	0.05	0.006	O	|	|	|	|	0.30
53.417	0.00	0.05	0.006	O	|	|	|	|	0.28
53.500	0.00	0.05	0.005	O	|	|	|	|	0.26
53.583	0.00	0.04	0.005	O	|	|	|	|	0.25
53.667	0.00	0.04	0.005	O	|	|	|	|	0.23
53.750	0.00	0.04	0.004	O	|	|	|	|	0.22
53.833	0.00	0.04	0.004	O	|	|	|	|	0.20
53.917	0.00	0.03	0.004	O	|	|	|	|	0.19
54.000	0.00	0.03	0.004	O	|	|	|	|	0.18
54.083	0.00	0.03	0.003	O	|	|	|	|	0.17
54.167	0.00	0.03	0.003	O	|	|	|	|	0.16
54.250	0.00	0.03	0.003	O	|	|	|	|	0.15
54.333	0.00	0.03	0.003	O	|	|	|	|	0.14
54.417	0.00	0.02	0.003	O	|	|	|	|	0.13
54.500	0.00	0.02	0.002	O	|	|	|	|	0.12
54.583	0.00	0.02	0.002	O	|	|	|	|	0.12
54.667	0.00	0.02	0.002	O	|	|	|	|	0.11
54.750	0.00	0.02	0.002	O	|	|	|	|	0.10
54.833	0.00	0.02	0.002	O	|	|	|	|	0.10
54.917	0.00	0.02	0.002	O	|	|	|	|	0.09
55.000	0.00	0.02	0.002	O	|	|	|	|	0.09
55.083	0.00	0.01	0.002	O	|	|	|	|	0.08
55.167	0.00	0.01	0.002	O	|	|	|	|	0.08
55.250	0.00	0.01	0.001	O	|	|	|	|	0.07
55.333	0.00	0.01	0.001	O	|	|	|	|	0.07
55.417	0.00	0.01	0.001	O	|	|	|	|	0.06
55.500	0.00	0.01	0.001	O	|	|	|	|	0.06
55.583	0.00	0.01	0.001	O	|	|	|	|	0.06
55.667	0.00	0.01	0.001	O	|	|	|	|	0.05
55.750	0.00	0.01	0.001	O	|	|	|	|	0.05
55.833	0.00	0.01	0.001	O	|	|	|	|	0.05
55.917	0.00	0.01	0.001	O	|	|	|	|	0.04
56.000	0.00	0.01	0.001	O	|	|	|	|	0.04
56.083	0.00	0.01	0.001	O	|	|	|	|	0.04
56.167	0.00	0.01	0.001	O	|	|	|	|	0.04
56.250	0.00	0.01	0.001	O	|	|	|	|	0.03
56.333	0.00	0.01	0.001	O	|	|	|	|	0.03
56.417	0.00	0.01	0.001	O	|	|	|	|	0.03
56.500	0.00	0.01	0.001	O	|	|	|	|	0.03
56.583	0.00	0.00	0.001	O	|	|	|	|	0.03
56.667	0.00	0.00	0.000	O	|	|	|	|	0.02
56.750	0.00	0.00	0.000	O	|	|	|	|	0.02
56.833	0.00	0.00	0.000	O	|	|	|	|	0.02
56.917	0.00	0.00	0.000	O	|	|	|	|	0.02

57.000	0.00	0.00	0.000	O	|	|	|	|	0.02
57.083	0.00	0.00	0.000	O	|	|	|	|	0.02
57.167	0.00	0.00	0.000	O	|	|	|	|	0.02
57.250	0.00	0.00	0.000	O	|	|	|	|	0.02
57.333	0.00	0.00	0.000	O	|	|	|	|	0.02
57.417	0.00	0.00	0.000	O	|	|	|	|	0.01
57.500	0.00	0.00	0.000	O	|	|	|	|	0.01
57.583	0.00	0.00	0.000	O	|	|	|	|	0.01
57.667	0.00	0.00	0.000	O	|	|	|	|	0.01
57.750	0.00	0.00	0.000	O	|	|	|	|	0.01
57.833	0.00	0.00	0.000	O	|	|	|	|	0.01
57.917	0.00	0.00	0.000	O	|	|	|	|	0.01
58.000	0.00	0.00	0.000	O	|	|	|	|	0.01
58.083	0.00	0.00	0.000	O	|	|	|	|	0.01
58.167	0.00	0.00	0.000	O	|	|	|	|	0.01
58.250	0.00	0.00	0.000	O	|	|	|	|	0.01
58.333	0.00	0.00	0.000	O	|	|	|	|	0.01
58.417	0.00	0.00	0.000	O	|	|	|	|	0.01
58.500	0.00	0.00	0.000	O	|	|	|	|	0.01
58.583	0.00	0.00	0.000	O	|	|	|	|	0.01
58.667	0.00	0.00	0.000	O	|	|	|	|	0.01
58.750	0.00	0.00	0.000	O	|	|	|	|	0.01

**********HYDROGRAPH DATA**********

Number of intervals = 705
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 3.901 (CFS)
Total volume = 0.783 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

APPENDIX E.5: 25-YEAR BASIN ROUTING CALCULATION

FLOOD HYDROGRAPH ROUTING PROGRAM
Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2014
Study date: 04/25/25

320.05 BUFFALO GROVE
BASIN ROUTING; BASIN A
25-YR, 24-HR STORM

Program License Serial Number 6279

********** HYDROGRAPH INFORMATION **********

From study/file name: UPA25.rte
**********HYDROGRAPH DATA**********
Number of intervals = 290
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 9.341 (CFS)
Total volume = 0.986 (Ac.Ft)
Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

++
Process from Point/Station 101.000 to Point/Station 102.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 290
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.500	0.010	0.090	0.010	0.010
1.000	0.020	0.090	0.020	0.020

1.500	0.034	0.090	0.034	0.034
2.000	0.051	0.090	0.051	0.051
2.500	0.070	0.090	0.070	0.070
3.000	0.090	0.090	0.090	0.090
3.500	0.111	0.090	0.111	0.111
4.000	0.133	0.090	0.133	0.133
4.500	0.155	0.090	0.155	0.155
5.000	0.177	0.090	0.177	0.177
5.500	0.199	0.090	0.199	0.199
6.000	0.221	0.090	0.221	0.221
6.500	0.243	1.430	0.238	0.248
7.000	0.264	2.760	0.254	0.274
7.500	0.284	3.870	0.271	0.297
8.000	0.303	4.720	0.287	0.319
8.500	0.320	5.440	0.301	0.339
9.000	0.334	6.070	0.313	0.355
9.500	0.344	6.640	0.321	0.367

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	2.3	4.67	7.01	9.34	Depth (Ft.)
0.083	0.06	0.00	0.000	O	|	|	|	|	0.01
0.167	0.21	0.01	0.001	O	|	|	|	|	0.05
0.250	0.24	0.02	0.002	O	|	|	|	|	0.12
0.333	0.24	0.04	0.004	O	|	|	|	|	0.20
0.417	0.24	0.05	0.005	O	|	|	|	|	0.26
0.500	0.24	0.06	0.007	O	|	|	|	|	0.33
0.583	0.24	0.07	0.008	O	|	|	|	|	0.39
0.667	0.24	0.08	0.009	O	|	|	|	|	0.44
0.750	0.24	0.09	0.010	O	|	|	|	|	0.50
0.833	0.24	0.09	0.011	O	|	|	|	|	0.55
0.917	0.24	0.09	0.012	O	|	|	|	|	0.60
1.000	0.24	0.09	0.013	O	|	|	|	|	0.65
1.083	0.24	0.09	0.014	O	|	|	|	|	0.71
1.167	0.24	0.09	0.015	O	|	|	|	|	0.76
1.250	0.24	0.09	0.016	O	|	|	|	|	0.81
1.333	0.25	0.09	0.017	O	|	|	|	|	0.87
1.417	0.25	0.09	0.018	O	|	|	|	|	0.92
1.500	0.25	0.09	0.019	O	|	|	|	|	0.97
1.583	0.25	0.09	0.021	O	|	|	|	|	1.02
1.667	0.25	0.09	0.022	O	|	|	|	|	1.06
1.750	0.25	0.09	0.023	O	|	|	|	|	1.10
1.833	0.25	0.09	0.024	O	|	|	|	|	1.14
1.917	0.25	0.09	0.025	O	|	|	|	|	1.18
2.000	0.25	0.09	0.026	O	|	|	|	|	1.21
2.083	0.25	0.09	0.027	O	|	|	|	|	1.25
2.167	0.25	0.09	0.028	O	|	|	|	|	1.29
2.250	0.25	0.09	0.029	O	|	|	|	|	1.33
2.333	0.25	0.09	0.030	O	|	|	|	|	1.37
2.417	0.25	0.09	0.032	O	|	|	|	|	1.42
2.500	0.26	0.09	0.033	O	|	|	|	|	1.46
2.583	0.26	0.09	0.034	O	|	|	|	|	1.50
2.667	0.26	0.09	0.035	O	|	|	|	|	1.53
2.750	0.26	0.09	0.036	O	|	|	|	|	1.56
2.833	0.26	0.09	0.037	O	|	|	|	|	1.60

2.917	0.26	0.09	0.039	O	|	|	|	|	1.63
3.000	0.26	0.09	0.040	O	|	|	|	|	1.67
3.083	0.26	0.09	0.041	O	|	|	|	|	1.70
3.167	0.26	0.09	0.042	O	|	|	|	|	1.74
3.250	0.26	0.09	0.043	O	|	|	|	|	1.77
3.333	0.26	0.09	0.044	O	|	|	|	|	1.81
3.417	0.26	0.09	0.046	O	|	|	|	|	1.84
3.500	0.27	0.09	0.047	O	|	|	|	|	1.88
3.583	0.27	0.09	0.048	O	|	|	|	|	1.91
3.667	0.27	0.09	0.049	O	|	|	|	|	1.95
3.750	0.27	0.09	0.051	O	|	|	|	|	1.99
3.833	0.27	0.09	0.052	O	|	|	|	|	2.02
3.917	0.27	0.09	0.053	O	|	|	|	|	2.05
4.000	0.27	0.09	0.054	O	|	|	|	|	2.09
4.083	0.27	0.09	0.055	O	|	|	|	|	2.12
4.167	0.27	0.09	0.057	O	|	|	|	|	2.15
4.250	0.27	0.09	0.058	O	|	|	|	|	2.18
4.333	0.28	0.09	0.059	O	|	|	|	|	2.22
4.417	0.28	0.09	0.061	O	|	|	|	|	2.25
4.500	0.28	0.09	0.062	O	|	|	|	|	2.29
4.583	0.28	0.09	0.063	O	|	|	|	|	2.32
4.667	0.28	0.09	0.064	O	|	|	|	|	2.35
4.750	0.28	0.09	0.066	O	|	|	|	|	2.39
4.833	0.28	0.09	0.067	O	|	|	|	|	2.42
4.917	0.28	0.09	0.068	O	|	|	|	|	2.46
5.000	0.28	0.09	0.070	O	|	|	|	|	2.49
5.083	0.28	0.09	0.071	O	|	|	|	|	2.53
5.167	0.29	0.09	0.072	O	|	|	|	|	2.56
5.250	0.29	0.09	0.074	O	|	|	|	|	2.59
5.333	0.29	0.09	0.075	O	|	|	|	|	2.63
5.417	0.29	0.09	0.076	O	|	|	|	|	2.66
5.500	0.29	0.09	0.078	O	|	|	|	|	2.70
5.583	0.29	0.09	0.079	O	|	|	|	|	2.73
5.667	0.29	0.09	0.081	OI	|	|	|	|	2.77
5.750	0.29	0.09	0.082	OI	|	|	|	|	2.80
5.833	0.30	0.09	0.083	OI	|	|	|	|	2.84
5.917	0.30	0.09	0.085	OI	|	|	|	|	2.87
6.000	0.30	0.09	0.086	OI	|	|	|	|	2.91
6.083	0.30	0.09	0.088	OI	|	|	|	|	2.94
6.167	0.30	0.09	0.089	OI	|	|	|	|	2.98
6.250	0.30	0.09	0.091	OI	|	|	|	|	3.02
6.333	0.30	0.09	0.092	OI	|	|	|	|	3.05
6.417	0.30	0.09	0.094	OI	|	|	|	|	3.08
6.500	0.31	0.09	0.095	OI	|	|	|	|	3.12
6.583	0.31	0.09	0.097	OI	|	|	|	|	3.16
6.667	0.31	0.09	0.098	OI	|	|	|	|	3.19
6.750	0.31	0.09	0.100	OI	|	|	|	|	3.23
6.833	0.31	0.09	0.101	OI	|	|	|	|	3.26
6.917	0.31	0.09	0.103	OI	|	|	|	|	3.30
7.000	0.31	0.09	0.104	OI	|	|	|	|	3.34
7.083	0.32	0.09	0.106	OI	|	|	|	|	3.37
7.167	0.32	0.09	0.107	OI	|	|	|	|	3.41
7.250	0.32	0.09	0.109	OI	|	|	|	|	3.45
7.333	0.32	0.09	0.110	OI	|	|	|	|	3.48
7.417	0.32	0.09	0.112	OI	|	|	|	|	3.52
7.500	0.32	0.09	0.114	OI	|	|	|	|	3.56
7.583	0.32	0.09	0.115	OI	|	|	|	|	3.59
7.667	0.33	0.09	0.117	OI	|	|	|	|	3.63
7.750	0.33	0.09	0.118	OI	|	|	|	|	3.67

7.833	0.33	0.09	0.120	OI					3.71
7.917	0.33	0.09	0.122	OI					3.74
8.000	0.33	0.09	0.123	OI					3.78
8.083	0.33	0.09	0.125	OI					3.82
8.167	0.34	0.09	0.127	OI					3.86
8.250	0.34	0.09	0.128	OI					3.90
8.333	0.34	0.09	0.130	OI					3.94
8.417	0.34	0.09	0.132	OI					3.98
8.500	0.34	0.09	0.134	OI					4.01
8.583	0.35	0.09	0.135	OI					4.05
8.667	0.35	0.09	0.137	OI					4.10
8.750	0.35	0.09	0.139	OI					4.14
8.833	0.35	0.09	0.141	OI					4.18
8.917	0.35	0.09	0.143	OI					4.22
9.000	0.36	0.09	0.144	OI					4.26
9.083	0.36	0.09	0.146	OI					4.30
9.167	0.36	0.09	0.148	OI					4.34
9.250	0.36	0.09	0.150	OI					4.39
9.333	0.37	0.09	0.152	OI					4.43
9.417	0.37	0.09	0.154	OI					4.47
9.500	0.37	0.09	0.156	OI					4.52
9.583	0.37	0.09	0.158	OI					4.56
9.667	0.37	0.09	0.160	OI					4.60
9.750	0.38	0.09	0.162	OI					4.65
9.833	0.38	0.09	0.164	OI					4.69
9.917	0.38	0.09	0.166	OI					4.74
10.000	0.38	0.09	0.168	OI					4.79
10.083	0.39	0.09	0.170	OI					4.83
10.167	0.39	0.09	0.172	OI					4.88
10.250	0.39	0.09	0.174	OI					4.93
10.333	0.40	0.09	0.176	OI					4.97
10.417	0.40	0.09	0.178	OI					5.02
10.500	0.40	0.09	0.180	OI					5.07
10.583	0.40	0.09	0.182	OI					5.12
10.667	0.41	0.09	0.184	OI					5.17
10.750	0.41	0.09	0.187	OI					5.22
10.833	0.41	0.09	0.189	OI					5.27
10.917	0.42	0.09	0.191	OI					5.32
11.000	0.42	0.09	0.193	OI					5.37
11.083	0.42	0.09	0.196	OI					5.42
11.167	0.43	0.09	0.198	OI					5.48
11.250	0.43	0.09	0.200	OI					5.53
11.333	0.44	0.09	0.203	OI					5.58
11.417	0.44	0.09	0.205	OI					5.64
11.500	0.44	0.09	0.208	OI					5.69
11.583	0.45	0.09	0.210	OI					5.75
11.667	0.45	0.09	0.212	OI					5.81
11.750	0.46	0.09	0.215	OI					5.86
11.833	0.46	0.09	0.218	OI					5.92
11.917	0.47	0.09	0.220	OI					5.98
12.000	0.47	0.18	0.222	OI					6.03
12.083	0.49	0.28	0.224	OI					6.07
12.167	0.52	0.36	0.225	|O					6.10
12.250	0.53	0.42	0.226	|O					6.12
12.333	0.54	0.46	0.227	|O					6.14
12.417	0.55	0.49	0.228	|O					6.15
12.500	0.55	0.51	0.228	|O					6.16
12.583	0.56	0.52	0.228	|O					6.16
12.667	0.56	0.54	0.228	|O					6.17

12.750	0.57	0.55	0.229	O					6.17
12.833	0.58	0.56	0.229	O					6.17
12.917	0.58	0.56	0.229	O					6.18
13.000	0.59	0.57	0.229	OI					6.18
13.083	0.60	0.58	0.229	OI					6.18
13.167	0.61	0.59	0.229	O					6.19
13.250	0.61	0.60	0.229	O					6.19
13.333	0.62	0.60	0.229	O					6.19
13.417	0.63	0.61	0.230	O					6.19
13.500	0.64	0.62	0.230	O					6.20
13.583	0.65	0.63	0.230	O					6.20
13.667	0.66	0.64	0.230	O					6.20
13.750	0.67	0.65	0.230	O					6.21
13.833	0.68	0.66	0.230	O					6.21
13.917	0.69	0.67	0.230	O					6.22
14.000	0.71	0.68	0.231	O					6.22
14.083	0.72	0.69	0.231	O					6.22
14.167	0.73	0.70	0.231	O					6.23
14.250	0.75	0.72	0.231	O					6.23
14.333	0.76	0.73	0.231	O					6.24
14.417	0.78	0.74	0.232	O					6.24
14.500	0.80	0.76	0.232	O					6.25
14.583	0.82	0.78	0.232	O					6.26
14.667	0.84	0.79	0.233	O					6.26
14.750	0.86	0.81	0.233	O					6.27
14.833	0.89	0.83	0.233	OI					6.28
14.917	0.91	0.86	0.234	OI					6.29
15.000	0.95	0.88	0.234	O					6.30
15.083	0.98	0.91	0.234	O					6.31
15.167	1.02	0.94	0.235	O					6.32
15.250	1.06	0.97	0.236	O					6.33
15.333	1.11	1.01	0.236	O					6.34
15.417	1.09	1.04	0.237	O					6.36
15.500	0.96	1.04	0.237	O					6.35
15.583	1.00	1.02	0.236	O					6.35
15.667	1.11	1.03	0.236	O					6.35
15.750	1.24	1.08	0.237	OI					6.37
15.833	1.46	1.18	0.239	O					6.40
15.917	1.83	1.34	0.241	O I					6.47
16.000	2.74	1.67	0.247	O	I				6.59
16.083	5.80	2.60	0.262	O		I			6.94
16.167	9.34	4.16	0.290		O			I	7.67
16.250	3.14	4.71	0.303		I O				8.00
16.333	1.32	4.05	0.288	I	O				7.61
16.417	1.10	3.18	0.272	I	O				7.19
16.500	1.14	2.49	0.260	I	O				6.90
16.583	1.07	1.99	0.252	I O					6.71
16.667	0.99	1.65	0.246	I O					6.58
16.750	0.92	1.40	0.243	IO					6.49
16.833	0.87	1.22	0.240	I O					6.42
16.917	0.82	1.09	0.237	IO					6.37
17.000	0.78	0.99	0.236	IO					6.34
17.083	0.75	0.91	0.235	IO					6.31
17.167	0.72	0.85	0.234	O					6.28
17.250	0.70	0.80	0.233	O					6.27
17.333	0.67	0.76	0.232	O					6.25
17.417	0.65	0.73	0.231	O					6.24
17.500	0.63	0.70	0.231	O					6.23
17.583	0.62	0.67	0.231	O					6.22

17.667	0.60	0.65	0.230	| O	|	|	|	6.21
17.750	0.58	0.63	0.230	| O	|	|	|	6.20
17.833	0.57	0.61	0.230	|IO	|	|	|	6.19
17.917	0.56	0.60	0.229	|IO	|	|	|	6.19
18.000	0.55	0.58	0.229	|O	|	|	|	6.18
18.083	0.52	0.56	0.229	|O	|	|	|	6.18
18.167	0.48	0.54	0.228	|O	|	|	|	6.17
18.250	0.47	0.52	0.228	|O	|	|	|	6.16
18.333	0.46	0.50	0.228	|O	|	|	|	6.15
18.417	0.45	0.48	0.227	|O	|	|	|	6.15
18.500	0.44	0.47	0.227	|O	|	|	|	6.14
18.583	0.43	0.46	0.227	|O	|	|	|	6.14
18.667	0.43	0.45	0.227	|O	|	|	|	6.13
18.750	0.42	0.44	0.227	|O	|	|	|	6.13
18.833	0.41	0.43	0.227	|O	|	|	|	6.13
18.917	0.41	0.42	0.226	|O	|	|	|	6.12
19.000	0.40	0.42	0.226	|O	|	|	|	6.12
19.083	0.39	0.41	0.226	|O	|	|	|	6.12
19.167	0.39	0.40	0.226	|O	|	|	|	6.12
19.250	0.38	0.40	0.226	|O	|	|	|	6.11
19.333	0.38	0.39	0.226	|O	|	|	|	6.11
19.417	0.37	0.39	0.226	|O	|	|	|	6.11
19.500	0.37	0.38	0.226	|O	|	|	|	6.11
19.583	0.36	0.38	0.226	|O	|	|	|	6.11
19.667	0.36	0.37	0.226	|O	|	|	|	6.10
19.750	0.35	0.37	0.226	|O	|	|	|	6.10
19.833	0.35	0.36	0.225	|O	|	|	|	6.10
19.917	0.35	0.36	0.225	|O	|	|	|	6.10
20.000	0.34	0.35	0.225	|O	|	|	|	6.10
20.083	0.34	0.35	0.225	|O	|	|	|	6.10
20.167	0.34	0.34	0.225	|O	|	|	|	6.09
20.250	0.33	0.34	0.225	|O	|	|	|	6.09
20.333	0.33	0.34	0.225	|O	|	|	|	6.09
20.417	0.32	0.33	0.225	|O	|	|	|	6.09
20.500	0.32	0.33	0.225	|O	|	|	|	6.09
20.583	0.32	0.33	0.225	|O	|	|	|	6.09
20.667	0.32	0.32	0.225	|O	|	|	|	6.09
20.750	0.31	0.32	0.225	|O	|	|	|	6.09
20.833	0.31	0.32	0.225	|O	|	|	|	6.08
20.917	0.31	0.31	0.225	|O	|	|	|	6.08
21.000	0.30	0.31	0.225	|O	|	|	|	6.08
21.083	0.30	0.31	0.225	|O	|	|	|	6.08
21.167	0.30	0.31	0.225	|O	|	|	|	6.08
21.250	0.30	0.30	0.224	|O	|	|	|	6.08
21.333	0.29	0.30	0.224	|O	|	|	|	6.08
21.417	0.29	0.30	0.224	IO	|	|	|	6.08
21.500	0.29	0.30	0.224	IO	|	|	|	6.08
21.583	0.29	0.29	0.224	IO	|	|	|	6.08
21.667	0.28	0.29	0.224	O	|	|	|	6.07
21.750	0.28	0.29	0.224	O	|	|	|	6.07
21.833	0.28	0.29	0.224	O	|	|	|	6.07
21.917	0.28	0.28	0.224	O	|	|	|	6.07
22.000	0.28	0.28	0.224	O	|	|	|	6.07
22.083	0.27	0.28	0.224	O	|	|	|	6.07
22.167	0.27	0.28	0.224	O	|	|	|	6.07
22.250	0.27	0.28	0.224	O	|	|	|	6.07
22.333	0.27	0.27	0.224	O	|	|	|	6.07
22.417	0.27	0.27	0.224	O	|	|	|	6.07
22.500	0.27	0.27	0.224	O	|	|	|	6.07

22.583	0.26	0.27	0.224	O					6.07
22.667	0.26	0.27	0.224	O					6.07
22.750	0.26	0.26	0.224	O					6.06
22.833	0.26	0.26	0.224	O					6.06
22.917	0.26	0.26	0.224	O					6.06
23.000	0.26	0.26	0.224	O					6.06
23.083	0.25	0.26	0.224	O					6.06
23.167	0.25	0.26	0.224	O					6.06
23.250	0.25	0.25	0.224	O					6.06
23.333	0.25	0.25	0.224	O					6.06
23.417	0.25	0.25	0.224	O					6.06
23.500	0.25	0.25	0.224	O					6.06
23.583	0.24	0.25	0.224	O					6.06
23.667	0.24	0.25	0.224	O					6.06
23.750	0.24	0.25	0.224	O					6.06
23.833	0.24	0.24	0.224	O					6.06
23.917	0.24	0.24	0.224	O					6.06
24.000	0.24	0.24	0.223	O					6.06
24.083	0.18	0.23	0.223	O					6.05
24.167	0.03	0.19	0.223	O					6.04
24.250	0.00	0.13	0.222	O					6.01
24.333	0.00	0.09	0.221	O					6.00
24.417	0.00	0.09	0.220	O					5.98
24.500	0.00	0.09	0.220	O					5.97
24.583	0.00	0.09	0.219	O					5.95
24.667	0.00	0.09	0.218	O					5.94
24.750	0.00	0.09	0.218	O					5.93
24.833	0.00	0.09	0.217	O					5.91
24.917	0.00	0.09	0.217	O					5.90
25.000	0.00	0.09	0.216	O					5.88
25.083	0.00	0.09	0.215	O					5.87
25.167	0.00	0.09	0.215	O					5.86
25.250	0.00	0.09	0.214	O					5.84
25.333	0.00	0.09	0.213	O					5.83
25.417	0.00	0.09	0.213	O					5.81
25.500	0.00	0.09	0.212	O					5.80
25.583	0.00	0.09	0.212	O					5.79
25.667	0.00	0.09	0.211	O					5.77
25.750	0.00	0.09	0.210	O					5.76
25.833	0.00	0.09	0.210	O					5.74
25.917	0.00	0.09	0.209	O					5.73
26.000	0.00	0.09	0.208	O					5.72
26.083	0.00	0.09	0.208	O					5.70
26.167	0.00	0.09	0.207	O					5.69
26.250	0.00	0.09	0.207	O					5.67
26.333	0.00	0.09	0.206	O					5.66
26.417	0.00	0.09	0.205	O					5.64
26.500	0.00	0.09	0.205	O					5.63
26.583	0.00	0.09	0.204	O					5.62
26.667	0.00	0.09	0.204	O					5.60
26.750	0.00	0.09	0.203	O					5.59
26.833	0.00	0.09	0.202	O					5.57
26.917	0.00	0.09	0.202	O					5.56
27.000	0.00	0.09	0.201	O					5.55
27.083	0.00	0.09	0.200	O					5.53
27.167	0.00	0.09	0.200	O					5.52
27.250	0.00	0.09	0.199	O					5.50
27.333	0.00	0.09	0.199	O					5.49
27.417	0.00	0.09	0.198	O					5.48

27.500	0.00	0.09	0.197	O	|	|	|	|	5.46
27.583	0.00	0.09	0.197	O	|	|	|	|	5.45
27.667	0.00	0.09	0.196	O	|	|	|	|	5.43
27.750	0.00	0.09	0.195	O	|	|	|	|	5.42
27.833	0.00	0.09	0.195	O	|	|	|	|	5.41
27.917	0.00	0.09	0.194	O	|	|	|	|	5.39
28.000	0.00	0.09	0.194	O	|	|	|	|	5.38
28.083	0.00	0.09	0.193	O	|	|	|	|	5.36
28.167	0.00	0.09	0.192	O	|	|	|	|	5.35
28.250	0.00	0.09	0.192	O	|	|	|	|	5.33
28.333	0.00	0.09	0.191	O	|	|	|	|	5.32
28.417	0.00	0.09	0.190	O	|	|	|	|	5.31
28.500	0.00	0.09	0.190	O	|	|	|	|	5.29
28.583	0.00	0.09	0.189	O	|	|	|	|	5.28
28.667	0.00	0.09	0.189	O	|	|	|	|	5.26
28.750	0.00	0.09	0.188	O	|	|	|	|	5.25
28.833	0.00	0.09	0.187	O	|	|	|	|	5.24
28.917	0.00	0.09	0.187	O	|	|	|	|	5.22
29.000	0.00	0.09	0.186	O	|	|	|	|	5.21
29.083	0.00	0.09	0.186	O	|	|	|	|	5.19
29.167	0.00	0.09	0.185	O	|	|	|	|	5.18
29.250	0.00	0.09	0.184	O	|	|	|	|	5.17
29.333	0.00	0.09	0.184	O	|	|	|	|	5.15
29.417	0.00	0.09	0.183	O	|	|	|	|	5.14
29.500	0.00	0.09	0.182	O	|	|	|	|	5.12
29.583	0.00	0.09	0.182	O	|	|	|	|	5.11
29.667	0.00	0.09	0.181	O	|	|	|	|	5.10
29.750	0.00	0.09	0.181	O	|	|	|	|	5.08
29.833	0.00	0.09	0.180	O	|	|	|	|	5.07
29.917	0.00	0.09	0.179	O	|	|	|	|	5.05
30.000	0.00	0.09	0.179	O	|	|	|	|	5.04
30.083	0.00	0.09	0.178	O	|	|	|	|	5.02
30.167	0.00	0.09	0.177	O	|	|	|	|	5.01
30.250	0.00	0.09	0.177	O	|	|	|	|	5.00
30.333	0.00	0.09	0.176	O	|	|	|	|	4.98
30.417	0.00	0.09	0.176	O	|	|	|	|	4.97
30.500	0.00	0.09	0.175	O	|	|	|	|	4.95
30.583	0.00	0.09	0.174	O	|	|	|	|	4.94
30.667	0.00	0.09	0.174	O	|	|	|	|	4.93
30.750	0.00	0.09	0.173	O	|	|	|	|	4.91
30.833	0.00	0.09	0.173	O	|	|	|	|	4.90
30.917	0.00	0.09	0.172	O	|	|	|	|	4.88
31.000	0.00	0.09	0.171	O	|	|	|	|	4.87
31.083	0.00	0.09	0.171	O	|	|	|	|	4.86
31.167	0.00	0.09	0.170	O	|	|	|	|	4.84
31.250	0.00	0.09	0.169	O	|	|	|	|	4.83
31.333	0.00	0.09	0.169	O	|	|	|	|	4.81
31.417	0.00	0.09	0.168	O	|	|	|	|	4.80
31.500	0.00	0.09	0.168	O	|	|	|	|	4.79
31.583	0.00	0.09	0.167	O	|	|	|	|	4.77
31.667	0.00	0.09	0.166	O	|	|	|	|	4.76
31.750	0.00	0.09	0.166	O	|	|	|	|	4.74
31.833	0.00	0.09	0.165	O	|	|	|	|	4.73
31.917	0.00	0.09	0.164	O	|	|	|	|	4.71
32.000	0.00	0.09	0.164	O	|	|	|	|	4.70
32.083	0.00	0.09	0.163	O	|	|	|	|	4.69
32.167	0.00	0.09	0.163	O	|	|	|	|	4.67
32.250	0.00	0.09	0.162	O	|	|	|	|	4.66
32.333	0.00	0.09	0.161	O	|	|	|	|	4.64

32.417	0.00	0.09	0.161	O	|	|	|	|	4.63
32.500	0.00	0.09	0.160	O	|	|	|	|	4.62
32.583	0.00	0.09	0.159	O	|	|	|	|	4.60
32.667	0.00	0.09	0.159	O	|	|	|	|	4.59
32.750	0.00	0.09	0.158	O	|	|	|	|	4.57
32.833	0.00	0.09	0.158	O	|	|	|	|	4.56
32.917	0.00	0.09	0.157	O	|	|	|	|	4.55
33.000	0.00	0.09	0.156	O	|	|	|	|	4.53
33.083	0.00	0.09	0.156	O	|	|	|	|	4.52
33.167	0.00	0.09	0.155	O	|	|	|	|	4.50
33.250	0.00	0.09	0.155	O	|	|	|	|	4.49
33.333	0.00	0.09	0.154	O	|	|	|	|	4.48
33.417	0.00	0.09	0.153	O	|	|	|	|	4.46
33.500	0.00	0.09	0.153	O	|	|	|	|	4.45
33.583	0.00	0.09	0.152	O	|	|	|	|	4.43
33.667	0.00	0.09	0.151	O	|	|	|	|	4.42
33.750	0.00	0.09	0.151	O	|	|	|	|	4.40
33.833	0.00	0.09	0.150	O	|	|	|	|	4.39
33.917	0.00	0.09	0.150	O	|	|	|	|	4.38
34.000	0.00	0.09	0.149	O	|	|	|	|	4.36
34.083	0.00	0.09	0.148	O	|	|	|	|	4.35
34.167	0.00	0.09	0.148	O	|	|	|	|	4.33
34.250	0.00	0.09	0.147	O	|	|	|	|	4.32
34.333	0.00	0.09	0.146	O	|	|	|	|	4.31
34.417	0.00	0.09	0.146	O	|	|	|	|	4.29
34.500	0.00	0.09	0.145	O	|	|	|	|	4.28
34.583	0.00	0.09	0.145	O	|	|	|	|	4.26
34.667	0.00	0.09	0.144	O	|	|	|	|	4.25
34.750	0.00	0.09	0.143	O	|	|	|	|	4.24
34.833	0.00	0.09	0.143	O	|	|	|	|	4.22
34.917	0.00	0.09	0.142	O	|	|	|	|	4.21
35.000	0.00	0.09	0.142	O	|	|	|	|	4.19
35.083	0.00	0.09	0.141	O	|	|	|	|	4.18
35.167	0.00	0.09	0.140	O	|	|	|	|	4.17
35.250	0.00	0.09	0.140	O	|	|	|	|	4.15
35.333	0.00	0.09	0.139	O	|	|	|	|	4.14
35.417	0.00	0.09	0.138	O	|	|	|	|	4.12
35.500	0.00	0.09	0.138	O	|	|	|	|	4.11
35.583	0.00	0.09	0.137	O	|	|	|	|	4.10
35.667	0.00	0.09	0.137	O	|	|	|	|	4.08
35.750	0.00	0.09	0.136	O	|	|	|	|	4.07
35.833	0.00	0.09	0.135	O	|	|	|	|	4.05
35.917	0.00	0.09	0.135	O	|	|	|	|	4.04
36.000	0.00	0.09	0.134	O	|	|	|	|	4.02
36.083	0.00	0.09	0.133	O	|	|	|	|	4.01
36.167	0.00	0.09	0.133	O	|	|	|	|	4.00
36.250	0.00	0.09	0.132	O	|	|	|	|	3.98
36.333	0.00	0.09	0.132	O	|	|	|	|	3.97
36.417	0.00	0.09	0.131	O	|	|	|	|	3.95
36.500	0.00	0.09	0.130	O	|	|	|	|	3.94
36.583	0.00	0.09	0.130	O	|	|	|	|	3.93
36.667	0.00	0.09	0.129	O	|	|	|	|	3.91
36.750	0.00	0.09	0.129	O	|	|	|	|	3.90
36.833	0.00	0.09	0.128	O	|	|	|	|	3.88
36.917	0.00	0.09	0.127	O	|	|	|	|	3.87
37.000	0.00	0.09	0.127	O	|	|	|	|	3.86
37.083	0.00	0.09	0.126	O	|	|	|	|	3.84
37.167	0.00	0.09	0.125	O	|	|	|	|	3.83
37.250	0.00	0.09	0.125	O	|	|	|	|	3.81

37.333	0.00	0.09	0.124	O	|	|	|	|	3.80
37.417	0.00	0.09	0.124	O	|	|	|	|	3.79
37.500	0.00	0.09	0.123	O	|	|	|	|	3.77
37.583	0.00	0.09	0.122	O	|	|	|	|	3.76
37.667	0.00	0.09	0.122	O	|	|	|	|	3.74
37.750	0.00	0.09	0.121	O	|	|	|	|	3.73
37.833	0.00	0.09	0.120	O	|	|	|	|	3.71
37.917	0.00	0.09	0.120	O	|	|	|	|	3.70
38.000	0.00	0.09	0.119	O	|	|	|	|	3.69
38.083	0.00	0.09	0.119	O	|	|	|	|	3.67
38.167	0.00	0.09	0.118	O	|	|	|	|	3.66
38.250	0.00	0.09	0.117	O	|	|	|	|	3.64
38.333	0.00	0.09	0.117	O	|	|	|	|	3.63
38.417	0.00	0.09	0.116	O	|	|	|	|	3.62
38.500	0.00	0.09	0.115	O	|	|	|	|	3.60
38.583	0.00	0.09	0.115	O	|	|	|	|	3.59
38.667	0.00	0.09	0.114	O	|	|	|	|	3.57
38.750	0.00	0.09	0.114	O	|	|	|	|	3.56
38.833	0.00	0.09	0.113	O	|	|	|	|	3.55
38.917	0.00	0.09	0.112	O	|	|	|	|	3.53
39.000	0.00	0.09	0.112	O	|	|	|	|	3.52
39.083	0.00	0.09	0.111	O	|	|	|	|	3.50
39.167	0.00	0.09	0.111	O	|	|	|	|	3.49
39.250	0.00	0.09	0.110	O	|	|	|	|	3.47
39.333	0.00	0.09	0.109	O	|	|	|	|	3.46
39.417	0.00	0.09	0.109	O	|	|	|	|	3.44
39.500	0.00	0.09	0.108	O	|	|	|	|	3.43
39.583	0.00	0.09	0.107	O	|	|	|	|	3.41
39.667	0.00	0.09	0.107	O	|	|	|	|	3.40
39.750	0.00	0.09	0.106	O	|	|	|	|	3.39
39.833	0.00	0.09	0.106	O	|	|	|	|	3.37
39.917	0.00	0.09	0.105	O	|	|	|	|	3.36
40.000	0.00	0.09	0.104	O	|	|	|	|	3.34
40.083	0.00	0.09	0.104	O	|	|	|	|	3.33
40.167	0.00	0.09	0.103	O	|	|	|	|	3.31
40.250	0.00	0.09	0.102	O	|	|	|	|	3.30
40.333	0.00	0.09	0.102	O	|	|	|	|	3.28
40.417	0.00	0.09	0.101	O	|	|	|	|	3.27
40.500	0.00	0.09	0.101	O	|	|	|	|	3.25
40.583	0.00	0.09	0.100	O	|	|	|	|	3.24
40.667	0.00	0.09	0.099	O	|	|	|	|	3.22
40.750	0.00	0.09	0.099	O	|	|	|	|	3.21
40.833	0.00	0.09	0.098	O	|	|	|	|	3.19
40.917	0.00	0.09	0.098	O	|	|	|	|	3.18
41.000	0.00	0.09	0.097	O	|	|	|	|	3.16
41.083	0.00	0.09	0.096	O	|	|	|	|	3.15
41.167	0.00	0.09	0.096	O	|	|	|	|	3.13
41.250	0.00	0.09	0.095	O	|	|	|	|	3.12
41.333	0.00	0.09	0.094	O	|	|	|	|	3.11
41.417	0.00	0.09	0.094	O	|	|	|	|	3.09
41.500	0.00	0.09	0.093	O	|	|	|	|	3.08
41.583	0.00	0.09	0.093	O	|	|	|	|	3.06
41.667	0.00	0.09	0.092	O	|	|	|	|	3.05
41.750	0.00	0.09	0.091	O	|	|	|	|	3.03
41.833	0.00	0.09	0.091	O	|	|	|	|	3.02
41.917	0.00	0.09	0.090	O	|	|	|	|	3.00
42.000	0.00	0.09	0.089	O	|	|	|	|	2.99
42.083	0.00	0.09	0.089	O	|	|	|	|	2.97
42.167	0.00	0.09	0.088	O	|	|	|	|	2.96

42.250	0.00	0.09	0.088	O	|	|	|	|	2.94
42.333	0.00	0.09	0.087	O	|	|	|	|	2.92
42.417	0.00	0.09	0.086	O	|	|	|	|	2.91
42.500	0.00	0.09	0.086	O	|	|	|	|	2.89
42.583	0.00	0.09	0.085	O	|	|	|	|	2.88
42.667	0.00	0.09	0.084	O	|	|	|	|	2.86
42.750	0.00	0.09	0.084	O	|	|	|	|	2.85
42.833	0.00	0.09	0.083	O	|	|	|	|	2.83
42.917	0.00	0.09	0.083	O	|	|	|	|	2.82
43.000	0.00	0.09	0.082	O	|	|	|	|	2.80
43.083	0.00	0.09	0.081	O	|	|	|	|	2.78
43.167	0.00	0.09	0.081	O	|	|	|	|	2.77
43.250	0.00	0.09	0.080	O	|	|	|	|	2.75
43.333	0.00	0.09	0.080	O	|	|	|	|	2.74
43.417	0.00	0.09	0.079	O	|	|	|	|	2.72
43.500	0.00	0.09	0.078	O	|	|	|	|	2.71
43.583	0.00	0.09	0.078	O	|	|	|	|	2.69
43.667	0.00	0.09	0.077	O	|	|	|	|	2.68
43.750	0.00	0.09	0.076	O	|	|	|	|	2.66
43.833	0.00	0.09	0.076	O	|	|	|	|	2.65
43.917	0.00	0.09	0.075	O	|	|	|	|	2.63
44.000	0.00	0.09	0.075	O	|	|	|	|	2.61
44.083	0.00	0.09	0.074	O	|	|	|	|	2.60
44.167	0.00	0.09	0.073	O	|	|	|	|	2.58
44.250	0.00	0.09	0.073	O	|	|	|	|	2.57
44.333	0.00	0.09	0.072	O	|	|	|	|	2.55
44.417	0.00	0.09	0.071	O	|	|	|	|	2.54
44.500	0.00	0.09	0.071	O	|	|	|	|	2.52
44.583	0.00	0.09	0.070	O	|	|	|	|	2.51
44.667	0.00	0.09	0.070	O	|	|	|	|	2.49
44.750	0.00	0.09	0.069	O	|	|	|	|	2.47
44.833	0.00	0.09	0.068	O	|	|	|	|	2.46
44.917	0.00	0.09	0.068	O	|	|	|	|	2.44
45.000	0.00	0.09	0.067	O	|	|	|	|	2.42
45.083	0.00	0.09	0.067	O	|	|	|	|	2.41
45.167	0.00	0.09	0.066	O	|	|	|	|	2.39
45.250	0.00	0.09	0.065	O	|	|	|	|	2.38
45.333	0.00	0.09	0.065	O	|	|	|	|	2.36
45.417	0.00	0.09	0.064	O	|	|	|	|	2.34
45.500	0.00	0.09	0.063	O	|	|	|	|	2.33
45.583	0.00	0.09	0.063	O	|	|	|	|	2.31
45.667	0.00	0.09	0.062	O	|	|	|	|	2.29
45.750	0.00	0.09	0.062	O	|	|	|	|	2.28
45.833	0.00	0.09	0.061	O	|	|	|	|	2.26
45.917	0.00	0.09	0.060	O	|	|	|	|	2.25
46.000	0.00	0.09	0.060	O	|	|	|	|	2.23
46.083	0.00	0.09	0.059	O	|	|	|	|	2.21
46.167	0.00	0.09	0.058	O	|	|	|	|	2.20
46.250	0.00	0.09	0.058	O	|	|	|	|	2.18
46.333	0.00	0.09	0.057	O	|	|	|	|	2.16
46.417	0.00	0.09	0.057	O	|	|	|	|	2.15
46.500	0.00	0.09	0.056	O	|	|	|	|	2.13
46.583	0.00	0.09	0.055	O	|	|	|	|	2.11
46.667	0.00	0.09	0.055	O	|	|	|	|	2.10
46.750	0.00	0.09	0.054	O	|	|	|	|	2.08
46.833	0.00	0.09	0.054	O	|	|	|	|	2.07
46.917	0.00	0.09	0.053	O	|	|	|	|	2.05
47.000	0.00	0.09	0.052	O	|	|	|	|	2.03
47.083	0.00	0.09	0.052	O	|	|	|	|	2.02

47.167	0.00	0.09	0.051	O	|	|	|	2.00
47.250	0.00	0.09	0.050	O	|	|	|	1.98
47.333	0.00	0.09	0.050	O	|	|	|	1.96
47.417	0.00	0.09	0.049	O	|	|	|	1.95
47.500	0.00	0.09	0.049	O	|	|	|	1.93
47.583	0.00	0.09	0.048	O	|	|	|	1.91
47.667	0.00	0.09	0.047	O	|	|	|	1.89
47.750	0.00	0.09	0.047	O	|	|	|	1.87
47.833	0.00	0.09	0.046	O	|	|	|	1.85
47.917	0.00	0.09	0.045	O	|	|	|	1.84
48.000	0.00	0.09	0.045	O	|	|	|	1.82
48.083	0.00	0.09	0.044	O	|	|	|	1.80
48.167	0.00	0.09	0.044	O	|	|	|	1.78
48.250	0.00	0.09	0.043	O	|	|	|	1.76
48.333	0.00	0.09	0.042	O	|	|	|	1.75
48.417	0.00	0.09	0.042	O	|	|	|	1.73
48.500	0.00	0.09	0.041	O	|	|	|	1.71
48.583	0.00	0.09	0.040	O	|	|	|	1.69
48.667	0.00	0.09	0.040	O	|	|	|	1.67
48.750	0.00	0.09	0.039	O	|	|	|	1.65
48.833	0.00	0.09	0.039	O	|	|	|	1.64
48.917	0.00	0.09	0.038	O	|	|	|	1.62
49.000	0.00	0.09	0.037	O	|	|	|	1.60
49.083	0.00	0.09	0.037	O	|	|	|	1.58
49.167	0.00	0.09	0.036	O	|	|	|	1.56
49.250	0.00	0.09	0.036	O	|	|	|	1.54
49.333	0.00	0.09	0.035	O	|	|	|	1.53
49.417	0.00	0.09	0.034	O	|	|	|	1.51
49.500	0.00	0.09	0.034	O	|	|	|	1.49
49.583	0.00	0.09	0.033	O	|	|	|	1.47
49.667	0.00	0.09	0.032	O	|	|	|	1.44
49.750	0.00	0.09	0.032	O	|	|	|	1.42
49.833	0.00	0.09	0.031	O	|	|	|	1.40
49.917	0.00	0.09	0.031	O	|	|	|	1.38
50.000	0.00	0.09	0.030	O	|	|	|	1.36
50.083	0.00	0.09	0.029	O	|	|	|	1.33
50.167	0.00	0.09	0.029	O	|	|	|	1.31
50.250	0.00	0.09	0.028	O	|	|	|	1.29
50.333	0.00	0.09	0.027	O	|	|	|	1.27
50.417	0.00	0.09	0.027	O	|	|	|	1.24
50.500	0.00	0.09	0.026	O	|	|	|	1.22
50.583	0.00	0.09	0.026	O	|	|	|	1.20
50.667	0.00	0.09	0.025	O	|	|	|	1.18
50.750	0.00	0.09	0.024	O	|	|	|	1.16
50.833	0.00	0.09	0.024	O	|	|	|	1.13
50.917	0.00	0.09	0.023	O	|	|	|	1.11
51.000	0.00	0.09	0.023	O	|	|	|	1.09
51.083	0.00	0.09	0.022	O	|	|	|	1.07
51.167	0.00	0.09	0.021	O	|	|	|	1.05
51.250	0.00	0.09	0.021	O	|	|	|	1.02
51.333	0.00	0.09	0.020	O	|	|	|	1.00
51.417	0.00	0.09	0.019	O	|	|	|	0.97
51.500	0.00	0.09	0.019	O	|	|	|	0.94
51.583	0.00	0.09	0.018	O	|	|	|	0.91
51.667	0.00	0.09	0.018	O	|	|	|	0.88
51.750	0.00	0.09	0.017	O	|	|	|	0.85
51.833	0.00	0.09	0.016	O	|	|	|	0.82
51.917	0.00	0.09	0.016	O	|	|	|	0.78
52.000	0.00	0.09	0.015	O	|	|	|	0.75

52.083	0.00	0.09	0.014	O	|	|	|	|	0.72
52.167	0.00	0.09	0.014	O	|	|	|	|	0.69
52.250	0.00	0.09	0.013	O	|	|	|	|	0.66
52.333	0.00	0.09	0.013	O	|	|	|	|	0.63
52.417	0.00	0.09	0.012	O	|	|	|	|	0.60
52.500	0.00	0.09	0.011	O	|	|	|	|	0.57
52.583	0.00	0.09	0.011	O	|	|	|	|	0.54
52.667	0.00	0.09	0.010	O	|	|	|	|	0.51
52.750	0.00	0.09	0.010	O	|	|	|	|	0.48
52.833	0.00	0.08	0.009	O	|	|	|	|	0.45
52.917	0.00	0.08	0.008	O	|	|	|	|	0.42
53.000	0.00	0.07	0.008	O	|	|	|	|	0.39
53.083	0.00	0.07	0.007	O	|	|	|	|	0.37
53.167	0.00	0.06	0.007	O	|	|	|	|	0.35
53.250	0.00	0.06	0.007	O	|	|	|	|	0.33
53.333	0.00	0.06	0.006	O	|	|	|	|	0.31
53.417	0.00	0.05	0.006	O	|	|	|	|	0.29
53.500	0.00	0.05	0.005	O	|	|	|	|	0.27
53.583	0.00	0.05	0.005	O	|	|	|	|	0.26
53.667	0.00	0.04	0.005	O	|	|	|	|	0.24
53.750	0.00	0.04	0.005	O	|	|	|	|	0.23
53.833	0.00	0.04	0.004	O	|	|	|	|	0.21
53.917	0.00	0.04	0.004	O	|	|	|	|	0.20
54.000	0.00	0.03	0.004	O	|	|	|	|	0.19
54.083	0.00	0.03	0.004	O	|	|	|	|	0.18
54.167	0.00	0.03	0.003	O	|	|	|	|	0.17
54.250	0.00	0.03	0.003	O	|	|	|	|	0.16
54.333	0.00	0.03	0.003	O	|	|	|	|	0.15
54.417	0.00	0.02	0.003	O	|	|	|	|	0.14
54.500	0.00	0.02	0.003	O	|	|	|	|	0.13
54.583	0.00	0.02	0.002	O	|	|	|	|	0.12
54.667	0.00	0.02	0.002	O	|	|	|	|	0.11
54.750	0.00	0.02	0.002	O	|	|	|	|	0.11
54.833	0.00	0.02	0.002	O	|	|	|	|	0.10
54.917	0.00	0.02	0.002	O	|	|	|	|	0.09
55.000	0.00	0.02	0.002	O	|	|	|	|	0.09
55.083	0.00	0.02	0.002	O	|	|	|	|	0.08
55.167	0.00	0.01	0.002	O	|	|	|	|	0.08
55.250	0.00	0.01	0.001	O	|	|	|	|	0.07
55.333	0.00	0.01	0.001	O	|	|	|	|	0.07
55.417	0.00	0.01	0.001	O	|	|	|	|	0.07
55.500	0.00	0.01	0.001	O	|	|	|	|	0.06
55.583	0.00	0.01	0.001	O	|	|	|	|	0.06
55.667	0.00	0.01	0.001	O	|	|	|	|	0.05
55.750	0.00	0.01	0.001	O	|	|	|	|	0.05
55.833	0.00	0.01	0.001	O	|	|	|	|	0.05
55.917	0.00	0.01	0.001	O	|	|	|	|	0.05
56.000	0.00	0.01	0.001	O	|	|	|	|	0.04
56.083	0.00	0.01	0.001	O	|	|	|	|	0.04
56.167	0.00	0.01	0.001	O	|	|	|	|	0.04
56.250	0.00	0.01	0.001	O	|	|	|	|	0.04
56.333	0.00	0.01	0.001	O	|	|	|	|	0.03
56.417	0.00	0.01	0.001	O	|	|	|	|	0.03
56.500	0.00	0.01	0.001	O	|	|	|	|	0.03
56.583	0.00	0.00	0.001	O	|	|	|	|	0.03
56.667	0.00	0.00	0.001	O	|	|	|	|	0.03
56.750	0.00	0.00	0.000	O	|	|	|	|	0.02
56.833	0.00	0.00	0.000	O	|	|	|	|	0.02
56.917	0.00	0.00	0.000	O	|	|	|	|	0.02

57.000	0.00	0.00	0.000	O	|	|	|	|	0.02
57.083	0.00	0.00	0.000	O	|	|	|	|	0.02
57.167	0.00	0.00	0.000	O	|	|	|	|	0.02
57.250	0.00	0.00	0.000	O	|	|	|	|	0.02
57.333	0.00	0.00	0.000	O	|	|	|	|	0.02
57.417	0.00	0.00	0.000	O	|	|	|	|	0.01
57.500	0.00	0.00	0.000	O	|	|	|	|	0.01
57.583	0.00	0.00	0.000	O	|	|	|	|	0.01
57.667	0.00	0.00	0.000	O	|	|	|	|	0.01
57.750	0.00	0.00	0.000	O	|	|	|	|	0.01
57.833	0.00	0.00	0.000	O	|	|	|	|	0.01
57.917	0.00	0.00	0.000	O	|	|	|	|	0.01
58.000	0.00	0.00	0.000	O	|	|	|	|	0.01
58.083	0.00	0.00	0.000	O	|	|	|	|	0.01
58.167	0.00	0.00	0.000	O	|	|	|	|	0.01
58.250	0.00	0.00	0.000	O	|	|	|	|	0.01
58.333	0.00	0.00	0.000	O	|	|	|	|	0.01
58.417	0.00	0.00	0.000	O	|	|	|	|	0.01
58.500	0.00	0.00	0.000	O	|	|	|	|	0.01
58.583	0.00	0.00	0.000	O	|	|	|	|	0.01
58.667	0.00	0.00	0.000	O	|	|	|	|	0.01
58.750	0.00	0.00	0.000	O	|	|	|	|	0.01

**********HYDROGRAPH DATA**********

Number of intervals = 705
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 4.712 (CFS)
Total volume = 0.986 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

APPENDIX E.6: 100-YEAR BASIN ROUTING CALCULATION

FLOOD HYDROGRAPH ROUTING PROGRAM
Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2014
Study date: 04/25/25

320.05 BUFFALO GROVE
BASIN ROUTING; BASIN A
100-YR, 24-HR STORM

Program License Serial Number 6279

********** HYDROGRAPH INFORMATION **********

From study/file name: UPA100.rte
**********HYDROGRAPH DATA**********
Number of intervals = 290
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 12.528 (CFS)
Total volume = 1.418 (Ac.Ft)
Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

++
Process from Point/Station 101.000 to Point/Station 102.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 290
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.500	0.010	0.090	0.010	0.010
1.000	0.020	0.090	0.020	0.020

1.500	0.034	0.090	0.034	0.034
2.000	0.051	0.090	0.051	0.051
2.500	0.070	0.090	0.070	0.070
3.000	0.090	0.090	0.090	0.090
3.500	0.111	0.090	0.111	0.111
4.000	0.133	0.090	0.133	0.133
4.500	0.155	0.090	0.155	0.155
5.000	0.177	0.090	0.177	0.177
5.500	0.199	0.090	0.199	0.199
6.000	0.221	0.090	0.221	0.221
6.500	0.243	1.430	0.238	0.248
7.000	0.264	2.760	0.254	0.274
7.500	0.284	3.870	0.271	0.297
8.000	0.303	4.720	0.287	0.319
8.500	0.320	5.440	0.301	0.339
9.000	0.334	6.070	0.313	0.355
9.500	0.344	6.640	0.321	0.367

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	3.1	6.26	9.40	12.53	Depth (Ft.)
0.083	0.08	0.00	0.000	O	|	|	|	|	0.01
0.167	0.31	0.01	0.002	O	|	|	|	|	0.08
0.250	0.35	0.03	0.004	O	|	|	|	|	0.18
0.333	0.35	0.05	0.006	O	|	|	|	|	0.29
0.417	0.35	0.07	0.008	O	|	|	|	|	0.39
0.500	0.35	0.09	0.010	O	|	|	|	|	0.48
0.583	0.35	0.09	0.011	O	|	|	|	|	0.57
0.667	0.35	0.09	0.013	O	|	|	|	|	0.66
0.750	0.35	0.09	0.015	O	|	|	|	|	0.75
0.833	0.35	0.09	0.017	O	|	|	|	|	0.84
0.917	0.36	0.09	0.019	O	|	|	|	|	0.94
1.000	0.36	0.09	0.021	O	|	|	|	|	1.02
1.083	0.36	0.09	0.022	O	|	|	|	|	1.09
1.167	0.36	0.09	0.024	O	|	|	|	|	1.15
1.250	0.36	0.09	0.026	O	|	|	|	|	1.22
1.333	0.36	0.09	0.028	O	|	|	|	|	1.28
1.417	0.36	0.09	0.030	O	|	|	|	|	1.35
1.500	0.36	0.09	0.032	O	|	|	|	|	1.42
1.583	0.36	0.09	0.034	O	|	|	|	|	1.49
1.667	0.37	0.09	0.035	O	|	|	|	|	1.54
1.750	0.37	0.09	0.037	O	|	|	|	|	1.60
1.833	0.37	0.09	0.039	O	|	|	|	|	1.66
1.917	0.37	0.09	0.041	O	|	|	|	|	1.71
2.000	0.37	0.09	0.043	O	|	|	|	|	1.77
2.083	0.37	0.09	0.045	O	|	|	|	|	1.83
2.167	0.37	0.09	0.047	O	|	|	|	|	1.88
2.250	0.37	0.09	0.049	O	|	|	|	|	1.94
2.333	0.37	0.09	0.051	O	|	|	|	|	2.00
2.417	0.37	0.09	0.053	O	|	|	|	|	2.05
2.500	0.38	0.09	0.055	O	|	|	|	|	2.10
2.583	0.38	0.09	0.057	O	|	|	|	|	2.15
2.667	0.38	0.09	0.059	O	|	|	|	|	2.20
2.750	0.38	0.09	0.061	O	|	|	|	|	2.26
2.833	0.38	0.09	0.063	O	|	|	|	|	2.31

2.917	0.38	0.09	0.065	O	|	|	|	|	2.36
3.000	0.38	0.09	0.067	O	|	|	|	|	2.42
3.083	0.38	0.09	0.069	O	|	|	|	|	2.47
3.167	0.39	0.09	0.071	O	|	|	|	|	2.52
3.250	0.39	0.09	0.073	O	|	|	|	|	2.57
3.333	0.39	0.09	0.075	O	|	|	|	|	2.62
3.417	0.39	0.09	0.077	O	|	|	|	|	2.67
3.500	0.39	0.09	0.079	O	|	|	|	|	2.73
3.583	0.39	0.09	0.081	OI	|	|	|	|	2.78
3.667	0.39	0.09	0.083	OI	|	|	|	|	2.83
3.750	0.39	0.09	0.085	OI	|	|	|	|	2.88
3.833	0.40	0.09	0.087	OI	|	|	|	|	2.94
3.917	0.40	0.09	0.090	OI	|	|	|	|	2.99
4.000	0.40	0.09	0.092	OI	|	|	|	|	3.04
4.083	0.40	0.09	0.094	OI	|	|	|	|	3.09
4.167	0.40	0.09	0.096	OI	|	|	|	|	3.14
4.250	0.40	0.09	0.098	OI	|	|	|	|	3.19
4.333	0.40	0.09	0.100	OI	|	|	|	|	3.24
4.417	0.41	0.09	0.102	OI	|	|	|	|	3.30
4.500	0.41	0.09	0.105	OI	|	|	|	|	3.35
4.583	0.41	0.09	0.107	OI	|	|	|	|	3.40
4.667	0.41	0.09	0.109	OI	|	|	|	|	3.45
4.750	0.41	0.09	0.111	OI	|	|	|	|	3.50
4.833	0.41	0.09	0.113	OI	|	|	|	|	3.56
4.917	0.42	0.09	0.116	OI	|	|	|	|	3.61
5.000	0.42	0.09	0.118	OI	|	|	|	|	3.66
5.083	0.42	0.09	0.120	OI	|	|	|	|	3.71
5.167	0.42	0.09	0.122	OI	|	|	|	|	3.76
5.250	0.42	0.09	0.125	OI	|	|	|	|	3.81
5.333	0.42	0.09	0.127	OI	|	|	|	|	3.86
5.417	0.42	0.09	0.129	OI	|	|	|	|	3.92
5.500	0.43	0.09	0.132	OI	|	|	|	|	3.97
5.583	0.43	0.09	0.134	OI	|	|	|	|	4.02
5.667	0.43	0.09	0.136	OI	|	|	|	|	4.07
5.750	0.43	0.09	0.139	OI	|	|	|	|	4.13
5.833	0.43	0.09	0.141	OI	|	|	|	|	4.18
5.917	0.44	0.09	0.143	OI	|	|	|	|	4.24
6.000	0.44	0.09	0.146	OI	|	|	|	|	4.29
6.083	0.44	0.09	0.148	OI	|	|	|	|	4.34
6.167	0.44	0.09	0.151	OI	|	|	|	|	4.40
6.250	0.44	0.09	0.153	OI	|	|	|	|	4.45
6.333	0.44	0.09	0.155	OI	|	|	|	|	4.51
6.417	0.45	0.09	0.158	OI	|	|	|	|	4.56
6.500	0.45	0.09	0.160	OI	|	|	|	|	4.62
6.583	0.45	0.09	0.163	OI	|	|	|	|	4.68
6.667	0.45	0.09	0.165	OI	|	|	|	|	4.73
6.750	0.45	0.09	0.168	OI	|	|	|	|	4.79
6.833	0.46	0.09	0.170	OI	|	|	|	|	4.85
6.917	0.46	0.09	0.173	OI	|	|	|	|	4.90
7.000	0.46	0.09	0.175	OI	|	|	|	|	4.96
7.083	0.46	0.09	0.178	OI	|	|	|	|	5.02
7.167	0.46	0.09	0.180	OI	|	|	|	|	5.08
7.250	0.47	0.09	0.183	OI	|	|	|	|	5.14
7.333	0.47	0.09	0.186	OI	|	|	|	|	5.20
7.417	0.47	0.09	0.188	OI	|	|	|	|	5.26
7.500	0.47	0.09	0.191	OI	|	|	|	|	5.32
7.583	0.48	0.09	0.194	OI	|	|	|	|	5.38
7.667	0.48	0.09	0.196	OI	|	|	|	|	5.44
7.750	0.48	0.09	0.199	OI	|	|	|	|	5.50

7.833	0.48	0.09	0.202	OI	|	|	|	|	5.56
7.917	0.49	0.09	0.204	OI	|	|	|	|	5.62
8.000	0.49	0.09	0.207	OI	|	|	|	|	5.68
8.083	0.49	0.09	0.210	OI	|	|	|	|	5.75
8.167	0.49	0.09	0.213	OI	|	|	|	|	5.81
8.250	0.50	0.09	0.215	OI	|	|	|	|	5.87
8.333	0.50	0.09	0.218	OI	|	|	|	|	5.94
8.417	0.50	0.09	0.221	OI	|	|	|	|	6.00
8.500	0.50	0.23	0.223	OI	|	|	|	|	6.05
8.583	0.51	0.33	0.225	OI	|	|	|	|	6.09
8.667	0.51	0.39	0.226	OI	|	|	|	|	6.11
8.750	0.51	0.43	0.227	|O	|	|	|	|	6.13
8.833	0.52	0.46	0.227	|O	|	|	|	|	6.14
8.917	0.52	0.48	0.227	|O	|	|	|	|	6.15
9.000	0.52	0.49	0.228	|O	|	|	|	|	6.15
9.083	0.52	0.50	0.228	|O	|	|	|	|	6.15
9.167	0.53	0.51	0.228	|O	|	|	|	|	6.16
9.250	0.53	0.52	0.228	|O	|	|	|	|	6.16
9.333	0.53	0.52	0.228	|O	|	|	|	|	6.16
9.417	0.54	0.53	0.228	|O	|	|	|	|	6.16
9.500	0.54	0.53	0.228	|O	|	|	|	|	6.16
9.583	0.54	0.54	0.228	|O	|	|	|	|	6.17
9.667	0.55	0.54	0.228	|O	|	|	|	|	6.17
9.750	0.55	0.54	0.228	|O	|	|	|	|	6.17
9.833	0.56	0.55	0.228	|O	|	|	|	|	6.17
9.917	0.56	0.55	0.229	|O	|	|	|	|	6.17
10.000	0.56	0.55	0.229	|O	|	|	|	|	6.17
10.083	0.57	0.56	0.229	|O	|	|	|	|	6.17
10.167	0.57	0.56	0.229	|O	|	|	|	|	6.18
10.250	0.57	0.57	0.229	|O	|	|	|	|	6.18
10.333	0.58	0.57	0.229	|O	|	|	|	|	6.18
10.417	0.58	0.57	0.229	|O	|	|	|	|	6.18
10.500	0.59	0.58	0.229	|O	|	|	|	|	6.18
10.583	0.59	0.58	0.229	|O	|	|	|	|	6.18
10.667	0.60	0.59	0.229	|O	|	|	|	|	6.19
10.750	0.60	0.59	0.229	|O	|	|	|	|	6.19
10.833	0.61	0.60	0.229	|O	|	|	|	|	6.19
10.917	0.61	0.60	0.229	|O	|	|	|	|	6.19
11.000	0.62	0.60	0.229	|O	|	|	|	|	6.19
11.083	0.62	0.61	0.230	|O	|	|	|	|	6.19
11.167	0.63	0.61	0.230	|O	|	|	|	|	6.20
11.250	0.63	0.62	0.230	|O	|	|	|	|	6.20
11.333	0.64	0.62	0.230	|O	|	|	|	|	6.20
11.417	0.64	0.63	0.230	|O	|	|	|	|	6.20
11.500	0.65	0.64	0.230	|O	|	|	|	|	6.20
11.583	0.65	0.64	0.230	|O	|	|	|	|	6.21
11.667	0.66	0.65	0.230	|O	|	|	|	|	6.21
11.750	0.67	0.65	0.230	|O	|	|	|	|	6.21
11.833	0.67	0.66	0.230	|O	|	|	|	|	6.21
11.917	0.68	0.67	0.230	|O	|	|	|	|	6.21
12.000	0.69	0.67	0.231	|O	|	|	|	|	6.22
12.083	0.71	0.68	0.231	|O	|	|	|	|	6.22
12.167	0.75	0.70	0.231	|O	|	|	|	|	6.23
12.250	0.76	0.72	0.231	|O	|	|	|	|	6.23
12.333	0.77	0.73	0.232	|O	|	|	|	|	6.24
12.417	0.77	0.75	0.232	|O	|	|	|	|	6.24
12.500	0.78	0.76	0.232	|O	|	|	|	|	6.25
12.583	0.79	0.77	0.232	|OI	|	|	|	|	6.25
12.667	0.80	0.78	0.232	|OI	|	|	|	|	6.26

12.750	0.81	0.79	0.232	O				6.26
12.833	0.82	0.80	0.233	O				6.26
12.917	0.83	0.81	0.233	O				6.27
13.000	0.84	0.82	0.233	O				6.27
13.083	0.85	0.83	0.233	O				6.27
13.167	0.86	0.84	0.233	O				6.28
13.250	0.87	0.85	0.233	O				6.28
13.333	0.88	0.86	0.234	O				6.29
13.417	0.90	0.87	0.234	O				6.29
13.500	0.91	0.88	0.234	O				6.30
13.583	0.92	0.89	0.234	O				6.30
13.667	0.94	0.91	0.234	O				6.30
13.750	0.95	0.92	0.235	O				6.31
13.833	0.97	0.93	0.235	O				6.32
13.917	0.99	0.95	0.235	O				6.32
14.000	1.01	0.97	0.235	O				6.33
14.083	1.02	0.98	0.236	O				6.33
14.167	1.04	1.00	0.236	O				6.34
14.250	1.06	1.02	0.236	O				6.35
14.333	1.09	1.04	0.237	O				6.35
14.417	1.11	1.06	0.237	O				6.36
14.500	1.14	1.08	0.237	O				6.37
14.583	1.17	1.11	0.238	O				6.38
14.667	1.20	1.13	0.238	OI				6.39
14.750	1.23	1.16	0.239	OI				6.40
14.833	1.27	1.19	0.239	O				6.41
14.917	1.30	1.22	0.240	O				6.42
15.000	1.35	1.26	0.240	O				6.44
15.083	1.40	1.30	0.241	O				6.45
15.167	1.46	1.34	0.242	O				6.47
15.250	1.51	1.39	0.242	O				6.49
15.333	1.59	1.45	0.243	OI				6.51
15.417	1.57	1.50	0.244	OI				6.53
15.500	1.40	1.49	0.244	O				6.52
15.583	1.46	1.47	0.244	O				6.51
15.667	1.62	1.50	0.244	OI				6.52
15.750	1.81	1.58	0.245	O				6.55
15.833	2.14	1.72	0.248	OI				6.61
15.917	2.69	1.97	0.252	OI				6.70
16.000	3.91	2.45	0.259	O	I			6.88
16.083	7.97	3.60	0.279		O	I		7.38
16.167	12.53	5.39	0.319		O		I	8.46
16.250	4.33	6.23	0.337		I O			9.14
16.333	1.92	5.37	0.318	I	O			8.45
16.417	1.60	4.44	0.297	I	O			7.84
16.500	1.64	3.65	0.280	I	O			7.40
16.583	1.53	2.99	0.268	I O				7.10
16.667	1.41	2.47	0.259	I O				6.89
16.750	1.31	2.07	0.253	I O				6.74
16.833	1.24	1.79	0.249	IO				6.63
16.917	1.17	1.58	0.245	I O				6.56
17.000	1.12	1.42	0.243	IO				6.50
17.083	1.07	1.31	0.241	IO				6.45
17.167	1.03	1.22	0.240	IO				6.42
17.250	0.99	1.15	0.238	O				6.39
17.333	0.96	1.09	0.237	O				6.37
17.417	0.93	1.04	0.237	O				6.35
17.500	0.90	0.99	0.236	O				6.34
17.583	0.87	0.96	0.235	O				6.32

17.667	0.85	0.92	0.235	| O	|	|	|	6.31
17.750	0.83	0.89	0.234	| O	|	|	|	6.30
17.833	0.81	0.87	0.234	| O	|	|	|	6.29
17.917	0.79	0.85	0.233	| O	|	|	|	6.28
18.000	0.78	0.82	0.233	|IO	|	|	|	6.27
18.083	0.75	0.80	0.233	|IO	|	|	|	6.27
18.167	0.70	0.78	0.232	|O	|	|	|	6.26
18.250	0.68	0.75	0.232	|O	|	|	|	6.24
18.333	0.67	0.72	0.231	|O	|	|	|	6.24
18.417	0.66	0.70	0.231	|O	|	|	|	6.23
18.500	0.64	0.68	0.231	|O	|	|	|	6.22
18.583	0.63	0.67	0.230	|O	|	|	|	6.22
18.667	0.62	0.65	0.230	|O	|	|	|	6.21
18.750	0.61	0.64	0.230	|O	|	|	|	6.21
18.833	0.60	0.63	0.230	|O	|	|	|	6.20
18.917	0.59	0.62	0.230	|O	|	|	|	6.20
19.000	0.58	0.61	0.229	|O	|	|	|	6.19
19.083	0.58	0.60	0.229	|O	|	|	|	6.19
19.167	0.57	0.59	0.229	|O	|	|	|	6.19
19.250	0.56	0.58	0.229	|O	|	|	|	6.18
19.333	0.55	0.57	0.229	|O	|	|	|	6.18
19.417	0.55	0.56	0.229	|O	|	|	|	6.18
19.500	0.54	0.56	0.229	|O	|	|	|	6.17
19.583	0.53	0.55	0.229	|O	|	|	|	6.17
19.667	0.53	0.54	0.228	|O	|	|	|	6.17
19.750	0.52	0.53	0.228	|O	|	|	|	6.17
19.833	0.51	0.53	0.228	|O	|	|	|	6.16
19.917	0.51	0.52	0.228	|O	|	|	|	6.16
20.000	0.50	0.52	0.228	|O	|	|	|	6.16
20.083	0.50	0.51	0.228	|O	|	|	|	6.16
20.167	0.49	0.50	0.228	|O	|	|	|	6.15
20.250	0.49	0.50	0.228	|O	|	|	|	6.15
20.333	0.48	0.49	0.228	|O	|	|	|	6.15
20.417	0.48	0.49	0.228	|O	|	|	|	6.15
20.500	0.47	0.48	0.227	|O	|	|	|	6.15
20.583	0.47	0.48	0.227	|O	|	|	|	6.15
20.667	0.46	0.47	0.227	|O	|	|	|	6.14
20.750	0.46	0.47	0.227	|O	|	|	|	6.14
20.833	0.45	0.46	0.227	|O	|	|	|	6.14
20.917	0.45	0.46	0.227	|O	|	|	|	6.14
21.000	0.45	0.46	0.227	|O	|	|	|	6.14
21.083	0.44	0.45	0.227	|O	|	|	|	6.14
21.167	0.44	0.45	0.227	|O	|	|	|	6.13
21.250	0.44	0.44	0.227	|O	|	|	|	6.13
21.333	0.43	0.44	0.227	|O	|	|	|	6.13
21.417	0.43	0.44	0.227	|O	|	|	|	6.13
21.500	0.43	0.43	0.227	|O	|	|	|	6.13
21.583	0.42	0.43	0.227	|O	|	|	|	6.13
21.667	0.42	0.43	0.227	|O	|	|	|	6.13
21.750	0.42	0.42	0.226	|O	|	|	|	6.12
21.833	0.41	0.42	0.226	|O	|	|	|	6.12
21.917	0.41	0.42	0.226	|O	|	|	|	6.12
22.000	0.41	0.41	0.226	|O	|	|	|	6.12
22.083	0.40	0.41	0.226	|O	|	|	|	6.12
22.167	0.40	0.41	0.226	|O	|	|	|	6.12
22.250	0.40	0.40	0.226	|O	|	|	|	6.12
22.333	0.40	0.40	0.226	|O	|	|	|	6.12
22.417	0.39	0.40	0.226	|O	|	|	|	6.12
22.500	0.39	0.40	0.226	IO	|	|	|	6.11

22.583	0.39	0.39	0.226	IO					6.11
22.667	0.38	0.39	0.226	O					6.11
22.750	0.38	0.39	0.226	O					6.11
22.833	0.38	0.39	0.226	O					6.11
22.917	0.38	0.38	0.226	O					6.11
23.000	0.38	0.38	0.226	O					6.11
23.083	0.37	0.38	0.226	O					6.11
23.167	0.37	0.38	0.226	O					6.11
23.250	0.37	0.37	0.226	O					6.11
23.333	0.37	0.37	0.226	O					6.11
23.417	0.36	0.37	0.226	O					6.10
23.500	0.36	0.37	0.226	O					6.10
23.583	0.36	0.37	0.226	O					6.10
23.667	0.36	0.36	0.225	O					6.10
23.750	0.36	0.36	0.225	O					6.10
23.833	0.35	0.36	0.225	O					6.10
23.917	0.35	0.36	0.225	O					6.10
24.000	0.35	0.35	0.225	O					6.10
24.083	0.27	0.34	0.225	O					6.09
24.167	0.04	0.27	0.224	O					6.07
24.250	0.00	0.19	0.223	O					6.04
24.333	0.00	0.12	0.222	O					6.01
24.417	0.00	0.09	0.221	O					6.00
24.500	0.00	0.09	0.220	O					5.98
24.583	0.00	0.09	0.220	O					5.97
24.667	0.00	0.09	0.219	O					5.95
24.750	0.00	0.09	0.218	O					5.94
24.833	0.00	0.09	0.218	O					5.92
24.917	0.00	0.09	0.217	O					5.91
25.000	0.00	0.09	0.216	O					5.90
25.083	0.00	0.09	0.216	O					5.88
25.167	0.00	0.09	0.215	O					5.87
25.250	0.00	0.09	0.215	O					5.85
25.333	0.00	0.09	0.214	O					5.84
25.417	0.00	0.09	0.213	O					5.83
25.500	0.00	0.09	0.213	O					5.81
25.583	0.00	0.09	0.212	O					5.80
25.667	0.00	0.09	0.211	O					5.78
25.750	0.00	0.09	0.211	O					5.77
25.833	0.00	0.09	0.210	O					5.76
25.917	0.00	0.09	0.210	O					5.74
26.000	0.00	0.09	0.209	O					5.73
26.083	0.00	0.09	0.208	O					5.71
26.167	0.00	0.09	0.208	O					5.70
26.250	0.00	0.09	0.207	O					5.69
26.333	0.00	0.09	0.207	O					5.67
26.417	0.00	0.09	0.206	O					5.66
26.500	0.00	0.09	0.205	O					5.64
26.583	0.00	0.09	0.205	O					5.63
26.667	0.00	0.09	0.204	O					5.61
26.750	0.00	0.09	0.203	O					5.60
26.833	0.00	0.09	0.203	O					5.59
26.917	0.00	0.09	0.202	O					5.57
27.000	0.00	0.09	0.202	O					5.56
27.083	0.00	0.09	0.201	O					5.54
27.167	0.00	0.09	0.200	O					5.53
27.250	0.00	0.09	0.200	O					5.52
27.333	0.00	0.09	0.199	O					5.50
27.417	0.00	0.09	0.198	O					5.49

27.500	0.00	0.09	0.198	O	|	|	|	|	5.47
27.583	0.00	0.09	0.197	O	|	|	|	|	5.46
27.667	0.00	0.09	0.197	O	|	|	|	|	5.45
27.750	0.00	0.09	0.196	O	|	|	|	|	5.43
27.833	0.00	0.09	0.195	O	|	|	|	|	5.42
27.917	0.00	0.09	0.195	O	|	|	|	|	5.40
28.000	0.00	0.09	0.194	O	|	|	|	|	5.39
28.083	0.00	0.09	0.194	O	|	|	|	|	5.38
28.167	0.00	0.09	0.193	O	|	|	|	|	5.36
28.250	0.00	0.09	0.192	O	|	|	|	|	5.35
28.333	0.00	0.09	0.192	O	|	|	|	|	5.33
28.417	0.00	0.09	0.191	O	|	|	|	|	5.32
28.500	0.00	0.09	0.190	O	|	|	|	|	5.30
28.583	0.00	0.09	0.190	O	|	|	|	|	5.29
28.667	0.00	0.09	0.189	O	|	|	|	|	5.28
28.750	0.00	0.09	0.189	O	|	|	|	|	5.26
28.833	0.00	0.09	0.188	O	|	|	|	|	5.25
28.917	0.00	0.09	0.187	O	|	|	|	|	5.23
29.000	0.00	0.09	0.187	O	|	|	|	|	5.22
29.083	0.00	0.09	0.186	O	|	|	|	|	5.21
29.167	0.00	0.09	0.185	O	|	|	|	|	5.19
29.250	0.00	0.09	0.185	O	|	|	|	|	5.18
29.333	0.00	0.09	0.184	O	|	|	|	|	5.16
29.417	0.00	0.09	0.184	O	|	|	|	|	5.15
29.500	0.00	0.09	0.183	O	|	|	|	|	5.14
29.583	0.00	0.09	0.182	O	|	|	|	|	5.12
29.667	0.00	0.09	0.182	O	|	|	|	|	5.11
29.750	0.00	0.09	0.181	O	|	|	|	|	5.09
29.833	0.00	0.09	0.180	O	|	|	|	|	5.08
29.917	0.00	0.09	0.180	O	|	|	|	|	5.07
30.000	0.00	0.09	0.179	O	|	|	|	|	5.05
30.083	0.00	0.09	0.179	O	|	|	|	|	5.04
30.167	0.00	0.09	0.178	O	|	|	|	|	5.02
30.250	0.00	0.09	0.177	O	|	|	|	|	5.01
30.333	0.00	0.09	0.177	O	|	|	|	|	5.00
30.417	0.00	0.09	0.176	O	|	|	|	|	4.98
30.500	0.00	0.09	0.176	O	|	|	|	|	4.97
30.583	0.00	0.09	0.175	O	|	|	|	|	4.95
30.667	0.00	0.09	0.174	O	|	|	|	|	4.94
30.750	0.00	0.09	0.174	O	|	|	|	|	4.92
30.833	0.00	0.09	0.173	O	|	|	|	|	4.91
30.917	0.00	0.09	0.172	O	|	|	|	|	4.90
31.000	0.00	0.09	0.172	O	|	|	|	|	4.88
31.083	0.00	0.09	0.171	O	|	|	|	|	4.87
31.167	0.00	0.09	0.171	O	|	|	|	|	4.85
31.250	0.00	0.09	0.170	O	|	|	|	|	4.84
31.333	0.00	0.09	0.169	O	|	|	|	|	4.83
31.417	0.00	0.09	0.169	O	|	|	|	|	4.81
31.500	0.00	0.09	0.168	O	|	|	|	|	4.80
31.583	0.00	0.09	0.167	O	|	|	|	|	4.78
31.667	0.00	0.09	0.167	O	|	|	|	|	4.77
31.750	0.00	0.09	0.166	O	|	|	|	|	4.76
31.833	0.00	0.09	0.166	O	|	|	|	|	4.74
31.917	0.00	0.09	0.165	O	|	|	|	|	4.73
32.000	0.00	0.09	0.164	O	|	|	|	|	4.71
32.083	0.00	0.09	0.164	O	|	|	|	|	4.70
32.167	0.00	0.09	0.163	O	|	|	|	|	4.69
32.250	0.00	0.09	0.163	O	|	|	|	|	4.67
32.333	0.00	0.09	0.162	O	|	|	|	|	4.66

32.417	0.00	0.09	0.161	O					4.64
32.500	0.00	0.09	0.161	O					4.63
32.583	0.00	0.09	0.160	O					4.61
32.667	0.00	0.09	0.159	O					4.60
32.750	0.00	0.09	0.159	O					4.59
32.833	0.00	0.09	0.158	O					4.57
32.917	0.00	0.09	0.158	O					4.56
33.000	0.00	0.09	0.157	O					4.54
33.083	0.00	0.09	0.156	O					4.53
33.167	0.00	0.09	0.156	O					4.52
33.250	0.00	0.09	0.155	O					4.50
33.333	0.00	0.09	0.154	O					4.49
33.417	0.00	0.09	0.154	O					4.47
33.500	0.00	0.09	0.153	O					4.46
33.583	0.00	0.09	0.153	O					4.45
33.667	0.00	0.09	0.152	O					4.43
33.750	0.00	0.09	0.151	O					4.42
33.833	0.00	0.09	0.151	O					4.40
33.917	0.00	0.09	0.150	O					4.39
34.000	0.00	0.09	0.150	O					4.38
34.083	0.00	0.09	0.149	O					4.36
34.167	0.00	0.09	0.148	O					4.35
34.250	0.00	0.09	0.148	O					4.33
34.333	0.00	0.09	0.147	O					4.32
34.417	0.00	0.09	0.146	O					4.30
34.500	0.00	0.09	0.146	O					4.29
34.583	0.00	0.09	0.145	O					4.28
34.667	0.00	0.09	0.145	O					4.26
34.750	0.00	0.09	0.144	O					4.25
34.833	0.00	0.09	0.143	O					4.23
34.917	0.00	0.09	0.143	O					4.22
35.000	0.00	0.09	0.142	O					4.21
35.083	0.00	0.09	0.141	O					4.19
35.167	0.00	0.09	0.141	O					4.18
35.250	0.00	0.09	0.140	O					4.16
35.333	0.00	0.09	0.140	O					4.15
35.417	0.00	0.09	0.139	O					4.14
35.500	0.00	0.09	0.138	O					4.12
35.583	0.00	0.09	0.138	O					4.11
35.667	0.00	0.09	0.137	O					4.09
35.750	0.00	0.09	0.136	O					4.08
35.833	0.00	0.09	0.136	O					4.07
35.917	0.00	0.09	0.135	O					4.05
36.000	0.00	0.09	0.135	O					4.04
36.083	0.00	0.09	0.134	O					4.02
36.167	0.00	0.09	0.133	O					4.01
36.250	0.00	0.09	0.133	O					3.99
36.333	0.00	0.09	0.132	O					3.98
36.417	0.00	0.09	0.132	O					3.97
36.500	0.00	0.09	0.131	O					3.95
36.583	0.00	0.09	0.130	O					3.94
36.667	0.00	0.09	0.130	O					3.92
36.750	0.00	0.09	0.129	O					3.91
36.833	0.00	0.09	0.128	O					3.90
36.917	0.00	0.09	0.128	O					3.88
37.000	0.00	0.09	0.127	O					3.87
37.083	0.00	0.09	0.127	O					3.85
37.167	0.00	0.09	0.126	O					3.84
37.250	0.00	0.09	0.125	O					3.83

37.333	0.00	0.09	0.125	O	|	|	|	|	3.81
37.417	0.00	0.09	0.124	O	|	|	|	|	3.80
37.500	0.00	0.09	0.123	O	|	|	|	|	3.78
37.583	0.00	0.09	0.123	O	|	|	|	|	3.77
37.667	0.00	0.09	0.122	O	|	|	|	|	3.76
37.750	0.00	0.09	0.122	O	|	|	|	|	3.74
37.833	0.00	0.09	0.121	O	|	|	|	|	3.73
37.917	0.00	0.09	0.120	O	|	|	|	|	3.71
38.000	0.00	0.09	0.120	O	|	|	|	|	3.70
38.083	0.00	0.09	0.119	O	|	|	|	|	3.68
38.167	0.00	0.09	0.119	O	|	|	|	|	3.67
38.250	0.00	0.09	0.118	O	|	|	|	|	3.66
38.333	0.00	0.09	0.117	O	|	|	|	|	3.64
38.417	0.00	0.09	0.117	O	|	|	|	|	3.63
38.500	0.00	0.09	0.116	O	|	|	|	|	3.61
38.583	0.00	0.09	0.115	O	|	|	|	|	3.60
38.667	0.00	0.09	0.115	O	|	|	|	|	3.59
38.750	0.00	0.09	0.114	O	|	|	|	|	3.57
38.833	0.00	0.09	0.114	O	|	|	|	|	3.56
38.917	0.00	0.09	0.113	O	|	|	|	|	3.54
39.000	0.00	0.09	0.112	O	|	|	|	|	3.53
39.083	0.00	0.09	0.112	O	|	|	|	|	3.52
39.167	0.00	0.09	0.111	O	|	|	|	|	3.50
39.250	0.00	0.09	0.110	O	|	|	|	|	3.49
39.333	0.00	0.09	0.110	O	|	|	|	|	3.47
39.417	0.00	0.09	0.109	O	|	|	|	|	3.46
39.500	0.00	0.09	0.109	O	|	|	|	|	3.44
39.583	0.00	0.09	0.108	O	|	|	|	|	3.43
39.667	0.00	0.09	0.107	O	|	|	|	|	3.41
39.750	0.00	0.09	0.107	O	|	|	|	|	3.40
39.833	0.00	0.09	0.106	O	|	|	|	|	3.38
39.917	0.00	0.09	0.105	O	|	|	|	|	3.37
40.000	0.00	0.09	0.105	O	|	|	|	|	3.35
40.083	0.00	0.09	0.104	O	|	|	|	|	3.34
40.167	0.00	0.09	0.104	O	|	|	|	|	3.32
40.250	0.00	0.09	0.103	O	|	|	|	|	3.31
40.333	0.00	0.09	0.102	O	|	|	|	|	3.30
40.417	0.00	0.09	0.102	O	|	|	|	|	3.28
40.500	0.00	0.09	0.101	O	|	|	|	|	3.27
40.583	0.00	0.09	0.101	O	|	|	|	|	3.25
40.667	0.00	0.09	0.100	O	|	|	|	|	3.24
40.750	0.00	0.09	0.099	O	|	|	|	|	3.22
40.833	0.00	0.09	0.099	O	|	|	|	|	3.21
40.917	0.00	0.09	0.098	O	|	|	|	|	3.19
41.000	0.00	0.09	0.097	O	|	|	|	|	3.18
41.083	0.00	0.09	0.097	O	|	|	|	|	3.16
41.167	0.00	0.09	0.096	O	|	|	|	|	3.15
41.250	0.00	0.09	0.096	O	|	|	|	|	3.13
41.333	0.00	0.09	0.095	O	|	|	|	|	3.12
41.417	0.00	0.09	0.094	O	|	|	|	|	3.10
41.500	0.00	0.09	0.094	O	|	|	|	|	3.09
41.583	0.00	0.09	0.093	O	|	|	|	|	3.07
41.667	0.00	0.09	0.092	O	|	|	|	|	3.06
41.750	0.00	0.09	0.092	O	|	|	|	|	3.04
41.833	0.00	0.09	0.091	O	|	|	|	|	3.03
41.917	0.00	0.09	0.091	O	|	|	|	|	3.01
42.000	0.00	0.09	0.090	O	|	|	|	|	3.00
42.083	0.00	0.09	0.089	O	|	|	|	|	2.98
42.167	0.00	0.09	0.089	O	|	|	|	|	2.97

42.250	0.00	0.09	0.088	O	|	|	|	|	2.95
42.333	0.00	0.09	0.088	O	|	|	|	|	2.94
42.417	0.00	0.09	0.087	O	|	|	|	|	2.92
42.500	0.00	0.09	0.086	O	|	|	|	|	2.91
42.583	0.00	0.09	0.086	O	|	|	|	|	2.89
42.667	0.00	0.09	0.085	O	|	|	|	|	2.88
42.750	0.00	0.09	0.084	O	|	|	|	|	2.86
42.833	0.00	0.09	0.084	O	|	|	|	|	2.85
42.917	0.00	0.09	0.083	O	|	|	|	|	2.83
43.000	0.00	0.09	0.083	O	|	|	|	|	2.81
43.083	0.00	0.09	0.082	O	|	|	|	|	2.80
43.167	0.00	0.09	0.081	O	|	|	|	|	2.78
43.250	0.00	0.09	0.081	O	|	|	|	|	2.77
43.333	0.00	0.09	0.080	O	|	|	|	|	2.75
43.417	0.00	0.09	0.079	O	|	|	|	|	2.74
43.500	0.00	0.09	0.079	O	|	|	|	|	2.72
43.583	0.00	0.09	0.078	O	|	|	|	|	2.71
43.667	0.00	0.09	0.078	O	|	|	|	|	2.69
43.750	0.00	0.09	0.077	O	|	|	|	|	2.67
43.833	0.00	0.09	0.076	O	|	|	|	|	2.66
43.917	0.00	0.09	0.076	O	|	|	|	|	2.64
44.000	0.00	0.09	0.075	O	|	|	|	|	2.63
44.083	0.00	0.09	0.075	O	|	|	|	|	2.61
44.167	0.00	0.09	0.074	O	|	|	|	|	2.60
44.250	0.00	0.09	0.073	O	|	|	|	|	2.58
44.333	0.00	0.09	0.073	O	|	|	|	|	2.57
44.417	0.00	0.09	0.072	O	|	|	|	|	2.55
44.500	0.00	0.09	0.071	O	|	|	|	|	2.54
44.583	0.00	0.09	0.071	O	|	|	|	|	2.52
44.667	0.00	0.09	0.070	O	|	|	|	|	2.50
44.750	0.00	0.09	0.070	O	|	|	|	|	2.49
44.833	0.00	0.09	0.069	O	|	|	|	|	2.47
44.917	0.00	0.09	0.068	O	|	|	|	|	2.46
45.000	0.00	0.09	0.068	O	|	|	|	|	2.44
45.083	0.00	0.09	0.067	O	|	|	|	|	2.42
45.167	0.00	0.09	0.066	O	|	|	|	|	2.41
45.250	0.00	0.09	0.066	O	|	|	|	|	2.39
45.333	0.00	0.09	0.065	O	|	|	|	|	2.37
45.417	0.00	0.09	0.065	O	|	|	|	|	2.36
45.500	0.00	0.09	0.064	O	|	|	|	|	2.34
45.583	0.00	0.09	0.063	O	|	|	|	|	2.33
45.667	0.00	0.09	0.063	O	|	|	|	|	2.31
45.750	0.00	0.09	0.062	O	|	|	|	|	2.29
45.833	0.00	0.09	0.061	O	|	|	|	|	2.28
45.917	0.00	0.09	0.061	O	|	|	|	|	2.26
46.000	0.00	0.09	0.060	O	|	|	|	|	2.24
46.083	0.00	0.09	0.060	O	|	|	|	|	2.23
46.167	0.00	0.09	0.059	O	|	|	|	|	2.21
46.250	0.00	0.09	0.058	O	|	|	|	|	2.19
46.333	0.00	0.09	0.058	O	|	|	|	|	2.18
46.417	0.00	0.09	0.057	O	|	|	|	|	2.16
46.500	0.00	0.09	0.057	O	|	|	|	|	2.15
46.583	0.00	0.09	0.056	O	|	|	|	|	2.13
46.667	0.00	0.09	0.055	O	|	|	|	|	2.11
46.750	0.00	0.09	0.055	O	|	|	|	|	2.10
46.833	0.00	0.09	0.054	O	|	|	|	|	2.08
46.917	0.00	0.09	0.053	O	|	|	|	|	2.06
47.000	0.00	0.09	0.053	O	|	|	|	|	2.05
47.083	0.00	0.09	0.052	O	|	|	|	|	2.03

47.167	0.00	0.09	0.052	O	|	|	|	|	2.02
47.250	0.00	0.09	0.051	O	|	|	|	|	2.00
47.333	0.00	0.09	0.050	O	|	|	|	|	1.98
47.417	0.00	0.09	0.050	O	|	|	|	|	1.96
47.500	0.00	0.09	0.049	O	|	|	|	|	1.94
47.583	0.00	0.09	0.048	O	|	|	|	|	1.93
47.667	0.00	0.09	0.048	O	|	|	|	|	1.91
47.750	0.00	0.09	0.047	O	|	|	|	|	1.89
47.833	0.00	0.09	0.047	O	|	|	|	|	1.87
47.917	0.00	0.09	0.046	O	|	|	|	|	1.85
48.000	0.00	0.09	0.045	O	|	|	|	|	1.83
48.083	0.00	0.09	0.045	O	|	|	|	|	1.82
48.167	0.00	0.09	0.044	O	|	|	|	|	1.80
48.250	0.00	0.09	0.044	O	|	|	|	|	1.78
48.333	0.00	0.09	0.043	O	|	|	|	|	1.76
48.417	0.00	0.09	0.042	O	|	|	|	|	1.74
48.500	0.00	0.09	0.042	O	|	|	|	|	1.73
48.583	0.00	0.09	0.041	O	|	|	|	|	1.71
48.667	0.00	0.09	0.040	O	|	|	|	|	1.69
48.750	0.00	0.09	0.040	O	|	|	|	|	1.67
48.833	0.00	0.09	0.039	O	|	|	|	|	1.65
48.917	0.00	0.09	0.039	O	|	|	|	|	1.63
49.000	0.00	0.09	0.038	O	|	|	|	|	1.62
49.083	0.00	0.09	0.037	O	|	|	|	|	1.60
49.167	0.00	0.09	0.037	O	|	|	|	|	1.58
49.250	0.00	0.09	0.036	O	|	|	|	|	1.56
49.333	0.00	0.09	0.035	O	|	|	|	|	1.54
49.417	0.00	0.09	0.035	O	|	|	|	|	1.52
49.500	0.00	0.09	0.034	O	|	|	|	|	1.51
49.583	0.00	0.09	0.034	O	|	|	|	|	1.49
49.667	0.00	0.09	0.033	O	|	|	|	|	1.46
49.750	0.00	0.09	0.032	O	|	|	|	|	1.44
49.833	0.00	0.09	0.032	O	|	|	|	|	1.42
49.917	0.00	0.09	0.031	O	|	|	|	|	1.40
50.000	0.00	0.09	0.030	O	|	|	|	|	1.37
50.083	0.00	0.09	0.030	O	|	|	|	|	1.35
50.167	0.00	0.09	0.029	O	|	|	|	|	1.33
50.250	0.00	0.09	0.029	O	|	|	|	|	1.31
50.333	0.00	0.09	0.028	O	|	|	|	|	1.29
50.417	0.00	0.09	0.027	O	|	|	|	|	1.26
50.500	0.00	0.09	0.027	O	|	|	|	|	1.24
50.583	0.00	0.09	0.026	O	|	|	|	|	1.22
50.667	0.00	0.09	0.026	O	|	|	|	|	1.20
50.750	0.00	0.09	0.025	O	|	|	|	|	1.18
50.833	0.00	0.09	0.024	O	|	|	|	|	1.15
50.917	0.00	0.09	0.024	O	|	|	|	|	1.13
51.000	0.00	0.09	0.023	O	|	|	|	|	1.11
51.083	0.00	0.09	0.022	O	|	|	|	|	1.09
51.167	0.00	0.09	0.022	O	|	|	|	|	1.07
51.250	0.00	0.09	0.021	O	|	|	|	|	1.04
51.333	0.00	0.09	0.021	O	|	|	|	|	1.02
51.417	0.00	0.09	0.020	O	|	|	|	|	1.00
51.500	0.00	0.09	0.019	O	|	|	|	|	0.97
51.583	0.00	0.09	0.019	O	|	|	|	|	0.94
51.667	0.00	0.09	0.018	O	|	|	|	|	0.91
51.750	0.00	0.09	0.017	O	|	|	|	|	0.87
51.833	0.00	0.09	0.017	O	|	|	|	|	0.84
51.917	0.00	0.09	0.016	O	|	|	|	|	0.81
52.000	0.00	0.09	0.016	O	|	|	|	|	0.78

52.083	0.00	0.09	0.015	O	|	|	|	|	0.75
52.167	0.00	0.09	0.014	O	|	|	|	|	0.72
52.250	0.00	0.09	0.014	O	|	|	|	|	0.69
52.333	0.00	0.09	0.013	O	|	|	|	|	0.66
52.417	0.00	0.09	0.013	O	|	|	|	|	0.63
52.500	0.00	0.09	0.012	O	|	|	|	|	0.60
52.583	0.00	0.09	0.011	O	|	|	|	|	0.56
52.667	0.00	0.09	0.011	O	|	|	|	|	0.53
52.750	0.00	0.09	0.010	O	|	|	|	|	0.50
52.833	0.00	0.08	0.009	O	|	|	|	|	0.47
52.917	0.00	0.08	0.009	O	|	|	|	|	0.44
53.000	0.00	0.08	0.008	O	|	|	|	|	0.42
53.083	0.00	0.07	0.008	O	|	|	|	|	0.39
53.167	0.00	0.07	0.007	O	|	|	|	|	0.37
53.250	0.00	0.06	0.007	O	|	|	|	|	0.35
53.333	0.00	0.06	0.007	O	|	|	|	|	0.33
53.417	0.00	0.06	0.006	O	|	|	|	|	0.31
53.500	0.00	0.05	0.006	O	|	|	|	|	0.29
53.583	0.00	0.05	0.005	O	|	|	|	|	0.27
53.667	0.00	0.05	0.005	O	|	|	|	|	0.25
53.750	0.00	0.04	0.005	O	|	|	|	|	0.24
53.833	0.00	0.04	0.004	O	|	|	|	|	0.22
53.917	0.00	0.04	0.004	O	|	|	|	|	0.21
54.000	0.00	0.04	0.004	O	|	|	|	|	0.20
54.083	0.00	0.03	0.004	O	|	|	|	|	0.19
54.167	0.00	0.03	0.004	O	|	|	|	|	0.18
54.250	0.00	0.03	0.003	O	|	|	|	|	0.16
54.333	0.00	0.03	0.003	O	|	|	|	|	0.15
54.417	0.00	0.03	0.003	O	|	|	|	|	0.15
54.500	0.00	0.02	0.003	O	|	|	|	|	0.14
54.583	0.00	0.02	0.003	O	|	|	|	|	0.13
54.667	0.00	0.02	0.002	O	|	|	|	|	0.12
54.750	0.00	0.02	0.002	O	|	|	|	|	0.11
54.833	0.00	0.02	0.002	O	|	|	|	|	0.11
54.917	0.00	0.02	0.002	O	|	|	|	|	0.10
55.000	0.00	0.02	0.002	O	|	|	|	|	0.09
55.083	0.00	0.02	0.002	O	|	|	|	|	0.09
55.167	0.00	0.01	0.002	O	|	|	|	|	0.08
55.250	0.00	0.01	0.002	O	|	|	|	|	0.08
55.333	0.00	0.01	0.001	O	|	|	|	|	0.07
55.417	0.00	0.01	0.001	O	|	|	|	|	0.07
55.500	0.00	0.01	0.001	O	|	|	|	|	0.06
55.583	0.00	0.01	0.001	O	|	|	|	|	0.06
55.667	0.00	0.01	0.001	O	|	|	|	|	0.06
55.750	0.00	0.01	0.001	O	|	|	|	|	0.05
55.833	0.00	0.01	0.001	O	|	|	|	|	0.05
55.917	0.00	0.01	0.001	O	|	|	|	|	0.05
56.000	0.00	0.01	0.001	O	|	|	|	|	0.04
56.083	0.00	0.01	0.001	O	|	|	|	|	0.04
56.167	0.00	0.01	0.001	O	|	|	|	|	0.04
56.250	0.00	0.01	0.001	O	|	|	|	|	0.04
56.333	0.00	0.01	0.001	O	|	|	|	|	0.03
56.417	0.00	0.01	0.001	O	|	|	|	|	0.03
56.500	0.00	0.01	0.001	O	|	|	|	|	0.03
56.583	0.00	0.01	0.001	O	|	|	|	|	0.03
56.667	0.00	0.00	0.001	O	|	|	|	|	0.03
56.750	0.00	0.00	0.001	O	|	|	|	|	0.03
56.833	0.00	0.00	0.000	O	|	|	|	|	0.02
56.917	0.00	0.00	0.000	O	|	|	|	|	0.02

57.000	0.00	0.00	0.000	O					0.02
57.083	0.00	0.00	0.000	O					0.02
57.167	0.00	0.00	0.000	O					0.02
57.250	0.00	0.00	0.000	O					0.02
57.333	0.00	0.00	0.000	O					0.02
57.417	0.00	0.00	0.000	O					0.02
57.500	0.00	0.00	0.000	O					0.01
57.583	0.00	0.00	0.000	O					0.01
57.667	0.00	0.00	0.000	O					0.01
57.750	0.00	0.00	0.000	O					0.01
57.833	0.00	0.00	0.000	O					0.01
57.917	0.00	0.00	0.000	O					0.01
58.000	0.00	0.00	0.000	O					0.01
58.083	0.00	0.00	0.000	O					0.01
58.167	0.00	0.00	0.000	O					0.01
58.250	0.00	0.00	0.000	O					0.01
58.333	0.00	0.00	0.000	O					0.01
58.417	0.00	0.00	0.000	O					0.01
58.500	0.00	0.00	0.000	O					0.01
58.583	0.00	0.00	0.000	O					0.01
58.667	0.00	0.00	0.000	O					0.01
58.750	0.00	0.00	0.000	O					0.01
58.833	0.00	0.00	0.000	O					0.01

**********HYDROGRAPH DATA**********

Number of intervals = 706
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 6.231 (CFS)
Total volume = 1.418 (Ac.Ft)

Status of hydrographs being held in storage

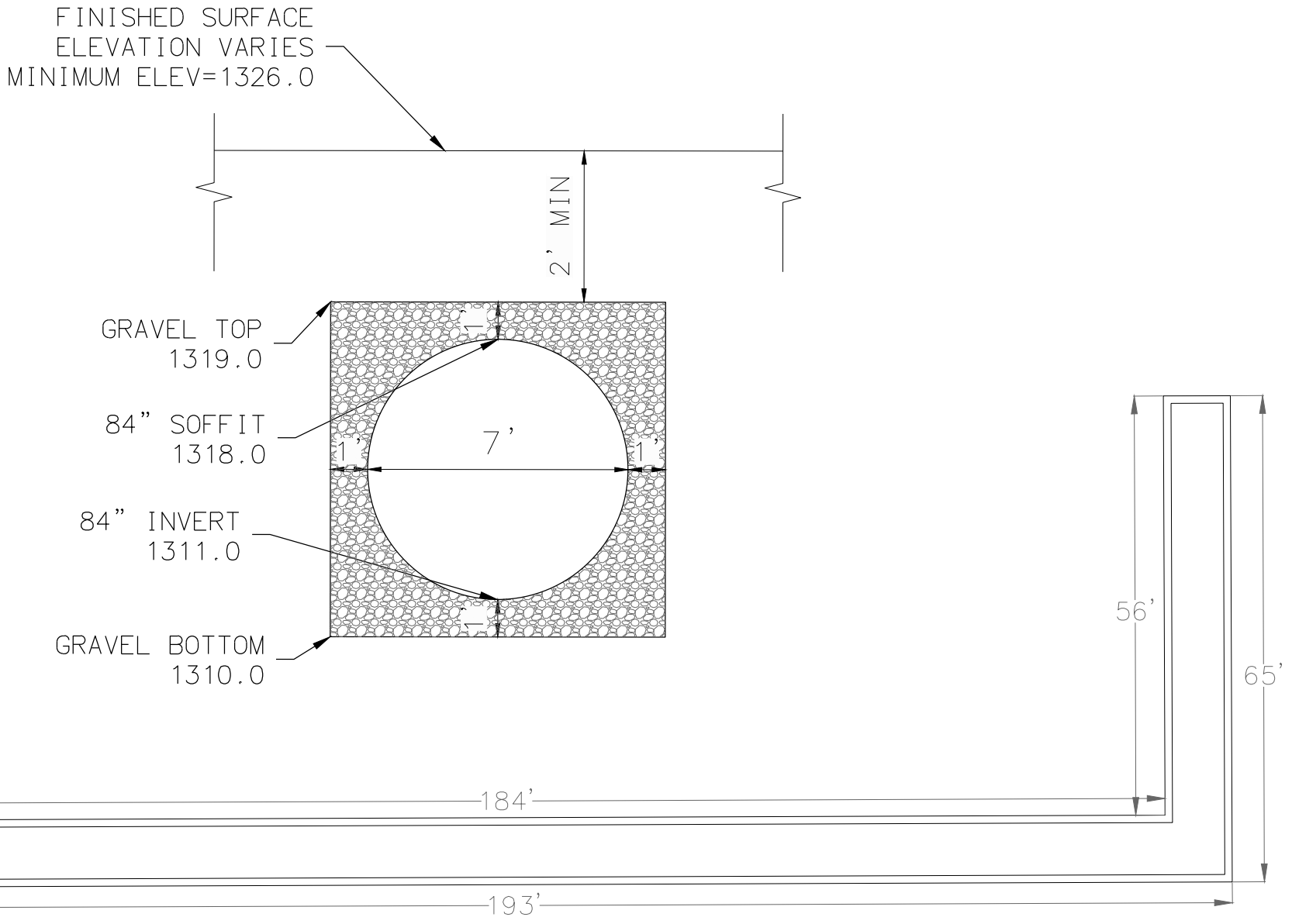
	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

APPENDIX F: BASIN B CALCULATIONS

APPENDIX F.1: SUBSURFACE SYSTEM GRAPHIC

BASIN B
84" SUBSURFACE STORAGE CROSS SECTION
SYSTEM LENGTH=240'



APPENDIX F.2: STAGE-STORAGE-OUTFLOW TABLES

320.05 - Buffalo Grove
Subsurface System B
Stage-Storage-Outflow Summary Table

Elevation	Stage (ft)	Storage (ac-ft)	Infiltration Outflow (cfs)	Pump Outflow (cfs)	Total Outflow (cfs)	
1310	**0**	**0.000**	0	0	**0.00**	BOTTOM GRAVEL=131
1310.5	**0.5**	**0.010**	0.09	0	**0.09**	
1311	**1**	**0.020**	0.09	0	**0.09**	PIPE INV=1311
1311.5	**1.5**	**0.034**	0.09	0	**0.09**	
1312	**2**	**0.051**	0.09	0	**0.09**	
1312.5	**2.5**	**0.070**	0.09	0	**0.09**	
1313	**3**	**0.089**	0.09	0	**0.09**	
1313.5	**3.5**	**0.110**	0.09	0	**0.09**	
1314	**4**	**0.131**	0.09	0	**0.09**	
1314.5	**4.5**	**0.153**	0.09	0	**0.09**	WQ PONDING=1314.9
1315	**5**	**0.174**	0.09	1.5	**1.59**	PUMP STARTS=1315
1315.5	**5.5**	**0.196**	0.09	1.5	**1.59**	
1316	**6**	**0.216**	0.09	1.5	**1.59**	
1316.5	**6.5**	**0.236**	0.09	1.5	**1.59**	
1317	**7**	**0.255**	0.09	1.5	**1.59**	
1317.5	**7.5**	**0.272**	0.09	1.5	**1.59**	
1318	**8**	**0.286**	0.09	1.5	**1.59**	PIPE SOFFIT=1318
1318.5	**8.5**	**0.296**	0.09	1.5	**1.59**	
1319	**9**	**0.306**	0.09	1.5	**1.59**	TOP GRAVEL=1319

BASIN B SUBSURFACE SYSTEM

320.05 - Buffalo Grove

1 Barrel 84-Inch Subsurface Infiltration Basin Volume Calculations

LENGTH OF SUBSURFACE SYSTEM (FT) = 240 **NUMBER OF CELLS 1**

Elevation	Depth	Pipe Depth	Pipe Area Each (ft^2)	Pipe Area Total (ft^2)	Pipe Total Gross Volume at Elev. (ft^3)	Gross Cross Sectional Area of System (ft^2)	Net Gravel Area (ft^2)	Gravel Volume (ft^3)	Cumulative Subsurface System Volume (ft^3)	Cumulative Subsurface System Volume (ac-ft)	Incremental Increase in Subsurface System Volume (ac-ft)	Effective Storage (ac-ft)*
1310	0	0	0.00	0.00	0.00	0	0.00	0.00	0.00	0.000	-	0.000
1310.5	0.5	0	0.00	0.00	0.00	4.5	4.50	432.00	432.00	0.010	0.010	0.010
1311	1	0	0.00	0.00	0.00	9	9.00	864.00	864.00	0.020	0.010	0.020
1311.5	1.5	0.5	1.22	1.22	292.83	13.5	12.28	1178.87	1471.70	0.034	0.014	0.034
1312	2	1	3.37	3.37	809.37	18	14.63	1404.25	2213.62	0.051	0.017	0.051
1312.5	2.5	1.5	6.05	6.05	1451.20	22.5	16.45	1579.52	3030.72	0.070	0.019	0.070
1313	3	2	9.07	9.07	2177.56	27	17.93	1720.97	3898.54	0.089	0.020	0.089
1313.5	3.5	2.5	12.34	12.34	2961.29	31.5	19.16	1839.49	4800.77	0.110	0.021	0.110
1314	4	3	15.75	15.75	3781.01	36	20.25	1943.60	5724.60	0.131	0.021	0.131
1314.5	4.5	3.5	19.24	19.24	4618.14	40.5	21.26	2040.74	6658.88	0.153	0.021	0.153
1315	5	4	22.73	22.73	5455.28	45	22.27	2137.89	7593.17	0.174	0.021	0.174
1315.5	5.5	4.5	26.15	26.15	6275.00	49.5	23.35	2242.00	8517.00	0.196	0.021	0.196
1316	6	5	29.41	29.41	7058.72	54	24.59	2360.51	9419.23	0.216	0.021	0.216
1316.5	6.5	5.5	32.44	32.44	7785.08	58.5	26.06	2501.97	10287.05	0.236	0.020	0.236
1317	7	6	35.11	35.11	8426.91	63	27.89	2677.24	11104.14	0.255	0.019	0.255
1317.5	7.5	6.5	37.26	37.26	8943.45	67.5	30.24	2902.62	11846.07	0.272	0.017	0.272
1318	8	7	38.48	38.48	9236.28	72	33.52	3217.49	12453.77	0.286	0.014	0.286
1318.5	8.5	7	38.48	38.48	9236.28	76.5	38.02	3649.49	12885.77	0.296	0.010	0.296
1319	9	7	38.48	38.48	9236.28	81	42.52	4081.49	13317.77	0.306	0.010	0.306

wq volume

INPUT DATA		
SUBSURFACE SYSTEM NAME	B	-
DIAMETER OF SUBSURFACE SYSTEM	7	FT
NUMBER OF BARRELS	1	EA
LENGTH OF SUBSURFACE SYSTEM	240	FT
BOTTOM INVERT OF GRAVEL BED	1310	FT
EFFECTIVE STORAGE ELEVATION	1310	FT
PIPE SPACING	0	FT
EDGE THICKNESS	1	FT
TOP CLEARANCE, THICKNESS	1	FT
BOTTOM CLEARANCE, THICKNESS	1	FT
GRAVEL POROSITY, N	0.4	-
FT2 -> AC	43560	FT^2/AC

OPTIONAL INPUT DATA		
WATER QUALITY VOLUME TO RETAIN	7330	FT^3
	0.17	AC-FT

320.05 - Buffalo Grove
Subsurface System B
Infiltration Outflow Calculation

VALUE	*UNITS*	*DESCRIPTION*	*CALCULATION*
3.48	IN/HR	MEASURED INFILTRATION RATE	[A] PER TESTING
2		SAFEY FACTOR	[B] PER WORKSHEET
1.74	IN/HR	DESIGN INFILTRATION RATE	[C] = [A] / [B]
0.145	FT/HR	DESIGN INFILTRATION RATE	[D] = [C] / 12
240	FT	INFILTRATION LENGTH	[E] PER DESIGN
9	FT	INFILTRATION WIDTH	[F] PER DESIGN
2160	SF	INFILTRATION AREA	[G] = [E] * [F]
313.2	CF/HR	INFILTRATION RATE	[H] = [D] * [G]
0.09	CF/S	INFILTRATION RATE	[I] = [H] / 60 / 60

APPENDIX F.3: 2-YEAR BASIN ROUTING CALCULATION

FLOOD HYDROGRAPH ROUTING PROGRAM
Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2014
Study date: 04/25/25

320.05 BUFFALO GROVE
BASIN ROUTING; BASIN B
2-YR, 24-HR STORM

Program License Serial Number 6279

********** HYDROGRAPH INFORMATION **********

From study/file name: UPB2.rte
**********HYDROGRAPH DATA**********
Number of intervals = 290
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 3.409 (CFS)
Total volume = 0.375 (Ac.Ft)
Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

++
Process from Point/Station 101.000 to Point/Station 102.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 290
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.500	0.010	0.090	0.010	0.010
1.000	0.020	0.090	0.020	0.020

1.500	0.034	0.090	0.034	0.034
2.000	0.051	0.090	0.051	0.051
2.500	0.070	0.090	0.070	0.070
3.000	0.089	0.090	0.089	0.089
3.500	0.110	0.090	0.110	0.110
4.000	0.131	0.090	0.131	0.131
4.500	0.153	0.090	0.153	0.153
5.000	0.174	1.590	0.169	0.179
5.500	0.196	1.590	0.191	0.201
6.000	0.216	1.590	0.211	0.221
6.500	0.236	1.590	0.231	0.241
7.000	0.255	1.590	0.250	0.260
7.500	0.272	1.590	0.267	0.277
8.000	0.286	1.590	0.281	0.291
8.500	0.296	1.590	0.291	0.301
9.000	0.306	1.590	0.301	0.311

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	0.9	1.70	2.56	3.41	Depth (Ft.)
0.083	0.02	0.00	0.000	O	|	|	|	|	0.00
0.167	0.08	0.00	0.000	O	|	|	|	|	0.02
0.250	0.09	0.01	0.001	O	|	|	|	|	0.05
0.333	0.09	0.01	0.001	O	|	|	|	|	0.07
0.417	0.09	0.02	0.002	O	|	|	|	|	0.10
0.500	0.09	0.02	0.002	O	|	|	|	|	0.12
0.583	0.09	0.03	0.003	O	|	|	|	|	0.14
0.667	0.09	0.03	0.003	O	|	|	|	|	0.16
0.750	0.09	0.03	0.004	O	|	|	|	|	0.18
0.833	0.09	0.04	0.004	O	|	|	|	|	0.20
0.917	0.09	0.04	0.004	O	|	|	|	|	0.22
1.000	0.09	0.04	0.005	O	|	|	|	|	0.23
1.083	0.09	0.04	0.005	O	|	|	|	|	0.25
1.167	0.09	0.05	0.005	O	|	|	|	|	0.26
1.250	0.09	0.05	0.006	O	|	|	|	|	0.28
1.333	0.09	0.05	0.006	O	|	|	|	|	0.29
1.417	0.09	0.05	0.006	O	|	|	|	|	0.30
1.500	0.09	0.06	0.006	O	|	|	|	|	0.31
1.583	0.09	0.06	0.006	O	|	|	|	|	0.32
1.667	0.09	0.06	0.007	O	|	|	|	|	0.33
1.750	0.09	0.06	0.007	O	|	|	|	|	0.34
1.833	0.09	0.06	0.007	O	|	|	|	|	0.35
1.917	0.09	0.07	0.007	O	|	|	|	|	0.36
2.000	0.09	0.07	0.007	O	|	|	|	|	0.37
2.083	0.09	0.07	0.008	O	|	|	|	|	0.38
2.167	0.09	0.07	0.008	O	|	|	|	|	0.39
2.250	0.09	0.07	0.008	O	|	|	|	|	0.39
2.333	0.09	0.07	0.008	O	|	|	|	|	0.40
2.417	0.09	0.07	0.008	O	|	|	|	|	0.41
2.500	0.09	0.07	0.008	O	|	|	|	|	0.41
2.583	0.09	0.08	0.008	O	|	|	|	|	0.42
2.667	0.09	0.08	0.009	O	|	|	|	|	0.43
2.750	0.09	0.08	0.009	O	|	|	|	|	0.43
2.833	0.09	0.08	0.009	O	|	|	|	|	0.44
2.917	0.09	0.08	0.009	O	|	|	|	|	0.44

3.000	0.09	0.08	0.009	O				0.45
3.083	0.09	0.08	0.009	O				0.45
3.167	0.10	0.08	0.009	O				0.46
3.250	0.10	0.08	0.009	O				0.46
3.333	0.10	0.08	0.009	O				0.47
3.417	0.10	0.08	0.009	O				0.47
3.500	0.10	0.09	0.009	O				0.47
3.583	0.10	0.09	0.010	O				0.48
3.667	0.10	0.09	0.010	O				0.48
3.750	0.10	0.09	0.010	O				0.48
3.833	0.10	0.09	0.010	O				0.49
3.917	0.10	0.09	0.010	O				0.49
4.000	0.10	0.09	0.010	O				0.49
4.083	0.10	0.09	0.010	O				0.50
4.167	0.10	0.09	0.010	O				0.50
4.250	0.10	0.09	0.010	O				0.50
4.333	0.10	0.09	0.010	O				0.51
4.417	0.10	0.09	0.010	O				0.51
4.500	0.10	0.09	0.010	O				0.52
4.583	0.10	0.09	0.010	O				0.52
4.667	0.10	0.09	0.010	O				0.52
4.750	0.10	0.09	0.011	O				0.53
4.833	0.10	0.09	0.011	O				0.53
4.917	0.10	0.09	0.011	O				0.54
5.000	0.10	0.09	0.011	O				0.54
5.083	0.10	0.09	0.011	O				0.55
5.167	0.10	0.09	0.011	O				0.55
5.250	0.10	0.09	0.011	O				0.56
5.333	0.11	0.09	0.011	O				0.56
5.417	0.11	0.09	0.011	O				0.57
5.500	0.11	0.09	0.011	O				0.57
5.583	0.11	0.09	0.012	O				0.58
5.667	0.11	0.09	0.012	OI				0.58
5.750	0.11	0.09	0.012	OI				0.59
5.833	0.11	0.09	0.012	OI				0.59
5.917	0.11	0.09	0.012	OI				0.60
6.000	0.11	0.09	0.012	OI				0.61
6.083	0.11	0.09	0.012	OI				0.61
6.167	0.11	0.09	0.012	OI				0.62
6.250	0.11	0.09	0.013	OI				0.63
6.333	0.11	0.09	0.013	OI				0.63
6.417	0.11	0.09	0.013	OI				0.64
6.500	0.11	0.09	0.013	OI				0.65
6.583	0.11	0.09	0.013	OI				0.66
6.667	0.11	0.09	0.013	OI				0.66
6.750	0.11	0.09	0.013	OI				0.67
6.833	0.11	0.09	0.014	OI				0.68
6.917	0.11	0.09	0.014	OI				0.69
7.000	0.12	0.09	0.014	OI				0.70
7.083	0.12	0.09	0.014	OI				0.71
7.167	0.12	0.09	0.014	OI				0.71
7.250	0.12	0.09	0.014	OI				0.72
7.333	0.12	0.09	0.015	OI				0.73
7.417	0.12	0.09	0.015	OI				0.74
7.500	0.12	0.09	0.015	OI				0.75
7.583	0.12	0.09	0.015	OI				0.76
7.667	0.12	0.09	0.015	OI				0.77
7.750	0.12	0.09	0.016	OI				0.78
7.833	0.12	0.09	0.016	OI				0.79

7.917	0.12	0.09	0.016	OI					0.80
8.000	0.12	0.09	0.016	OI					0.82
8.083	0.12	0.09	0.017	OI					0.83
8.167	0.12	0.09	0.017	OI					0.84
8.250	0.12	0.09	0.017	OI					0.85
8.333	0.13	0.09	0.017	OI					0.86
8.417	0.13	0.09	0.017	OI					0.87
8.500	0.13	0.09	0.018	OI					0.89
8.583	0.13	0.09	0.018	OI					0.90
8.667	0.13	0.09	0.018	OI					0.91
8.750	0.13	0.09	0.019	OI					0.93
8.833	0.13	0.09	0.019	OI					0.94
8.917	0.13	0.09	0.019	OI					0.95
9.000	0.13	0.09	0.019	OI					0.97
9.083	0.13	0.09	0.020	OI					0.98
9.167	0.13	0.09	0.020	OI					1.00
9.250	0.13	0.09	0.020	OI					1.01
9.333	0.14	0.09	0.021	OI					1.02
9.417	0.14	0.09	0.021	OI					1.03
9.500	0.14	0.09	0.021	OI					1.04
9.583	0.14	0.09	0.022	OI					1.05
9.667	0.14	0.09	0.022	OI					1.07
9.750	0.14	0.09	0.022	OI					1.08
9.833	0.14	0.09	0.023	OI					1.09
9.917	0.14	0.09	0.023	OI					1.10
10.000	0.14	0.09	0.023	OI					1.12
10.083	0.14	0.09	0.024	OI					1.13
10.167	0.14	0.09	0.024	OI					1.14
10.250	0.15	0.09	0.024	OI					1.16
10.333	0.15	0.09	0.025	OI					1.17
10.417	0.15	0.09	0.025	OI					1.18
10.500	0.15	0.09	0.026	OI					1.20
10.583	0.15	0.09	0.026	OI					1.21
10.667	0.15	0.09	0.026	OI					1.23
10.750	0.15	0.09	0.027	OI					1.24
10.833	0.15	0.09	0.027	OI					1.26
10.917	0.16	0.09	0.028	OI					1.28
11.000	0.16	0.09	0.028	OI					1.29
11.083	0.16	0.09	0.029	OI					1.31
11.167	0.16	0.09	0.029	OI					1.33
11.250	0.16	0.09	0.030	OI					1.34
11.333	0.16	0.09	0.030	OI					1.36
11.417	0.16	0.09	0.031	OI					1.38
11.500	0.17	0.09	0.031	OI					1.40
11.583	0.17	0.09	0.032	OI					1.42
11.667	0.17	0.09	0.032	OI					1.44
11.750	0.17	0.09	0.033	OI					1.46
11.833	0.17	0.09	0.033	OI					1.48
11.917	0.17	0.09	0.034	OI					1.50
12.000	0.18	0.09	0.034	OI					1.51
12.083	0.19	0.09	0.035	OI					1.53
12.167	0.22	0.09	0.036	O I					1.56
12.250	0.22	0.09	0.037	O I					1.58
12.333	0.22	0.09	0.038	O I					1.61
12.417	0.23	0.09	0.039	O I					1.64
12.500	0.23	0.09	0.040	O I					1.66
12.583	0.23	0.09	0.041	O I					1.69
12.667	0.23	0.09	0.042	O I					1.72
12.750	0.24	0.09	0.042	O I					1.75

12.833	0.24	0.09	0.044	O I	|	|	|	1.78
12.917	0.24	0.09	0.045	O I	|	|	|	1.81
13.000	0.24	0.09	0.046	O I	|	|	|	1.84
13.083	0.25	0.09	0.047	O I	|	|	|	1.87
13.167	0.25	0.09	0.048	O I	|	|	|	1.90
13.250	0.25	0.09	0.049	O I	|	|	|	1.94
13.333	0.26	0.09	0.050	O I	|	|	|	1.97
13.417	0.26	0.09	0.051	O I	|	|	|	2.00
13.500	0.26	0.09	0.052	O I	|	|	|	2.03
13.583	0.27	0.09	0.054	O I	|	|	|	2.07
13.667	0.27	0.09	0.055	O I	|	|	|	2.10
13.750	0.27	0.09	0.056	O I	|	|	|	2.13
13.833	0.28	0.09	0.057	O I	|	|	|	2.17
13.917	0.28	0.09	0.059	O I	|	|	|	2.20
14.000	0.29	0.09	0.060	O I	|	|	|	2.24
14.083	0.29	0.09	0.061	O I	|	|	|	2.27
14.167	0.30	0.09	0.063	O I	|	|	|	2.31
14.250	0.30	0.09	0.064	O I	|	|	|	2.35
14.333	0.31	0.09	0.066	O I	|	|	|	2.39
14.417	0.32	0.09	0.067	O I	|	|	|	2.43
14.500	0.33	0.09	0.069	O I	|	|	|	2.47
14.583	0.33	0.09	0.070	O I	|	|	|	2.51
14.667	0.34	0.09	0.072	O I	|	|	|	2.56
14.750	0.35	0.09	0.074	O I	|	|	|	2.60
14.833	0.36	0.09	0.076	O I	|	|	|	2.65
14.917	0.37	0.09	0.078	O I	|	|	|	2.70
15.000	0.38	0.09	0.080	O I	|	|	|	2.75
15.083	0.39	0.09	0.082	O I	|	|	|	2.81
15.167	0.41	0.09	0.084	O I	|	|	|	2.86
15.250	0.43	0.09	0.086	O I	|	|	|	2.92
15.333	0.45	0.09	0.088	O I	|	|	|	2.99
15.417	0.43	0.09	0.091	O I	|	|	|	3.04
15.500	0.37	0.09	0.093	O I	|	|	|	3.10
15.583	0.39	0.09	0.095	O I	|	|	|	3.14
15.667	0.43	0.09	0.097	O I	|	|	|	3.20
15.750	0.48	0.09	0.100	O I	|	|	|	3.26
15.833	0.56	0.09	0.103	O I	|	|	|	3.33
15.917	0.69	0.09	0.106	O I	|	|	|	3.41
16.000	0.97	0.09	0.111	O |I	|	|	|	3.54
16.083	2.17	0.09	0.122	O |	| I	|	|	3.78
16.167	3.41	0.09	0.140	O |	|	| I|		4.21
16.250	1.07	0.21	0.155	|O | I	|	|	|	4.54
16.333	0.50	0.43	0.158	| O	|	|	|	4.61
16.417	0.43	0.45	0.158	| O	|	|	|	4.62
16.500	0.46	0.44	0.158	| O	|	|	|	4.62
16.583	0.43	0.44	0.158	| O	|	|	|	4.62
16.667	0.40	0.43	0.158	| IO	|	|	|	4.61
16.750	0.37	0.41	0.158	| O	|	|	|	4.61
16.833	0.35	0.39	0.157	| O	|	|	|	4.60
16.917	0.33	0.37	0.157	| O	|	|	|	4.59
17.000	0.32	0.35	0.157	| IO	|	|	|	4.59
17.083	0.31	0.34	0.156	| IO	|	|	|	4.58
17.167	0.29	0.32	0.156	| IO	|	|	|	4.58
17.250	0.28	0.31	0.156	| O	|	|	|	4.57
17.333	0.27	0.30	0.156	| O	|	|	|	4.57
17.417	0.27	0.29	0.156	| O	|	|	|	4.57
17.500	0.26	0.28	0.156	| O	|	|	|	4.56
17.583	0.25	0.27	0.156	| O	|	|	|	4.56
17.667	0.25	0.26	0.155	| O	|	|	|	4.56

17.750	0.24	0.25	0.155	| O	|	|	|	4.55
17.833	0.24	0.25	0.155	| O	|	|	|	4.55
17.917	0.23	0.24	0.155	| O	|	|	|	4.55
18.000	0.23	0.24	0.155	| O	|	|	|	4.55
18.083	0.21	0.23	0.155	|IO	|	|	|	4.55
18.167	0.18	0.22	0.155	|IO	|	|	|	4.54
18.250	0.17	0.20	0.155	|O	|	|	|	4.54
18.333	0.17	0.19	0.154	|O	|	|	|	4.53
18.417	0.17	0.18	0.154	|O	|	|	|	4.53
18.500	0.16	0.18	0.154	|O	|	|	|	4.53
18.583	0.16	0.17	0.154	|O	|	|	|	4.53
18.667	0.16	0.17	0.154	|O	|	|	|	4.53
18.750	0.16	0.16	0.154	|O	|	|	|	4.52
18.833	0.15	0.16	0.154	|O	|	|	|	4.52
18.917	0.15	0.16	0.154	|O	|	|	|	4.52
19.000	0.15	0.15	0.154	|O	|	|	|	4.52
19.083	0.15	0.15	0.154	|O	|	|	|	4.52
19.167	0.14	0.15	0.154	|O	|	|	|	4.52
19.250	0.14	0.15	0.154	|O	|	|	|	4.52
19.333	0.14	0.14	0.154	|O	|	|	|	4.52
19.417	0.14	0.14	0.154	|O	|	|	|	4.52
19.500	0.14	0.14	0.154	|O	|	|	|	4.52
19.583	0.13	0.14	0.154	|O	|	|	|	4.52
19.667	0.13	0.14	0.154	|O	|	|	|	4.52
19.750	0.13	0.13	0.154	|O	|	|	|	4.51
19.833	0.13	0.13	0.154	|O	|	|	|	4.51
19.917	0.13	0.13	0.154	|O	|	|	|	4.51
20.000	0.13	0.13	0.154	|O	|	|	|	4.51
20.083	0.12	0.13	0.154	|O	|	|	|	4.51
20.167	0.12	0.13	0.154	|O	|	|	|	4.51
20.250	0.12	0.12	0.153	|O	|	|	|	4.51
20.333	0.12	0.12	0.153	|O	|	|	|	4.51
20.417	0.12	0.12	0.153	|O	|	|	|	4.51
20.500	0.12	0.12	0.153	|O	|	|	|	4.51
20.583	0.12	0.12	0.153	|O	|	|	|	4.51
20.667	0.12	0.12	0.153	|O	|	|	|	4.51
20.750	0.11	0.12	0.153	|O	|	|	|	4.51
20.833	0.11	0.12	0.153	|O	|	|	|	4.51
20.917	0.11	0.11	0.153	|O	|	|	|	4.51
21.000	0.11	0.11	0.153	|O	|	|	|	4.51
21.083	0.11	0.11	0.153	|O	|	|	|	4.51
21.167	0.11	0.11	0.153	|O	|	|	|	4.51
21.250	0.11	0.11	0.153	|O	|	|	|	4.51
21.333	0.11	0.11	0.153	|O	|	|	|	4.51
21.417	0.11	0.11	0.153	IO	|	|	|	4.51
21.500	0.11	0.11	0.153	IO	|	|	|	4.51
21.583	0.10	0.11	0.153	IO	|	|	|	4.51
21.667	0.10	0.11	0.153	O	|	|	|	4.51
21.750	0.10	0.10	0.153	O	|	|	|	4.50
21.833	0.10	0.10	0.153	O	|	|	|	4.50
21.917	0.10	0.10	0.153	O	|	|	|	4.50
22.000	0.10	0.10	0.153	O	|	|	|	4.50
22.083	0.10	0.10	0.153	O	|	|	|	4.50
22.167	0.10	0.10	0.153	O	|	|	|	4.50
22.250	0.10	0.10	0.153	O	|	|	|	4.50
22.333	0.10	0.10	0.153	O	|	|	|	4.50
22.417	0.10	0.10	0.153	O	|	|	|	4.50
22.500	0.10	0.10	0.153	O	|	|	|	4.50
22.583	0.10	0.10	0.153	O	|	|	|	4.50

22.667	0.09	0.10	0.153	O	|	|	|	|	4.50
22.750	0.09	0.10	0.153	O	|	|	|	|	4.50
22.833	0.09	0.09	0.153	O	|	|	|	|	4.50
22.917	0.09	0.09	0.153	O	|	|	|	|	4.50
23.000	0.09	0.09	0.153	O	|	|	|	|	4.50
23.083	0.09	0.09	0.153	O	|	|	|	|	4.50
23.167	0.09	0.09	0.153	O	|	|	|	|	4.50
23.250	0.09	0.09	0.153	O	|	|	|	|	4.50
23.333	0.09	0.09	0.153	O	|	|	|	|	4.50
23.417	0.09	0.09	0.153	O	|	|	|	|	4.50
23.500	0.09	0.09	0.153	O	|	|	|	|	4.50
23.583	0.09	0.09	0.153	O	|	|	|	|	4.50
23.667	0.09	0.09	0.153	O	|	|	|	|	4.50
23.750	0.09	0.09	0.153	O	|	|	|	|	4.50
23.833	0.09	0.09	0.153	O	|	|	|	|	4.50
23.917	0.09	0.09	0.153	O	|	|	|	|	4.50
24.000	0.09	0.09	0.153	O	|	|	|	|	4.50
24.083	0.06	0.09	0.153	O	|	|	|	|	4.50
24.167	0.01	0.09	0.152	O	|	|	|	|	4.49
24.250	0.00	0.09	0.152	O	|	|	|	|	4.47
24.333	0.00	0.09	0.151	O	|	|	|	|	4.46
24.417	0.00	0.09	0.151	O	|	|	|	|	4.44
24.500	0.00	0.09	0.150	O	|	|	|	|	4.43
24.583	0.00	0.09	0.149	O	|	|	|	|	4.42
24.667	0.00	0.09	0.149	O	|	|	|	|	4.40
24.750	0.00	0.09	0.148	O	|	|	|	|	4.39
24.833	0.00	0.09	0.147	O	|	|	|	|	4.37
24.917	0.00	0.09	0.147	O	|	|	|	|	4.36
25.000	0.00	0.09	0.146	O	|	|	|	|	4.35
25.083	0.00	0.09	0.146	O	|	|	|	|	4.33
25.167	0.00	0.09	0.145	O	|	|	|	|	4.32
25.250	0.00	0.09	0.144	O	|	|	|	|	4.30
25.333	0.00	0.09	0.144	O	|	|	|	|	4.29
25.417	0.00	0.09	0.143	O	|	|	|	|	4.28
25.500	0.00	0.09	0.143	O	|	|	|	|	4.26
25.583	0.00	0.09	0.142	O	|	|	|	|	4.25
25.667	0.00	0.09	0.141	O	|	|	|	|	4.23
25.750	0.00	0.09	0.141	O	|	|	|	|	4.22
25.833	0.00	0.09	0.140	O	|	|	|	|	4.21
25.917	0.00	0.09	0.139	O	|	|	|	|	4.19
26.000	0.00	0.09	0.139	O	|	|	|	|	4.18
26.083	0.00	0.09	0.138	O	|	|	|	|	4.16
26.167	0.00	0.09	0.138	O	|	|	|	|	4.15
26.250	0.00	0.09	0.137	O	|	|	|	|	4.14
26.333	0.00	0.09	0.136	O	|	|	|	|	4.12
26.417	0.00	0.09	0.136	O	|	|	|	|	4.11
26.500	0.00	0.09	0.135	O	|	|	|	|	4.09
26.583	0.00	0.09	0.134	O	|	|	|	|	4.08
26.667	0.00	0.09	0.134	O	|	|	|	|	4.06
26.750	0.00	0.09	0.133	O	|	|	|	|	4.05
26.833	0.00	0.09	0.133	O	|	|	|	|	4.04
26.917	0.00	0.09	0.132	O	|	|	|	|	4.02
27.000	0.00	0.09	0.131	O	|	|	|	|	4.01
27.083	0.00	0.09	0.131	O	|	|	|	|	3.99
27.167	0.00	0.09	0.130	O	|	|	|	|	3.98
27.250	0.00	0.09	0.130	O	|	|	|	|	3.96
27.333	0.00	0.09	0.129	O	|	|	|	|	3.95
27.417	0.00	0.09	0.128	O	|	|	|	|	3.93
27.500	0.00	0.09	0.128	O	|	|	|	|	3.92

27.583	0.00	0.09	0.127	O	|	|	|	|	3.91
27.667	0.00	0.09	0.126	O	|	|	|	|	3.89
27.750	0.00	0.09	0.126	O	|	|	|	|	3.88
27.833	0.00	0.09	0.125	O	|	|	|	|	3.86
27.917	0.00	0.09	0.125	O	|	|	|	|	3.85
28.000	0.00	0.09	0.124	O	|	|	|	|	3.83
28.083	0.00	0.09	0.123	O	|	|	|	|	3.82
28.167	0.00	0.09	0.123	O	|	|	|	|	3.80
28.250	0.00	0.09	0.122	O	|	|	|	|	3.79
28.333	0.00	0.09	0.121	O	|	|	|	|	3.77
28.417	0.00	0.09	0.121	O	|	|	|	|	3.76
28.500	0.00	0.09	0.120	O	|	|	|	|	3.74
28.583	0.00	0.09	0.120	O	|	|	|	|	3.73
28.667	0.00	0.09	0.119	O	|	|	|	|	3.71
28.750	0.00	0.09	0.118	O	|	|	|	|	3.70
28.833	0.00	0.09	0.118	O	|	|	|	|	3.68
28.917	0.00	0.09	0.117	O	|	|	|	|	3.67
29.000	0.00	0.09	0.116	O	|	|	|	|	3.65
29.083	0.00	0.09	0.116	O	|	|	|	|	3.64
29.167	0.00	0.09	0.115	O	|	|	|	|	3.62
29.250	0.00	0.09	0.115	O	|	|	|	|	3.61
29.333	0.00	0.09	0.114	O	|	|	|	|	3.60
29.417	0.00	0.09	0.113	O	|	|	|	|	3.58
29.500	0.00	0.09	0.113	O	|	|	|	|	3.57
29.583	0.00	0.09	0.112	O	|	|	|	|	3.55
29.667	0.00	0.09	0.112	O	|	|	|	|	3.54
29.750	0.00	0.09	0.111	O	|	|	|	|	3.52
29.833	0.00	0.09	0.110	O	|	|	|	|	3.51
29.917	0.00	0.09	0.110	O	|	|	|	|	3.49
30.000	0.00	0.09	0.109	O	|	|	|	|	3.48
30.083	0.00	0.09	0.108	O	|	|	|	|	3.46
30.167	0.00	0.09	0.108	O	|	|	|	|	3.45
30.250	0.00	0.09	0.107	O	|	|	|	|	3.43
30.333	0.00	0.09	0.107	O	|	|	|	|	3.42
30.417	0.00	0.09	0.106	O	|	|	|	|	3.40
30.500	0.00	0.09	0.105	O	|	|	|	|	3.39
30.583	0.00	0.09	0.105	O	|	|	|	|	3.37
30.667	0.00	0.09	0.104	O	|	|	|	|	3.36
30.750	0.00	0.09	0.103	O	|	|	|	|	3.34
30.833	0.00	0.09	0.103	O	|	|	|	|	3.33
30.917	0.00	0.09	0.102	O	|	|	|	|	3.32
31.000	0.00	0.09	0.102	O	|	|	|	|	3.30
31.083	0.00	0.09	0.101	O	|	|	|	|	3.29
31.167	0.00	0.09	0.100	O	|	|	|	|	3.27
31.250	0.00	0.09	0.100	O	|	|	|	|	3.26
31.333	0.00	0.09	0.099	O	|	|	|	|	3.24
31.417	0.00	0.09	0.099	O	|	|	|	|	3.23
31.500	0.00	0.09	0.098	O	|	|	|	|	3.21
31.583	0.00	0.09	0.097	O	|	|	|	|	3.20
31.667	0.00	0.09	0.097	O	|	|	|	|	3.18
31.750	0.00	0.09	0.096	O	|	|	|	|	3.17
31.833	0.00	0.09	0.095	O	|	|	|	|	3.15
31.917	0.00	0.09	0.095	O	|	|	|	|	3.14
32.000	0.00	0.09	0.094	O	|	|	|	|	3.12
32.083	0.00	0.09	0.094	O	|	|	|	|	3.11
32.167	0.00	0.09	0.093	O	|	|	|	|	3.09
32.250	0.00	0.09	0.092	O	|	|	|	|	3.08
32.333	0.00	0.09	0.092	O	|	|	|	|	3.06
32.417	0.00	0.09	0.091	O	|	|	|	|	3.05

32.500	0.00	0.09	0.090	O	|	|	|	|	3.03
32.583	0.00	0.09	0.090	O	|	|	|	|	3.02
32.667	0.00	0.09	0.089	O	|	|	|	|	3.01
32.750	0.00	0.09	0.089	O	|	|	|	|	2.99
32.833	0.00	0.09	0.088	O	|	|	|	|	2.97
32.917	0.00	0.09	0.087	O	|	|	|	|	2.96
33.000	0.00	0.09	0.087	O	|	|	|	|	2.94
33.083	0.00	0.09	0.086	O	|	|	|	|	2.92
33.167	0.00	0.09	0.085	O	|	|	|	|	2.91
33.250	0.00	0.09	0.085	O	|	|	|	|	2.89
33.333	0.00	0.09	0.084	O	|	|	|	|	2.88
33.417	0.00	0.09	0.084	O	|	|	|	|	2.86
33.500	0.00	0.09	0.083	O	|	|	|	|	2.84
33.583	0.00	0.09	0.082	O	|	|	|	|	2.83
33.667	0.00	0.09	0.082	O	|	|	|	|	2.81
33.750	0.00	0.09	0.081	O	|	|	|	|	2.79
33.833	0.00	0.09	0.081	O	|	|	|	|	2.78
33.917	0.00	0.09	0.080	O	|	|	|	|	2.76
34.000	0.00	0.09	0.079	O	|	|	|	|	2.74
34.083	0.00	0.09	0.079	O	|	|	|	|	2.73
34.167	0.00	0.09	0.078	O	|	|	|	|	2.71
34.250	0.00	0.09	0.077	O	|	|	|	|	2.70
34.333	0.00	0.09	0.077	O	|	|	|	|	2.68
34.417	0.00	0.09	0.076	O	|	|	|	|	2.66
34.500	0.00	0.09	0.076	O	|	|	|	|	2.65
34.583	0.00	0.09	0.075	O	|	|	|	|	2.63
34.667	0.00	0.09	0.074	O	|	|	|	|	2.61
34.750	0.00	0.09	0.074	O	|	|	|	|	2.60
34.833	0.00	0.09	0.073	O	|	|	|	|	2.58
34.917	0.00	0.09	0.072	O	|	|	|	|	2.57
35.000	0.00	0.09	0.072	O	|	|	|	|	2.55
35.083	0.00	0.09	0.071	O	|	|	|	|	2.53
35.167	0.00	0.09	0.071	O	|	|	|	|	2.52
35.250	0.00	0.09	0.070	O	|	|	|	|	2.50
35.333	0.00	0.09	0.069	O	|	|	|	|	2.48
35.417	0.00	0.09	0.069	O	|	|	|	|	2.47
35.500	0.00	0.09	0.068	O	|	|	|	|	2.45
35.583	0.00	0.09	0.068	O	|	|	|	|	2.43
35.667	0.00	0.09	0.067	O	|	|	|	|	2.42
35.750	0.00	0.09	0.066	O	|	|	|	|	2.40
35.833	0.00	0.09	0.066	O	|	|	|	|	2.39
35.917	0.00	0.09	0.065	O	|	|	|	|	2.37
36.000	0.00	0.09	0.064	O	|	|	|	|	2.35
36.083	0.00	0.09	0.064	O	|	|	|	|	2.34
36.167	0.00	0.09	0.063	O	|	|	|	|	2.32
36.250	0.00	0.09	0.063	O	|	|	|	|	2.30
36.333	0.00	0.09	0.062	O	|	|	|	|	2.29
36.417	0.00	0.09	0.061	O	|	|	|	|	2.27
36.500	0.00	0.09	0.061	O	|	|	|	|	2.26
36.583	0.00	0.09	0.060	O	|	|	|	|	2.24
36.667	0.00	0.09	0.059	O	|	|	|	|	2.22
36.750	0.00	0.09	0.059	O	|	|	|	|	2.21
36.833	0.00	0.09	0.058	O	|	|	|	|	2.19
36.917	0.00	0.09	0.058	O	|	|	|	|	2.17
37.000	0.00	0.09	0.057	O	|	|	|	|	2.16
37.083	0.00	0.09	0.056	O	|	|	|	|	2.14
37.167	0.00	0.09	0.056	O	|	|	|	|	2.12
37.250	0.00	0.09	0.055	O	|	|	|	|	2.11
37.333	0.00	0.09	0.055	O	|	|	|	|	2.09

37.417	0.00	0.09	0.054	O	|	|	|	2.08
37.500	0.00	0.09	0.053	O	|	|	|	2.06
37.583	0.00	0.09	0.053	O	|	|	|	2.04
37.667	0.00	0.09	0.052	O	|	|	|	2.03
37.750	0.00	0.09	0.051	O	|	|	|	2.01
37.833	0.00	0.09	0.051	O	|	|	|	1.99
37.917	0.00	0.09	0.050	O	|	|	|	1.98
38.000	0.00	0.09	0.050	O	|	|	|	1.96
38.083	0.00	0.09	0.049	O	|	|	|	1.94
38.167	0.00	0.09	0.048	O	|	|	|	1.92
38.250	0.00	0.09	0.048	O	|	|	|	1.90
38.333	0.00	0.09	0.047	O	|	|	|	1.88
38.417	0.00	0.09	0.046	O	|	|	|	1.87
38.500	0.00	0.09	0.046	O	|	|	|	1.85
38.583	0.00	0.09	0.045	O	|	|	|	1.83
38.667	0.00	0.09	0.045	O	|	|	|	1.81
38.750	0.00	0.09	0.044	O	|	|	|	1.79
38.833	0.00	0.09	0.043	O	|	|	|	1.77
38.917	0.00	0.09	0.043	O	|	|	|	1.76
39.000	0.00	0.09	0.042	O	|	|	|	1.74
39.083	0.00	0.09	0.041	O	|	|	|	1.72
39.167	0.00	0.09	0.041	O	|	|	|	1.70
39.250	0.00	0.09	0.040	O	|	|	|	1.68
39.333	0.00	0.09	0.040	O	|	|	|	1.67
39.417	0.00	0.09	0.039	O	|	|	|	1.65
39.500	0.00	0.09	0.038	O	|	|	|	1.63
39.583	0.00	0.09	0.038	O	|	|	|	1.61
39.667	0.00	0.09	0.037	O	|	|	|	1.59
39.750	0.00	0.09	0.037	O	|	|	|	1.57
39.833	0.00	0.09	0.036	O	|	|	|	1.56
39.917	0.00	0.09	0.035	O	|	|	|	1.54
40.000	0.00	0.09	0.035	O	|	|	|	1.52
40.083	0.00	0.09	0.034	O	|	|	|	1.50
40.167	0.00	0.09	0.033	O	|	|	|	1.48
40.250	0.00	0.09	0.033	O	|	|	|	1.46
40.333	0.00	0.09	0.032	O	|	|	|	1.44
40.417	0.00	0.09	0.032	O	|	|	|	1.41
40.500	0.00	0.09	0.031	O	|	|	|	1.39
40.583	0.00	0.09	0.030	O	|	|	|	1.37
40.667	0.00	0.09	0.030	O	|	|	|	1.35
40.750	0.00	0.09	0.029	O	|	|	|	1.32
40.833	0.00	0.09	0.028	O	|	|	|	1.30
40.917	0.00	0.09	0.028	O	|	|	|	1.28
41.000	0.00	0.09	0.027	O	|	|	|	1.26
41.083	0.00	0.09	0.027	O	|	|	|	1.24
41.167	0.00	0.09	0.026	O	|	|	|	1.21
41.250	0.00	0.09	0.025	O	|	|	|	1.19
41.333	0.00	0.09	0.025	O	|	|	|	1.17
41.417	0.00	0.09	0.024	O	|	|	|	1.15
41.500	0.00	0.09	0.024	O	|	|	|	1.13
41.583	0.00	0.09	0.023	O	|	|	|	1.10
41.667	0.00	0.09	0.022	O	|	|	|	1.08
41.750	0.00	0.09	0.022	O	|	|	|	1.06
41.833	0.00	0.09	0.021	O	|	|	|	1.04
41.917	0.00	0.09	0.020	O	|	|	|	1.01
42.000	0.00	0.09	0.020	O	|	|	|	0.99
42.083	0.00	0.09	0.019	O	|	|	|	0.96
42.167	0.00	0.09	0.019	O	|	|	|	0.93
42.250	0.00	0.09	0.018	O	|	|	|	0.90

42.333	0.00	0.09	0.017	O	|	|	|	|	0.87
42.417	0.00	0.09	0.017	O	|	|	|	|	0.83
42.500	0.00	0.09	0.016	O	|	|	|	|	0.80
42.583	0.00	0.09	0.015	O	|	|	|	|	0.77
42.667	0.00	0.09	0.015	O	|	|	|	|	0.74
42.750	0.00	0.09	0.014	O	|	|	|	|	0.71
42.833	0.00	0.09	0.014	O	|	|	|	|	0.68
42.917	0.00	0.09	0.013	O	|	|	|	|	0.65
43.000	0.00	0.09	0.012	O	|	|	|	|	0.62
43.083	0.00	0.09	0.012	O	|	|	|	|	0.59
43.167	0.00	0.09	0.011	O	|	|	|	|	0.56
43.250	0.00	0.09	0.010	O	|	|	|	|	0.52
43.333	0.00	0.09	0.010	O	|	|	|	|	0.49
43.417	0.00	0.08	0.009	O	|	|	|	|	0.46
43.500	0.00	0.08	0.009	O	|	|	|	|	0.44
43.583	0.00	0.07	0.008	O	|	|	|	|	0.41
43.667	0.00	0.07	0.008	O	|	|	|	|	0.39
43.750	0.00	0.07	0.007	O	|	|	|	|	0.36
43.833	0.00	0.06	0.007	O	|	|	|	|	0.34
43.917	0.00	0.06	0.006	O	|	|	|	|	0.32
44.000	0.00	0.05	0.006	O	|	|	|	|	0.30
44.083	0.00	0.05	0.006	O	|	|	|	|	0.28
44.167	0.00	0.05	0.005	O	|	|	|	|	0.27
44.250	0.00	0.04	0.005	O	|	|	|	|	0.25
44.333	0.00	0.04	0.005	O	|	|	|	|	0.23
44.417	0.00	0.04	0.004	O	|	|	|	|	0.22
44.500	0.00	0.04	0.004	O	|	|	|	|	0.21
44.583	0.00	0.04	0.004	O	|	|	|	|	0.19
44.667	0.00	0.03	0.004	O	|	|	|	|	0.18
44.750	0.00	0.03	0.003	O	|	|	|	|	0.17
44.833	0.00	0.03	0.003	O	|	|	|	|	0.16
44.917	0.00	0.03	0.003	O	|	|	|	|	0.15
45.000	0.00	0.03	0.003	O	|	|	|	|	0.14
45.083	0.00	0.02	0.003	O	|	|	|	|	0.13
45.167	0.00	0.02	0.003	O	|	|	|	|	0.13
45.250	0.00	0.02	0.002	O	|	|	|	|	0.12
45.333	0.00	0.02	0.002	O	|	|	|	|	0.11
45.417	0.00	0.02	0.002	O	|	|	|	|	0.10
45.500	0.00	0.02	0.002	O	|	|	|	|	0.10
45.583	0.00	0.02	0.002	O	|	|	|	|	0.09
45.667	0.00	0.02	0.002	O	|	|	|	|	0.09
45.750	0.00	0.01	0.002	O	|	|	|	|	0.08
45.833	0.00	0.01	0.002	O	|	|	|	|	0.08
45.917	0.00	0.01	0.001	O	|	|	|	|	0.07
46.000	0.00	0.01	0.001	O	|	|	|	|	0.07
46.083	0.00	0.01	0.001	O	|	|	|	|	0.06
46.167	0.00	0.01	0.001	O	|	|	|	|	0.06
46.250	0.00	0.01	0.001	O	|	|	|	|	0.06
46.333	0.00	0.01	0.001	O	|	|	|	|	0.05
46.417	0.00	0.01	0.001	O	|	|	|	|	0.05
46.500	0.00	0.01	0.001	O	|	|	|	|	0.05
46.583	0.00	0.01	0.001	O	|	|	|	|	0.04
46.667	0.00	0.01	0.001	O	|	|	|	|	0.04
46.750	0.00	0.01	0.001	O	|	|	|	|	0.04
46.833	0.00	0.01	0.001	O	|	|	|	|	0.04
46.917	0.00	0.01	0.001	O	|	|	|	|	0.03
47.000	0.00	0.01	0.001	O	|	|	|	|	0.03
47.083	0.00	0.01	0.001	O	|	|	|	|	0.03
47.167	0.00	0.01	0.001	O	|	|	|	|	0.03

47.250	0.00	0.00	0.001	O	|	|	|	|	0.03
47.333	0.00	0.00	0.001	O	|	|	|	|	0.03
47.417	0.00	0.00	0.000	O	|	|	|	|	0.02
47.500	0.00	0.00	0.000	O	|	|	|	|	0.02
47.583	0.00	0.00	0.000	O	|	|	|	|	0.02
47.667	0.00	0.00	0.000	O	|	|	|	|	0.02
47.750	0.00	0.00	0.000	O	|	|	|	|	0.02
47.833	0.00	0.00	0.000	O	|	|	|	|	0.02
47.917	0.00	0.00	0.000	O	|	|	|	|	0.02
48.000	0.00	0.00	0.000	O	|	|	|	|	0.02
48.083	0.00	0.00	0.000	O	|	|	|	|	0.01
48.167	0.00	0.00	0.000	O	|	|	|	|	0.01
48.250	0.00	0.00	0.000	O	|	|	|	|	0.01
48.333	0.00	0.00	0.000	O	|	|	|	|	0.01
48.417	0.00	0.00	0.000	O	|	|	|	|	0.01
48.500	0.00	0.00	0.000	O	|	|	|	|	0.01
48.583	0.00	0.00	0.000	O	|	|	|	|	0.01
48.667	0.00	0.00	0.000	O	|	|	|	|	0.01
48.750	0.00	0.00	0.000	O	|	|	|	|	0.01
48.833	0.00	0.00	0.000	O	|	|	|	|	0.01
48.917	0.00	0.00	0.000	O	|	|	|	|	0.01
49.000	0.00	0.00	0.000	O	|	|	|	|	0.01
49.083	0.00	0.00	0.000	O	|	|	|	|	0.01
49.167	0.00	0.00	0.000	O	|	|	|	|	0.01
49.250	0.00	0.00	0.000	O	|	|	|	|	0.01
49.333	0.00	0.00	0.000	O	|	|	|	|	0.01
49.417	0.00	0.00	0.000	O	|	|	|	|	0.01

**********HYDROGRAPH DATA**********

Number of intervals = 593
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 0.446 (CFS)
Total volume = 0.374 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

APPENDIX F.4: 10-YEAR BASIN ROUTING CALCULATION

FLOOD HYDROGRAPH ROUTING PROGRAM
Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2014
Study date: 04/25/25

320.05 BUFFALO GROVE
BASIN ROUTING; BASIN B
10-YR, 24-HR STORM

Program License Serial Number 6279

********** HYDROGRAPH INFORMATION **********

From study/file name: UPB10.rte
**********HYDROGRAPH DATA**********
Number of intervals = 290
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 5.589 (CFS)
Total volume = 0.614 (Ac.Ft)
Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

++
Process from Point/Station 101.000 to Point/Station 102.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 290
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.500	0.010	0.090	0.010	0.010
1.000	0.020	0.090	0.020	0.020

1.500	0.034	0.090	0.034	0.034
2.000	0.051	0.090	0.051	0.051
2.500	0.070	0.090	0.070	0.070
3.000	0.089	0.090	0.089	0.089
3.500	0.110	0.090	0.110	0.110
4.000	0.131	0.090	0.131	0.131
4.500	0.153	0.090	0.153	0.153
5.000	0.174	1.590	0.169	0.179
5.500	0.196	1.590	0.191	0.201
6.000	0.216	1.590	0.211	0.221
6.500	0.236	1.590	0.231	0.241
7.000	0.255	1.590	0.250	0.260
7.500	0.272	1.590	0.267	0.277
8.000	0.286	1.590	0.281	0.291
8.500	0.296	1.590	0.291	0.301
9.000	0.306	1.590	0.301	0.311

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	1.4	2.79	4.19	5.59	Depth (Ft.)
0.083	0.04	0.00	0.000	O	|	|	|	|	0.01
0.167	0.13	0.01	0.001	O	|	|	|	|	0.03
0.250	0.15	0.01	0.002	O	|	|	|	|	0.08
0.333	0.15	0.02	0.002	O	|	|	|	|	0.12
0.417	0.15	0.03	0.003	O	|	|	|	|	0.16
0.500	0.15	0.04	0.004	O	|	|	|	|	0.20
0.583	0.15	0.04	0.005	O	|	|	|	|	0.24
0.667	0.15	0.05	0.005	O	|	|	|	|	0.27
0.750	0.15	0.06	0.006	O	|	|	|	|	0.31
0.833	0.15	0.06	0.007	O	|	|	|	|	0.34
0.917	0.15	0.07	0.007	O	|	|	|	|	0.37
1.000	0.15	0.07	0.008	O	|	|	|	|	0.40
1.083	0.15	0.08	0.008	O	|	|	|	|	0.42
1.167	0.15	0.08	0.009	O	|	|	|	|	0.45
1.250	0.15	0.08	0.009	O	|	|	|	|	0.47
1.333	0.15	0.09	0.010	O	|	|	|	|	0.49
1.417	0.15	0.09	0.010	O	|	|	|	|	0.51
1.500	0.15	0.09	0.011	O	|	|	|	|	0.54
1.583	0.15	0.09	0.011	O	|	|	|	|	0.56
1.667	0.15	0.09	0.012	O	|	|	|	|	0.58
1.750	0.15	0.09	0.012	O	|	|	|	|	0.60
1.833	0.15	0.09	0.012	O	|	|	|	|	0.62
1.917	0.15	0.09	0.013	O	|	|	|	|	0.64
2.000	0.15	0.09	0.013	O	|	|	|	|	0.67
2.083	0.16	0.09	0.014	O	|	|	|	|	0.69
2.167	0.16	0.09	0.014	O	|	|	|	|	0.71
2.250	0.16	0.09	0.015	O	|	|	|	|	0.73
2.333	0.16	0.09	0.015	O	|	|	|	|	0.76
2.417	0.16	0.09	0.016	O	|	|	|	|	0.78
2.500	0.16	0.09	0.016	O	|	|	|	|	0.80
2.583	0.16	0.09	0.017	O	|	|	|	|	0.83
2.667	0.16	0.09	0.017	O	|	|	|	|	0.85
2.750	0.16	0.09	0.017	O	|	|	|	|	0.87
2.833	0.16	0.09	0.018	O	|	|	|	|	0.90
2.917	0.16	0.09	0.018	O	|	|	|	|	0.92

3.000	0.16	0.09	0.019	O					0.95
3.083	0.16	0.09	0.019	O					0.97
3.167	0.16	0.09	0.020	O					1.00
3.250	0.16	0.09	0.020	O					1.01
3.333	0.16	0.09	0.021	O					1.03
3.417	0.16	0.09	0.021	O					1.05
3.500	0.16	0.09	0.022	O					1.07
3.583	0.16	0.09	0.022	O					1.09
3.667	0.17	0.09	0.023	O					1.11
3.750	0.17	0.09	0.023	O					1.12
3.833	0.17	0.09	0.024	O					1.14
3.917	0.17	0.09	0.025	O					1.16
4.000	0.17	0.09	0.025	O					1.18
4.083	0.17	0.09	0.026	O					1.20
4.167	0.17	0.09	0.026	O					1.22
4.250	0.17	0.09	0.027	O					1.24
4.333	0.17	0.09	0.027	O					1.26
4.417	0.17	0.09	0.028	O					1.28
4.500	0.17	0.09	0.028	O					1.30
4.583	0.17	0.09	0.029	O					1.32
4.667	0.17	0.09	0.029	O					1.34
4.750	0.17	0.09	0.030	O					1.36
4.833	0.17	0.09	0.031	O					1.38
4.917	0.17	0.09	0.031	O					1.40
5.000	0.18	0.09	0.032	OI					1.42
5.083	0.18	0.09	0.032	OI					1.44
5.167	0.18	0.09	0.033	OI					1.46
5.250	0.18	0.09	0.034	OI					1.48
5.333	0.18	0.09	0.034	OI					1.51
5.417	0.18	0.09	0.035	OI					1.52
5.500	0.18	0.09	0.035	OI					1.54
5.583	0.18	0.09	0.036	OI					1.56
5.667	0.18	0.09	0.037	OI					1.58
5.750	0.18	0.09	0.037	OI					1.60
5.833	0.18	0.09	0.038	OI					1.61
5.917	0.18	0.09	0.039	OI					1.63
6.000	0.18	0.09	0.039	OI					1.65
6.083	0.18	0.09	0.040	OI					1.67
6.167	0.19	0.09	0.041	OI					1.69
6.250	0.19	0.09	0.041	OI					1.71
6.333	0.19	0.09	0.042	OI					1.73
6.417	0.19	0.09	0.043	OI					1.75
6.500	0.19	0.09	0.043	OI					1.77
6.583	0.19	0.09	0.044	OI					1.79
6.667	0.19	0.09	0.045	OI					1.81
6.750	0.19	0.09	0.045	OI					1.83
6.833	0.19	0.09	0.046	OI					1.85
6.917	0.19	0.09	0.047	OI					1.87
7.000	0.19	0.09	0.047	OI					1.89
7.083	0.20	0.09	0.048	OI					1.91
7.167	0.20	0.09	0.049	OI					1.94
7.250	0.20	0.09	0.050	OI					1.96
7.333	0.20	0.09	0.050	OI					1.98
7.417	0.20	0.09	0.051	OI					2.00
7.500	0.20	0.09	0.052	OI					2.02
7.583	0.20	0.09	0.053	OI					2.04
7.667	0.20	0.09	0.053	OI					2.06
7.750	0.20	0.09	0.054	OI					2.08
7.833	0.20	0.09	0.055	OI					2.10

7.917	0.21	0.09	0.056	OI					2.12
8.000	0.21	0.09	0.056	OI					2.14
8.083	0.21	0.09	0.057	OI					2.17
8.167	0.21	0.09	0.058	OI					2.19
8.250	0.21	0.09	0.059	OI					2.21
8.333	0.21	0.09	0.060	OI					2.23
8.417	0.21	0.09	0.061	OI					2.25
8.500	0.21	0.09	0.061	OI					2.28
8.583	0.21	0.09	0.062	OI					2.30
8.667	0.22	0.09	0.063	OI					2.32
8.750	0.22	0.09	0.064	OI					2.34
8.833	0.22	0.09	0.065	OI					2.37
8.917	0.22	0.09	0.066	OI					2.39
9.000	0.22	0.09	0.067	OI					2.41
9.083	0.22	0.09	0.068	OI					2.44
9.167	0.22	0.09	0.069	OI					2.46
9.250	0.23	0.09	0.069	OI					2.49
9.333	0.23	0.09	0.070	OI					2.51
9.417	0.23	0.09	0.071	OI					2.54
9.500	0.23	0.09	0.072	OI					2.56
9.583	0.23	0.09	0.073	OI					2.59
9.667	0.23	0.09	0.074	OI					2.61
9.750	0.23	0.09	0.075	OI					2.64
9.833	0.24	0.09	0.076	OI					2.66
9.917	0.24	0.09	0.077	OI					2.69
10.000	0.24	0.09	0.078	OI					2.72
10.083	0.24	0.09	0.079	OI					2.74
10.167	0.24	0.09	0.080	OI					2.77
10.250	0.24	0.09	0.081	OI					2.80
10.333	0.25	0.09	0.082	OI					2.83
10.417	0.25	0.09	0.084	OI					2.86
10.500	0.25	0.09	0.085	OI					2.89
10.583	0.25	0.09	0.086	OI					2.91
10.667	0.25	0.09	0.087	OI					2.94
10.750	0.26	0.09	0.088	OI					2.97
10.833	0.26	0.09	0.089	OI					3.00
10.917	0.26	0.09	0.090	OI					3.03
11.000	0.26	0.09	0.091	OI					3.06
11.083	0.26	0.09	0.093	OI					3.09
11.167	0.27	0.09	0.094	OI					3.12
11.250	0.27	0.09	0.095	OI					3.15
11.333	0.27	0.09	0.096	OI					3.18
11.417	0.27	0.09	0.098	OI					3.21
11.500	0.28	0.09	0.099	OI					3.24
11.583	0.28	0.09	0.100	OI					3.27
11.667	0.28	0.09	0.102	OI					3.30
11.750	0.28	0.09	0.103	OI					3.33
11.833	0.29	0.09	0.104	OI					3.36
11.917	0.29	0.09	0.106	OI					3.39
12.000	0.29	0.09	0.107	OI					3.43
12.083	0.31	0.09	0.108	OI					3.46
12.167	0.34	0.09	0.110	OI					3.50
12.250	0.34	0.09	0.112	OI					3.54
12.333	0.35	0.09	0.113	OI					3.58
12.417	0.35	0.09	0.115	OI					3.62
12.500	0.35	0.09	0.117	O I					3.67
12.583	0.36	0.09	0.119	O I					3.71
12.667	0.36	0.09	0.121	O I					3.75
12.750	0.36	0.09	0.123	O I					3.80

12.833	0.37	0.09	0.124	O I	|	|	|	3.84
12.917	0.37	0.09	0.126	O I	|	|	|	3.89
13.000	0.38	0.09	0.128	O I	|	|	|	3.94
13.083	0.38	0.09	0.130	O I	|	|	|	3.99
13.167	0.39	0.09	0.132	O I	|	|	|	4.03
13.250	0.39	0.09	0.134	O I	|	|	|	4.08
13.333	0.40	0.09	0.137	O I	|	|	|	4.13
13.417	0.40	0.09	0.139	O I	|	|	|	4.18
13.500	0.41	0.09	0.141	O I	|	|	|	4.22
13.583	0.41	0.09	0.143	O I	|	|	|	4.28
13.667	0.42	0.09	0.145	O I	|	|	|	4.33
13.750	0.43	0.09	0.148	O I	|	|	|	4.38
13.833	0.44	0.09	0.150	O I	|	|	|	4.43
13.917	0.44	0.09	0.152	O I	|	|	|	4.49
14.000	0.45	0.20	0.155	|OI	|	|	|	4.54
14.083	0.46	0.30	0.156	|OI	|	|	|	4.57
14.167	0.47	0.36	0.157	| O	|	|	|	4.59
14.250	0.48	0.41	0.157	| O	|	|	|	4.61
14.333	0.49	0.44	0.158	| O	|	|	|	4.62
14.417	0.50	0.46	0.158	| O	|	|	|	4.62
14.500	0.51	0.48	0.158	| O	|	|	|	4.63
14.583	0.52	0.49	0.159	| O	|	|	|	4.63
14.667	0.54	0.51	0.159	| OI	|	|	|	4.64
14.750	0.55	0.52	0.159	| OI	|	|	|	4.64
14.833	0.57	0.53	0.159	| O	|	|	|	4.65
14.917	0.58	0.55	0.159	| O	|	|	|	4.65
15.000	0.60	0.57	0.160	| O	|	|	|	4.66
15.083	0.62	0.58	0.160	| O	|	|	|	4.66
15.167	0.65	0.60	0.160	| O	|	|	|	4.67
15.250	0.67	0.63	0.161	| O	|	|	|	4.68
15.333	0.71	0.65	0.161	| OI	|	|	|	4.69
15.417	0.69	0.67	0.161	| O	|	|	|	4.69
15.500	0.60	0.66	0.161	| O	|	|	|	4.69
15.583	0.63	0.64	0.161	| O	|	|	|	4.68
15.667	0.70	0.65	0.161	| OI	|	|	|	4.69
15.750	0.79	0.69	0.161	| OI	|	|	|	4.70
15.833	0.92	0.75	0.162	| OI	|	|	|	4.72
15.917	1.15	0.87	0.164	| O I	|	|	|	4.76
16.000	1.69	1.08	0.167	| O	|I	|	|	4.83
16.083	3.66	1.59	0.176	|	|O	| I	|	5.05
16.167	5.59	1.59	0.197	|	|O	|	| I	5.53
16.250	1.75	1.59	0.211	|	|O	|	|	5.88
16.333	0.81	1.59	0.209	| I	|O	|	|	5.83
16.417	0.70	1.59	0.203	| I	|O	|	|	5.69
16.500	0.73	1.59	0.197	| I	|O	|	|	5.53
16.583	0.68	1.59	0.191	| I	|O	|	|	5.39
16.667	0.62	1.59	0.185	| I	|O	|	|	5.24
16.750	0.58	1.59	0.178	| I	|O	|	|	5.09
16.833	0.55	1.41	0.172	| I	O	|	|	4.94
16.917	0.52	1.07	0.167	| I O	|	|	|	4.83
17.000	0.50	0.85	0.164	| I O	|	|	|	4.75
17.083	0.48	0.71	0.162	| I O	|	|	|	4.71
17.167	0.46	0.61	0.160	| IO	|	|	|	4.67
17.250	0.44	0.55	0.159	| IO	|	|	|	4.65
17.333	0.43	0.50	0.159	| O	|	|	|	4.64
17.417	0.42	0.47	0.158	| O	|	|	|	4.63
17.500	0.40	0.45	0.158	| O	|	|	|	4.62
17.583	0.39	0.43	0.158	| O	|	|	|	4.61
17.667	0.38	0.41	0.158	| O	|	|	|	4.61

17.750	0.37	0.40	0.157	| O	|	|	|	4.60
17.833	0.36	0.39	0.157	| O	|	|	|	4.60
17.917	0.36	0.38	0.157	| O	|	|	|	4.60
18.000	0.35	0.37	0.157	| O	|	|	|	4.59
18.083	0.33	0.36	0.157	|IO	|	|	|	4.59
18.167	0.30	0.34	0.157	|O	|	|	|	4.58
18.250	0.29	0.32	0.156	|O	|	|	|	4.58
18.333	0.28	0.31	0.156	|O	|	|	|	4.57
18.417	0.28	0.30	0.156	|O	|	|	|	4.57
18.500	0.27	0.29	0.156	|O	|	|	|	4.57
18.583	0.27	0.28	0.156	|O	|	|	|	4.56
18.667	0.26	0.28	0.156	|O	|	|	|	4.56
18.750	0.26	0.27	0.156	|O	|	|	|	4.56
18.833	0.26	0.27	0.155	|O	|	|	|	4.56
18.917	0.25	0.26	0.155	|O	|	|	|	4.56
19.000	0.25	0.26	0.155	|O	|	|	|	4.56
19.083	0.24	0.25	0.155	|O	|	|	|	4.55
19.167	0.24	0.25	0.155	|O	|	|	|	4.55
19.250	0.24	0.24	0.155	|O	|	|	|	4.55
19.333	0.23	0.24	0.155	|O	|	|	|	4.55
19.417	0.23	0.24	0.155	|O	|	|	|	4.55
19.500	0.23	0.23	0.155	|O	|	|	|	4.55
19.583	0.23	0.23	0.155	|O	|	|	|	4.55
19.667	0.22	0.23	0.155	|O	|	|	|	4.55
19.750	0.22	0.23	0.155	|O	|	|	|	4.55
19.833	0.22	0.22	0.155	|O	|	|	|	4.54
19.917	0.21	0.22	0.155	|O	|	|	|	4.54
20.000	0.21	0.22	0.155	|O	|	|	|	4.54
20.083	0.21	0.21	0.155	|O	|	|	|	4.54
20.167	0.21	0.21	0.155	|O	|	|	|	4.54
20.250	0.21	0.21	0.155	|O	|	|	|	4.54
20.333	0.20	0.21	0.155	|O	|	|	|	4.54
20.417	0.20	0.21	0.155	|O	|	|	|	4.54
20.500	0.20	0.20	0.155	|O	|	|	|	4.54
20.583	0.20	0.20	0.155	|O	|	|	|	4.54
20.667	0.20	0.20	0.155	|O	|	|	|	4.54
20.750	0.19	0.20	0.155	|O	|	|	|	4.54
20.833	0.19	0.20	0.154	|O	|	|	|	4.54
20.917	0.19	0.19	0.154	|O	|	|	|	4.53
21.000	0.19	0.19	0.154	|O	|	|	|	4.53
21.083	0.19	0.19	0.154	|O	|	|	|	4.53
21.167	0.18	0.19	0.154	|O	|	|	|	4.53
21.250	0.18	0.19	0.154	|O	|	|	|	4.53
21.333	0.18	0.19	0.154	|O	|	|	|	4.53
21.417	0.18	0.18	0.154	|O	|	|	|	4.53
21.500	0.18	0.18	0.154	|O	|	|	|	4.53
21.583	0.18	0.18	0.154	|O	|	|	|	4.53
21.667	0.18	0.18	0.154	|O	|	|	|	4.53
21.750	0.17	0.18	0.154	|O	|	|	|	4.53
21.833	0.17	0.18	0.154	IO	|	|	|	4.53
21.917	0.17	0.17	0.154	IO	|	|	|	4.53
22.000	0.17	0.17	0.154	O	|	|	|	4.53
22.083	0.17	0.17	0.154	O	|	|	|	4.53
22.167	0.17	0.17	0.154	O	|	|	|	4.53
22.250	0.17	0.17	0.154	O	|	|	|	4.53
22.333	0.17	0.17	0.154	O	|	|	|	4.53
22.417	0.16	0.17	0.154	O	|	|	|	4.53
22.500	0.16	0.17	0.154	O	|	|	|	4.53
22.583	0.16	0.16	0.154	O	|	|	|	4.52

22.667	0.16	0.16	0.154	O	|	|	|	|	4.52
22.750	0.16	0.16	0.154	O	|	|	|	|	4.52
22.833	0.16	0.16	0.154	O	|	|	|	|	4.52
22.917	0.16	0.16	0.154	O	|	|	|	|	4.52
23.000	0.16	0.16	0.154	O	|	|	|	|	4.52
23.083	0.16	0.16	0.154	O	|	|	|	|	4.52
23.167	0.16	0.16	0.154	O	|	|	|	|	4.52
23.250	0.15	0.16	0.154	O	|	|	|	|	4.52
23.333	0.15	0.16	0.154	O	|	|	|	|	4.52
23.417	0.15	0.15	0.154	O	|	|	|	|	4.52
23.500	0.15	0.15	0.154	O	|	|	|	|	4.52
23.583	0.15	0.15	0.154	O	|	|	|	|	4.52
23.667	0.15	0.15	0.154	O	|	|	|	|	4.52
23.750	0.15	0.15	0.154	O	|	|	|	|	4.52
23.833	0.15	0.15	0.154	O	|	|	|	|	4.52
23.917	0.15	0.15	0.154	O	|	|	|	|	4.52
24.000	0.15	0.15	0.154	O	|	|	|	|	4.52
24.083	0.11	0.14	0.154	O	|	|	|	|	4.52
24.167	0.01	0.11	0.153	O	|	|	|	|	4.51
24.250	0.00	0.09	0.153	O	|	|	|	|	4.49
24.333	0.00	0.09	0.152	O	|	|	|	|	4.48
24.417	0.00	0.09	0.151	O	|	|	|	|	4.46
24.500	0.00	0.09	0.151	O	|	|	|	|	4.45
24.583	0.00	0.09	0.150	O	|	|	|	|	4.44
24.667	0.00	0.09	0.150	O	|	|	|	|	4.42
24.750	0.00	0.09	0.149	O	|	|	|	|	4.41
24.833	0.00	0.09	0.148	O	|	|	|	|	4.39
24.917	0.00	0.09	0.148	O	|	|	|	|	4.38
25.000	0.00	0.09	0.147	O	|	|	|	|	4.36
25.083	0.00	0.09	0.146	O	|	|	|	|	4.35
25.167	0.00	0.09	0.146	O	|	|	|	|	4.34
25.250	0.00	0.09	0.145	O	|	|	|	|	4.32
25.333	0.00	0.09	0.145	O	|	|	|	|	4.31
25.417	0.00	0.09	0.144	O	|	|	|	|	4.29
25.500	0.00	0.09	0.143	O	|	|	|	|	4.28
25.583	0.00	0.09	0.143	O	|	|	|	|	4.27
25.667	0.00	0.09	0.142	O	|	|	|	|	4.25
25.750	0.00	0.09	0.141	O	|	|	|	|	4.24
25.833	0.00	0.09	0.141	O	|	|	|	|	4.22
25.917	0.00	0.09	0.140	O	|	|	|	|	4.21
26.000	0.00	0.09	0.140	O	|	|	|	|	4.20
26.083	0.00	0.09	0.139	O	|	|	|	|	4.18
26.167	0.00	0.09	0.138	O	|	|	|	|	4.17
26.250	0.00	0.09	0.138	O	|	|	|	|	4.15
26.333	0.00	0.09	0.137	O	|	|	|	|	4.14
26.417	0.00	0.09	0.137	O	|	|	|	|	4.13
26.500	0.00	0.09	0.136	O	|	|	|	|	4.11
26.583	0.00	0.09	0.135	O	|	|	|	|	4.10
26.667	0.00	0.09	0.135	O	|	|	|	|	4.08
26.750	0.00	0.09	0.134	O	|	|	|	|	4.07
26.833	0.00	0.09	0.133	O	|	|	|	|	4.05
26.917	0.00	0.09	0.133	O	|	|	|	|	4.04
27.000	0.00	0.09	0.132	O	|	|	|	|	4.03
27.083	0.00	0.09	0.132	O	|	|	|	|	4.01
27.167	0.00	0.09	0.131	O	|	|	|	|	4.00
27.250	0.00	0.09	0.130	O	|	|	|	|	3.98
27.333	0.00	0.09	0.130	O	|	|	|	|	3.97
27.417	0.00	0.09	0.129	O	|	|	|	|	3.95
27.500	0.00	0.09	0.128	O	|	|	|	|	3.94

27.583	0.00	0.09	0.128	O					3.92
27.667	0.00	0.09	0.127	O					3.91
27.750	0.00	0.09	0.127	O					3.90
27.833	0.00	0.09	0.126	O					3.88
27.917	0.00	0.09	0.125	O					3.87
28.000	0.00	0.09	0.125	O					3.85
28.083	0.00	0.09	0.124	O					3.84
28.167	0.00	0.09	0.123	O					3.82
28.250	0.00	0.09	0.123	O					3.81
28.333	0.00	0.09	0.122	O					3.79
28.417	0.00	0.09	0.122	O					3.78
28.500	0.00	0.09	0.121	O					3.76
28.583	0.00	0.09	0.120	O					3.75
28.667	0.00	0.09	0.120	O					3.73
28.750	0.00	0.09	0.119	O					3.72
28.833	0.00	0.09	0.119	O					3.70
28.917	0.00	0.09	0.118	O					3.69
29.000	0.00	0.09	0.117	O					3.67
29.083	0.00	0.09	0.117	O					3.66
29.167	0.00	0.09	0.116	O					3.64
29.250	0.00	0.09	0.115	O					3.63
29.333	0.00	0.09	0.115	O					3.61
29.417	0.00	0.09	0.114	O					3.60
29.500	0.00	0.09	0.114	O					3.59
29.583	0.00	0.09	0.113	O					3.57
29.667	0.00	0.09	0.112	O					3.56
29.750	0.00	0.09	0.112	O					3.54
29.833	0.00	0.09	0.111	O					3.53
29.917	0.00	0.09	0.110	O					3.51
30.000	0.00	0.09	0.110	O					3.50
30.083	0.00	0.09	0.109	O					3.48
30.167	0.00	0.09	0.109	O					3.47
30.250	0.00	0.09	0.108	O					3.45
30.333	0.00	0.09	0.107	O					3.44
30.417	0.00	0.09	0.107	O					3.42
30.500	0.00	0.09	0.106	O					3.41
30.583	0.00	0.09	0.106	O					3.39
30.667	0.00	0.09	0.105	O					3.38
30.750	0.00	0.09	0.104	O					3.36
30.833	0.00	0.09	0.104	O					3.35
30.917	0.00	0.09	0.103	O					3.33
31.000	0.00	0.09	0.102	O					3.32
31.083	0.00	0.09	0.102	O					3.30
31.167	0.00	0.09	0.101	O					3.29
31.250	0.00	0.09	0.101	O					3.28
31.333	0.00	0.09	0.100	O					3.26
31.417	0.00	0.09	0.099	O					3.25
31.500	0.00	0.09	0.099	O					3.23
31.583	0.00	0.09	0.098	O					3.22
31.667	0.00	0.09	0.097	O					3.20
31.750	0.00	0.09	0.097	O					3.19
31.833	0.00	0.09	0.096	O					3.17
31.917	0.00	0.09	0.096	O					3.16
32.000	0.00	0.09	0.095	O					3.14
32.083	0.00	0.09	0.094	O					3.13
32.167	0.00	0.09	0.094	O					3.11
32.250	0.00	0.09	0.093	O					3.10
32.333	0.00	0.09	0.093	O					3.08
32.417	0.00	0.09	0.092	O					3.07

32.500	0.00	0.09	0.091	O	|	|	|	|	3.05
32.583	0.00	0.09	0.091	O	|	|	|	|	3.04
32.667	0.00	0.09	0.090	O	|	|	|	|	3.02
32.750	0.00	0.09	0.089	O	|	|	|	|	3.01
32.833	0.00	0.09	0.089	O	|	|	|	|	2.99
32.917	0.00	0.09	0.088	O	|	|	|	|	2.98
33.000	0.00	0.09	0.088	O	|	|	|	|	2.96
33.083	0.00	0.09	0.087	O	|	|	|	|	2.95
33.167	0.00	0.09	0.086	O	|	|	|	|	2.93
33.250	0.00	0.09	0.086	O	|	|	|	|	2.91
33.333	0.00	0.09	0.085	O	|	|	|	|	2.90
33.417	0.00	0.09	0.084	O	|	|	|	|	2.88
33.500	0.00	0.09	0.084	O	|	|	|	|	2.86
33.583	0.00	0.09	0.083	O	|	|	|	|	2.85
33.667	0.00	0.09	0.083	O	|	|	|	|	2.83
33.750	0.00	0.09	0.082	O	|	|	|	|	2.81
33.833	0.00	0.09	0.081	O	|	|	|	|	2.80
33.917	0.00	0.09	0.081	O	|	|	|	|	2.78
34.000	0.00	0.09	0.080	O	|	|	|	|	2.77
34.083	0.00	0.09	0.079	O	|	|	|	|	2.75
34.167	0.00	0.09	0.079	O	|	|	|	|	2.73
34.250	0.00	0.09	0.078	O	|	|	|	|	2.72
34.333	0.00	0.09	0.078	O	|	|	|	|	2.70
34.417	0.00	0.09	0.077	O	|	|	|	|	2.68
34.500	0.00	0.09	0.076	O	|	|	|	|	2.67
34.583	0.00	0.09	0.076	O	|	|	|	|	2.65
34.667	0.00	0.09	0.075	O	|	|	|	|	2.64
34.750	0.00	0.09	0.075	O	|	|	|	|	2.62
34.833	0.00	0.09	0.074	O	|	|	|	|	2.60
34.917	0.00	0.09	0.073	O	|	|	|	|	2.59
35.000	0.00	0.09	0.073	O	|	|	|	|	2.57
35.083	0.00	0.09	0.072	O	|	|	|	|	2.55
35.167	0.00	0.09	0.071	O	|	|	|	|	2.54
35.250	0.00	0.09	0.071	O	|	|	|	|	2.52
35.333	0.00	0.09	0.070	O	|	|	|	|	2.50
35.417	0.00	0.09	0.070	O	|	|	|	|	2.49
35.500	0.00	0.09	0.069	O	|	|	|	|	2.47
35.583	0.00	0.09	0.068	O	|	|	|	|	2.46
35.667	0.00	0.09	0.068	O	|	|	|	|	2.44
35.750	0.00	0.09	0.067	O	|	|	|	|	2.42
35.833	0.00	0.09	0.066	O	|	|	|	|	2.41
35.917	0.00	0.09	0.066	O	|	|	|	|	2.39
36.000	0.00	0.09	0.065	O	|	|	|	|	2.37
36.083	0.00	0.09	0.065	O	|	|	|	|	2.36
36.167	0.00	0.09	0.064	O	|	|	|	|	2.34
36.250	0.00	0.09	0.063	O	|	|	|	|	2.33
36.333	0.00	0.09	0.063	O	|	|	|	|	2.31
36.417	0.00	0.09	0.062	O	|	|	|	|	2.29
36.500	0.00	0.09	0.062	O	|	|	|	|	2.28
36.583	0.00	0.09	0.061	O	|	|	|	|	2.26
36.667	0.00	0.09	0.060	O	|	|	|	|	2.24
36.750	0.00	0.09	0.060	O	|	|	|	|	2.23
36.833	0.00	0.09	0.059	O	|	|	|	|	2.21
36.917	0.00	0.09	0.058	O	|	|	|	|	2.20
37.000	0.00	0.09	0.058	O	|	|	|	|	2.18
37.083	0.00	0.09	0.057	O	|	|	|	|	2.16
37.167	0.00	0.09	0.057	O	|	|	|	|	2.15
37.250	0.00	0.09	0.056	O	|	|	|	|	2.13
37.333	0.00	0.09	0.055	O	|	|	|	|	2.11

37.417	0.00	0.09	0.055	O	|	|	|	|	2.10
37.500	0.00	0.09	0.054	O	|	|	|	|	2.08
37.583	0.00	0.09	0.053	O	|	|	|	|	2.06
37.667	0.00	0.09	0.053	O	|	|	|	|	2.05
37.750	0.00	0.09	0.052	O	|	|	|	|	2.03
37.833	0.00	0.09	0.052	O	|	|	|	|	2.02
37.917	0.00	0.09	0.051	O	|	|	|	|	2.00
38.000	0.00	0.09	0.050	O	|	|	|	|	1.98
38.083	0.00	0.09	0.050	O	|	|	|	|	1.96
38.167	0.00	0.09	0.049	O	|	|	|	|	1.94
38.250	0.00	0.09	0.048	O	|	|	|	|	1.93
38.333	0.00	0.09	0.048	O	|	|	|	|	1.91
38.417	0.00	0.09	0.047	O	|	|	|	|	1.89
38.500	0.00	0.09	0.047	O	|	|	|	|	1.87
38.583	0.00	0.09	0.046	O	|	|	|	|	1.85
38.667	0.00	0.09	0.045	O	|	|	|	|	1.84
38.750	0.00	0.09	0.045	O	|	|	|	|	1.82
38.833	0.00	0.09	0.044	O	|	|	|	|	1.80
38.917	0.00	0.09	0.044	O	|	|	|	|	1.78
39.000	0.00	0.09	0.043	O	|	|	|	|	1.76
39.083	0.00	0.09	0.042	O	|	|	|	|	1.74
39.167	0.00	0.09	0.042	O	|	|	|	|	1.73
39.250	0.00	0.09	0.041	O	|	|	|	|	1.71
39.333	0.00	0.09	0.040	O	|	|	|	|	1.69
39.417	0.00	0.09	0.040	O	|	|	|	|	1.67
39.500	0.00	0.09	0.039	O	|	|	|	|	1.65
39.583	0.00	0.09	0.039	O	|	|	|	|	1.63
39.667	0.00	0.09	0.038	O	|	|	|	|	1.62
39.750	0.00	0.09	0.037	O	|	|	|	|	1.60
39.833	0.00	0.09	0.037	O	|	|	|	|	1.58
39.917	0.00	0.09	0.036	O	|	|	|	|	1.56
40.000	0.00	0.09	0.035	O	|	|	|	|	1.54
40.083	0.00	0.09	0.035	O	|	|	|	|	1.53
40.167	0.00	0.09	0.034	O	|	|	|	|	1.51
40.250	0.00	0.09	0.034	O	|	|	|	|	1.49
40.333	0.00	0.09	0.033	O	|	|	|	|	1.46
40.417	0.00	0.09	0.032	O	|	|	|	|	1.44
40.500	0.00	0.09	0.032	O	|	|	|	|	1.42
40.583	0.00	0.09	0.031	O	|	|	|	|	1.40
40.667	0.00	0.09	0.031	O	|	|	|	|	1.38
40.750	0.00	0.09	0.030	O	|	|	|	|	1.35
40.833	0.00	0.09	0.029	O	|	|	|	|	1.33
40.917	0.00	0.09	0.029	O	|	|	|	|	1.31
41.000	0.00	0.09	0.028	O	|	|	|	|	1.29
41.083	0.00	0.09	0.027	O	|	|	|	|	1.27
41.167	0.00	0.09	0.027	O	|	|	|	|	1.24
41.250	0.00	0.09	0.026	O	|	|	|	|	1.22
41.333	0.00	0.09	0.026	O	|	|	|	|	1.20
41.417	0.00	0.09	0.025	O	|	|	|	|	1.18
41.500	0.00	0.09	0.024	O	|	|	|	|	1.15
41.583	0.00	0.09	0.024	O	|	|	|	|	1.13
41.667	0.00	0.09	0.023	O	|	|	|	|	1.11
41.750	0.00	0.09	0.022	O	|	|	|	|	1.09
41.833	0.00	0.09	0.022	O	|	|	|	|	1.07
41.917	0.00	0.09	0.021	O	|	|	|	|	1.04
42.000	0.00	0.09	0.021	O	|	|	|	|	1.02
42.083	0.00	0.09	0.020	O	|	|	|	|	1.00
42.167	0.00	0.09	0.019	O	|	|	|	|	0.97
42.250	0.00	0.09	0.019	O	|	|	|	|	0.94

42.333	0.00	0.09	0.018	O	|	|	|	|	0.91
42.417	0.00	0.09	0.018	O	|	|	|	|	0.88
42.500	0.00	0.09	0.017	O	|	|	|	|	0.84
42.583	0.00	0.09	0.016	O	|	|	|	|	0.81
42.667	0.00	0.09	0.016	O	|	|	|	|	0.78
42.750	0.00	0.09	0.015	O	|	|	|	|	0.75
42.833	0.00	0.09	0.014	O	|	|	|	|	0.72
42.917	0.00	0.09	0.014	O	|	|	|	|	0.69
43.000	0.00	0.09	0.013	O	|	|	|	|	0.66
43.083	0.00	0.09	0.013	O	|	|	|	|	0.63
43.167	0.00	0.09	0.012	O	|	|	|	|	0.60
43.250	0.00	0.09	0.011	O	|	|	|	|	0.57
43.333	0.00	0.09	0.011	O	|	|	|	|	0.53
43.417	0.00	0.09	0.010	O	|	|	|	|	0.50
43.500	0.00	0.09	0.009	O	|	|	|	|	0.47
43.583	0.00	0.08	0.009	O	|	|	|	|	0.44
43.667	0.00	0.08	0.008	O	|	|	|	|	0.42
43.750	0.00	0.07	0.008	O	|	|	|	|	0.39
43.833	0.00	0.07	0.007	O	|	|	|	|	0.37
43.917	0.00	0.06	0.007	O	|	|	|	|	0.35
44.000	0.00	0.06	0.007	O	|	|	|	|	0.33
44.083	0.00	0.06	0.006	O	|	|	|	|	0.31
44.167	0.00	0.05	0.006	O	|	|	|	|	0.29
44.250	0.00	0.05	0.005	O	|	|	|	|	0.27
44.333	0.00	0.05	0.005	O	|	|	|	|	0.25
44.417	0.00	0.04	0.005	O	|	|	|	|	0.24
44.500	0.00	0.04	0.004	O	|	|	|	|	0.22
44.583	0.00	0.04	0.004	O	|	|	|	|	0.21
44.667	0.00	0.04	0.004	O	|	|	|	|	0.20
44.750	0.00	0.03	0.004	O	|	|	|	|	0.19
44.833	0.00	0.03	0.004	O	|	|	|	|	0.18
44.917	0.00	0.03	0.003	O	|	|	|	|	0.16
45.000	0.00	0.03	0.003	O	|	|	|	|	0.15
45.083	0.00	0.03	0.003	O	|	|	|	|	0.15
45.167	0.00	0.02	0.003	O	|	|	|	|	0.14
45.250	0.00	0.02	0.003	O	|	|	|	|	0.13
45.333	0.00	0.02	0.002	O	|	|	|	|	0.12
45.417	0.00	0.02	0.002	O	|	|	|	|	0.11
45.500	0.00	0.02	0.002	O	|	|	|	|	0.11
45.583	0.00	0.02	0.002	O	|	|	|	|	0.10
45.667	0.00	0.02	0.002	O	|	|	|	|	0.09
45.750	0.00	0.02	0.002	O	|	|	|	|	0.09
45.833	0.00	0.02	0.002	O	|	|	|	|	0.08
45.917	0.00	0.01	0.002	O	|	|	|	|	0.08
46.000	0.00	0.01	0.001	O	|	|	|	|	0.07
46.083	0.00	0.01	0.001	O	|	|	|	|	0.07
46.167	0.00	0.01	0.001	O	|	|	|	|	0.07
46.250	0.00	0.01	0.001	O	|	|	|	|	0.06
46.333	0.00	0.01	0.001	O	|	|	|	|	0.06
46.417	0.00	0.01	0.001	O	|	|	|	|	0.05
46.500	0.00	0.01	0.001	O	|	|	|	|	0.05
46.583	0.00	0.01	0.001	O	|	|	|	|	0.05
46.667	0.00	0.01	0.001	O	|	|	|	|	0.04
46.750	0.00	0.01	0.001	O	|	|	|	|	0.04
46.833	0.00	0.01	0.001	O	|	|	|	|	0.04
46.917	0.00	0.01	0.001	O	|	|	|	|	0.04
47.000	0.00	0.01	0.001	O	|	|	|	|	0.03
47.083	0.00	0.01	0.001	O	|	|	|	|	0.03
47.167	0.00	0.01	0.001	O	|	|	|	|	0.03

47.250	0.00	0.01	0.001	O	|	|	|	|	0.03
47.333	0.00	0.00	0.001	O	|	|	|	|	0.03
47.417	0.00	0.00	0.001	O	|	|	|	|	0.03
47.500	0.00	0.00	0.000	O	|	|	|	|	0.02
47.583	0.00	0.00	0.000	O	|	|	|	|	0.02
47.667	0.00	0.00	0.000	O	|	|	|	|	0.02
47.750	0.00	0.00	0.000	O	|	|	|	|	0.02
47.833	0.00	0.00	0.000	O	|	|	|	|	0.02
47.917	0.00	0.00	0.000	O	|	|	|	|	0.02
48.000	0.00	0.00	0.000	O	|	|	|	|	0.02
48.083	0.00	0.00	0.000	O	|	|	|	|	0.02
48.167	0.00	0.00	0.000	O	|	|	|	|	0.01
48.250	0.00	0.00	0.000	O	|	|	|	|	0.01
48.333	0.00	0.00	0.000	O	|	|	|	|	0.01
48.417	0.00	0.00	0.000	O	|	|	|	|	0.01
48.500	0.00	0.00	0.000	O	|	|	|	|	0.01
48.583	0.00	0.00	0.000	O	|	|	|	|	0.01
48.667	0.00	0.00	0.000	O	|	|	|	|	0.01
48.750	0.00	0.00	0.000	O	|	|	|	|	0.01
48.833	0.00	0.00	0.000	O	|	|	|	|	0.01
48.917	0.00	0.00	0.000	O	|	|	|	|	0.01
49.000	0.00	0.00	0.000	O	|	|	|	|	0.01
49.083	0.00	0.00	0.000	O	|	|	|	|	0.01
49.167	0.00	0.00	0.000	O	|	|	|	|	0.01
49.250	0.00	0.00	0.000	O	|	|	|	|	0.01
49.333	0.00	0.00	0.000	O	|	|	|	|	0.01
49.417	0.00	0.00	0.000	O	|	|	|	|	0.01
49.500	0.00	0.00	0.000	O	|	|	|	|	0.01

**********HYDROGRAPH DATA**********

Number of intervals = 594
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 1.590 (CFS)
Total volume = 0.614 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

APPENDIX F.5: 25-YEAR BASIN ROUTING CALCULATION

FLOOD HYDROGRAPH ROUTING PROGRAM
Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2014
Study date: 04/25/25

320.05 BUFFALO GROVE
BASIN ROUTING; BASIN B
25-YR, 24-HR STORM

Program License Serial Number 6279

********** HYDROGRAPH INFORMATION **********

From study/file name: UPB25.rte
**********HYDROGRAPH DATA**********
Number of intervals = 290
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 6.958 (CFS)
Total volume = 0.770 (Ac.Ft)
Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

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Process from Point/Station 101.000 to Point/Station 102.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 290
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.500	0.010	0.090	0.010	0.010
1.000	0.020	0.090	0.020	0.020

1.500	0.034	0.090	0.034	0.034
2.000	0.051	0.090	0.051	0.051
2.500	0.070	0.090	0.070	0.070
3.000	0.089	0.090	0.089	0.089
3.500	0.110	0.090	0.110	0.110
4.000	0.131	0.090	0.131	0.131
4.500	0.153	0.090	0.153	0.153
5.000	0.174	1.590	0.169	0.179
5.500	0.196	1.590	0.191	0.201
6.000	0.216	1.590	0.211	0.221
6.500	0.236	1.590	0.231	0.241
7.000	0.255	1.590	0.250	0.260
7.500	0.272	1.590	0.267	0.277
8.000	0.286	1.590	0.281	0.291
8.500	0.296	1.590	0.291	0.301
9.000	0.306	1.590	0.301	0.311

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	1.7	3.48	5.22	6.96	Depth (Ft.)
0.083	0.05	0.00	0.000	O	|	|	|	|	0.01
0.167	0.17	0.01	0.001	O	|	|	|	|	0.04
0.250	0.19	0.02	0.002	O	|	|	|	|	0.10
0.333	0.19	0.03	0.003	O	|	|	|	|	0.16
0.417	0.19	0.04	0.004	O	|	|	|	|	0.21
0.500	0.19	0.05	0.005	O	|	|	|	|	0.26
0.583	0.19	0.06	0.006	O	|	|	|	|	0.31
0.667	0.19	0.06	0.007	O	|	|	|	|	0.35
0.750	0.19	0.07	0.008	O	|	|	|	|	0.39
0.833	0.19	0.08	0.009	O	|	|	|	|	0.43
0.917	0.19	0.08	0.009	O	|	|	|	|	0.47
1.000	0.19	0.09	0.010	O	|	|	|	|	0.50
1.083	0.19	0.09	0.011	O	|	|	|	|	0.54
1.167	0.19	0.09	0.011	O	|	|	|	|	0.57
1.250	0.19	0.09	0.012	O	|	|	|	|	0.61
1.333	0.19	0.09	0.013	O	|	|	|	|	0.64
1.417	0.19	0.09	0.014	O	|	|	|	|	0.68
1.500	0.19	0.09	0.014	O	|	|	|	|	0.71
1.583	0.19	0.09	0.015	O	|	|	|	|	0.75
1.667	0.19	0.09	0.016	O	|	|	|	|	0.79
1.750	0.20	0.09	0.016	O	|	|	|	|	0.82
1.833	0.20	0.09	0.017	O	|	|	|	|	0.86
1.917	0.20	0.09	0.018	O	|	|	|	|	0.90
2.000	0.20	0.09	0.019	O	|	|	|	|	0.93
2.083	0.20	0.09	0.019	O	|	|	|	|	0.97
2.167	0.20	0.09	0.020	O	|	|	|	|	1.00
2.250	0.20	0.09	0.021	O	|	|	|	|	1.03
2.333	0.20	0.09	0.022	O	|	|	|	|	1.06
2.417	0.20	0.09	0.022	O	|	|	|	|	1.09
2.500	0.20	0.09	0.023	O	|	|	|	|	1.11
2.583	0.20	0.09	0.024	O	|	|	|	|	1.14
2.667	0.20	0.09	0.025	O	|	|	|	|	1.17
2.750	0.20	0.09	0.025	O	|	|	|	|	1.20
2.833	0.20	0.09	0.026	O	|	|	|	|	1.22
2.917	0.20	0.09	0.027	O	|	|	|	|	1.25

3.000	0.20	0.09	0.028	O					1.28
3.083	0.21	0.09	0.029	O					1.31
3.167	0.21	0.09	0.029	O					1.34
3.250	0.21	0.09	0.030	O					1.36
3.333	0.21	0.09	0.031	O					1.39
3.417	0.21	0.09	0.032	O					1.42
3.500	0.21	0.09	0.033	O					1.45
3.583	0.21	0.09	0.033	O					1.48
3.667	0.21	0.09	0.034	O					1.51
3.750	0.21	0.09	0.035	O					1.53
3.833	0.21	0.09	0.036	O					1.56
3.917	0.21	0.09	0.037	O					1.58
4.000	0.21	0.09	0.038	O					1.61
4.083	0.21	0.09	0.038	O					1.63
4.167	0.21	0.09	0.039	O					1.66
4.250	0.22	0.09	0.040	O					1.68
4.333	0.22	0.09	0.041	O					1.71
4.417	0.22	0.09	0.042	O					1.73
4.500	0.22	0.09	0.043	OI					1.76
4.583	0.22	0.09	0.044	OI					1.78
4.667	0.22	0.09	0.045	OI					1.81
4.750	0.22	0.09	0.045	OI					1.84
4.833	0.22	0.09	0.046	OI					1.86
4.917	0.22	0.09	0.047	OI					1.89
5.000	0.22	0.09	0.048	OI					1.92
5.083	0.22	0.09	0.049	OI					1.94
5.167	0.22	0.09	0.050	OI					1.97
5.250	0.23	0.09	0.051	OI					2.00
5.333	0.23	0.09	0.052	OI					2.02
5.417	0.23	0.09	0.053	OI					2.05
5.500	0.23	0.09	0.054	OI					2.07
5.583	0.23	0.09	0.055	OI					2.10
5.667	0.23	0.09	0.056	OI					2.12
5.750	0.23	0.09	0.057	OI					2.15
5.833	0.23	0.09	0.058	OI					2.17
5.917	0.23	0.09	0.059	OI					2.20
6.000	0.23	0.09	0.060	OI					2.23
6.083	0.23	0.09	0.061	OI					2.25
6.167	0.24	0.09	0.062	OI					2.28
6.250	0.24	0.09	0.063	OI					2.31
6.333	0.24	0.09	0.064	OI					2.33
6.417	0.24	0.09	0.065	OI					2.36
6.500	0.24	0.09	0.066	OI					2.39
6.583	0.24	0.09	0.067	OI					2.41
6.667	0.24	0.09	0.068	OI					2.44
6.750	0.24	0.09	0.069	OI					2.47
6.833	0.24	0.09	0.070	OI					2.50
6.917	0.25	0.09	0.071	OI					2.52
7.000	0.25	0.09	0.072	OI					2.55
7.083	0.25	0.09	0.073	OI					2.58
7.167	0.25	0.09	0.074	OI					2.61
7.250	0.25	0.09	0.075	OI					2.64
7.333	0.25	0.09	0.076	OI					2.67
7.417	0.25	0.09	0.077	OI					2.70
7.500	0.25	0.09	0.079	OI					2.73
7.583	0.25	0.09	0.080	OI					2.76
7.667	0.26	0.09	0.081	OI					2.79
7.750	0.26	0.09	0.082	OI					2.82
7.833	0.26	0.09	0.083	OI					2.85

7.917	0.26	0.09	0.084	OI	|	|	|	|	2.88
8.000	0.26	0.09	0.086	OI	|	|	|	|	2.91
8.083	0.26	0.09	0.087	OI	|	|	|	|	2.94
8.167	0.26	0.09	0.088	OI	|	|	|	|	2.97
8.250	0.27	0.09	0.089	OI	|	|	|	|	3.00
8.333	0.27	0.09	0.090	OI	|	|	|	|	3.03
8.417	0.27	0.09	0.092	OI	|	|	|	|	3.06
8.500	0.27	0.09	0.093	OI	|	|	|	|	3.09
8.583	0.27	0.09	0.094	OI	|	|	|	|	3.12
8.667	0.27	0.09	0.095	OI	|	|	|	|	3.15
8.750	0.27	0.09	0.097	OI	|	|	|	|	3.18
8.833	0.28	0.09	0.098	OI	|	|	|	|	3.21
8.917	0.28	0.09	0.099	OI	|	|	|	|	3.24
9.000	0.28	0.09	0.100	OI	|	|	|	|	3.27
9.083	0.28	0.09	0.102	OI	|	|	|	|	3.30
9.167	0.28	0.09	0.103	OI	|	|	|	|	3.33
9.250	0.28	0.09	0.104	OI	|	|	|	|	3.37
9.333	0.29	0.09	0.106	OI	|	|	|	|	3.40
9.417	0.29	0.09	0.107	OI	|	|	|	|	3.43
9.500	0.29	0.09	0.108	OI	|	|	|	|	3.46
9.583	0.29	0.09	0.110	OI	|	|	|	|	3.50
9.667	0.29	0.09	0.111	OI	|	|	|	|	3.53
9.750	0.30	0.09	0.113	OI	|	|	|	|	3.56
9.833	0.30	0.09	0.114	OI	|	|	|	|	3.60
9.917	0.30	0.09	0.116	OI	|	|	|	|	3.63
10.000	0.30	0.09	0.117	OI	|	|	|	|	3.67
10.083	0.30	0.09	0.118	OI	|	|	|	|	3.70
10.167	0.31	0.09	0.120	OI	|	|	|	|	3.74
10.250	0.31	0.09	0.121	OI	|	|	|	|	3.77
10.333	0.31	0.09	0.123	OI	|	|	|	|	3.81
10.417	0.31	0.09	0.124	OI	|	|	|	|	3.85
10.500	0.32	0.09	0.126	OI	|	|	|	|	3.88
10.583	0.32	0.09	0.128	OI	|	|	|	|	3.92
10.667	0.32	0.09	0.129	OI	|	|	|	|	3.96
10.750	0.32	0.09	0.131	OI	|	|	|	|	3.99
10.833	0.33	0.09	0.132	OI	|	|	|	|	4.03
10.917	0.33	0.09	0.134	OI	|	|	|	|	4.07
11.000	0.33	0.09	0.136	OI	|	|	|	|	4.11
11.083	0.33	0.09	0.137	OI	|	|	|	|	4.14
11.167	0.34	0.09	0.139	OI	|	|	|	|	4.18
11.250	0.34	0.09	0.141	OI	|	|	|	|	4.22
11.333	0.34	0.09	0.142	OI	|	|	|	|	4.26
11.417	0.35	0.09	0.144	OI	|	|	|	|	4.30
11.500	0.35	0.09	0.146	OI	|	|	|	|	4.34
11.583	0.35	0.09	0.148	OI	|	|	|	|	4.38
11.667	0.36	0.09	0.150	OI	|	|	|	|	4.42
11.750	0.36	0.09	0.151	OI	|	|	|	|	4.46
11.833	0.36	0.11	0.153	OI	|	|	|	|	4.51
11.917	0.37	0.21	0.155	OI	|	|	|	|	4.54
12.000	0.37	0.27	0.156	|O	|	|	|	|	4.56
12.083	0.38	0.31	0.156	|O	|	|	|	|	4.57
12.167	0.41	0.35	0.157	|O	|	|	|	|	4.59
12.250	0.42	0.37	0.157	|O	|	|	|	|	4.59
12.333	0.42	0.39	0.157	|O	|	|	|	|	4.60
12.417	0.43	0.41	0.157	|O	|	|	|	|	4.61
12.500	0.43	0.42	0.158	|O	|	|	|	|	4.61
12.583	0.44	0.42	0.158	|OI	|	|	|	|	4.61
12.667	0.44	0.43	0.158	|OI	|	|	|	|	4.61
12.750	0.45	0.44	0.158	| O	|	|	|	|	4.62

12.833	0.45	0.44	0.158	O				4.62
12.917	0.46	0.45	0.158	O				4.62
13.000	0.46	0.45	0.158	O				4.62
13.083	0.47	0.46	0.158	O				4.62
13.167	0.48	0.46	0.158	O				4.62
13.250	0.48	0.47	0.158	O				4.63
13.333	0.49	0.48	0.158	O				4.63
13.417	0.50	0.48	0.158	O				4.63
13.500	0.50	0.49	0.159	O				4.63
13.583	0.51	0.50	0.159	O				4.64
13.667	0.52	0.50	0.159	O				4.64
13.750	0.53	0.51	0.159	O				4.64
13.833	0.54	0.52	0.159	O				4.64
13.917	0.54	0.53	0.159	O				4.65
14.000	0.55	0.54	0.159	O				4.65
14.083	0.56	0.55	0.159	O				4.65
14.167	0.58	0.55	0.160	O				4.65
14.250	0.59	0.57	0.160	O				4.66
14.333	0.60	0.58	0.160	O				4.66
14.417	0.61	0.59	0.160	O				4.67
14.500	0.63	0.60	0.160	O				4.67
14.583	0.64	0.61	0.160	O				4.67
14.667	0.66	0.63	0.161	OI				4.68
14.750	0.68	0.64	0.161	OI				4.68
14.833	0.70	0.66	0.161	O				4.69
14.917	0.72	0.68	0.161	O				4.70
15.000	0.74	0.70	0.162	O				4.70
15.083	0.77	0.72	0.162	O				4.71
15.167	0.80	0.75	0.162	O				4.72
15.250	0.83	0.77	0.163	O				4.73
15.333	0.87	0.80	0.163	OI				4.74
15.417	0.85	0.83	0.163	O				4.75
15.500	0.75	0.82	0.163	O				4.74
15.583	0.79	0.80	0.163	O				4.74
15.667	0.88	0.81	0.163	OI				4.74
15.750	0.98	0.86	0.164	OI				4.76
15.833	1.15	0.94	0.165	OI				4.78
15.917	1.45	1.08	0.167	O I				4.83
16.000	2.15	1.37	0.171	O	I			4.93
16.083	4.58	1.59	0.184	O		I		5.23
16.167	6.96	1.59	0.213	O			I	5.92
16.250	2.21	1.59	0.233	O	I			6.43
16.333	1.02	1.59	0.234	I O				6.44
16.417	0.87	1.59	0.229	I O				6.33
16.500	0.90	1.59	0.224	I O				6.20
16.583	0.84	1.59	0.219	I O				6.08
16.667	0.77	1.59	0.214	I O				5.94
16.750	0.72	1.59	0.208	I O				5.80
16.833	0.68	1.59	0.202	I O				5.65
16.917	0.64	1.59	0.195	I O				5.49
17.000	0.61	1.59	0.189	I O				5.34
17.083	0.59	1.59	0.182	I O				5.18
17.167	0.56	1.59	0.175	I O				5.02
17.250	0.54	1.24	0.169	I O				4.88
17.333	0.53	0.96	0.165	I O				4.79
17.417	0.51	0.79	0.163	IO				4.73
17.500	0.50	0.67	0.161	IO				4.69
17.583	0.48	0.60	0.160	O				4.67
17.667	0.47	0.55	0.159	O				4.65

17.750	0.46	0.52	0.159	| O	|	|	|	4.64
17.833	0.45	0.49	0.159	| O	|	|	|	4.63
17.917	0.44	0.47	0.158	| O	|	|	|	4.63
18.000	0.43	0.46	0.158	|IO	|	|	|	4.62
18.083	0.41	0.44	0.158	|IO	|	|	|	4.62
18.167	0.38	0.42	0.158	|O	|	|	|	4.61
18.250	0.37	0.40	0.157	|O	|	|	|	4.60
18.333	0.36	0.39	0.157	|O	|	|	|	4.60
18.417	0.35	0.37	0.157	|O	|	|	|	4.59
18.500	0.35	0.36	0.157	|O	|	|	|	4.59
18.583	0.34	0.36	0.157	|O	|	|	|	4.59
18.667	0.33	0.35	0.157	|O	|	|	|	4.59
18.750	0.33	0.34	0.157	|O	|	|	|	4.58
18.833	0.32	0.34	0.156	|O	|	|	|	4.58
18.917	0.32	0.33	0.156	|O	|	|	|	4.58
19.000	0.31	0.32	0.156	|O	|	|	|	4.58
19.083	0.31	0.32	0.156	|O	|	|	|	4.58
19.167	0.30	0.31	0.156	|O	|	|	|	4.57
19.250	0.30	0.31	0.156	|O	|	|	|	4.57
19.333	0.30	0.30	0.156	|O	|	|	|	4.57
19.417	0.29	0.30	0.156	|O	|	|	|	4.57
19.500	0.29	0.30	0.156	|O	|	|	|	4.57
19.583	0.28	0.29	0.156	|O	|	|	|	4.57
19.667	0.28	0.29	0.156	|O	|	|	|	4.57
19.750	0.28	0.29	0.156	|O	|	|	|	4.57
19.833	0.27	0.28	0.156	|O	|	|	|	4.56
19.917	0.27	0.28	0.156	|O	|	|	|	4.56
20.000	0.27	0.28	0.156	|O	|	|	|	4.56
20.083	0.27	0.27	0.156	|O	|	|	|	4.56
20.167	0.26	0.27	0.156	|O	|	|	|	4.56
20.250	0.26	0.27	0.155	|O	|	|	|	4.56
20.333	0.26	0.26	0.155	|O	|	|	|	4.56
20.417	0.25	0.26	0.155	|O	|	|	|	4.56
20.500	0.25	0.26	0.155	|O	|	|	|	4.56
20.583	0.25	0.26	0.155	|O	|	|	|	4.56
20.667	0.25	0.25	0.155	|O	|	|	|	4.55
20.750	0.25	0.25	0.155	|O	|	|	|	4.55
20.833	0.24	0.25	0.155	|O	|	|	|	4.55
20.917	0.24	0.25	0.155	|O	|	|	|	4.55
21.000	0.24	0.24	0.155	|O	|	|	|	4.55
21.083	0.24	0.24	0.155	|O	|	|	|	4.55
21.167	0.23	0.24	0.155	|O	|	|	|	4.55
21.250	0.23	0.24	0.155	|O	|	|	|	4.55
21.333	0.23	0.23	0.155	|O	|	|	|	4.55
21.417	0.23	0.23	0.155	|O	|	|	|	4.55
21.500	0.23	0.23	0.155	|O	|	|	|	4.55
21.583	0.23	0.23	0.155	|O	|	|	|	4.55
21.667	0.22	0.23	0.155	|O	|	|	|	4.55
21.750	0.22	0.23	0.155	|O	|	|	|	4.55
21.833	0.22	0.22	0.155	|O	|	|	|	4.54
21.917	0.22	0.22	0.155	|O	|	|	|	4.54
22.000	0.22	0.22	0.155	IO	|	|	|	4.54
22.083	0.22	0.22	0.155	IO	|	|	|	4.54
22.167	0.21	0.22	0.155	O	|	|	|	4.54
22.250	0.21	0.22	0.155	O	|	|	|	4.54
22.333	0.21	0.21	0.155	O	|	|	|	4.54
22.417	0.21	0.21	0.155	O	|	|	|	4.54
22.500	0.21	0.21	0.155	O	|	|	|	4.54
22.583	0.21	0.21	0.155	O	|	|	|	4.54

22.667	0.21	0.21	0.155	O					4.54
22.750	0.20	0.21	0.155	O					4.54
22.833	0.20	0.21	0.155	O					4.54
22.917	0.20	0.20	0.155	O					4.54
23.000	0.20	0.20	0.155	O					4.54
23.083	0.20	0.20	0.155	O					4.54
23.167	0.20	0.20	0.155	O					4.54
23.250	0.20	0.20	0.155	O					4.54
23.333	0.20	0.20	0.155	O					4.54
23.417	0.19	0.20	0.154	O					4.54
23.500	0.19	0.20	0.154	O					4.54
23.583	0.19	0.19	0.154	O					4.53
23.667	0.19	0.19	0.154	O					4.53
23.750	0.19	0.19	0.154	O					4.53
23.833	0.19	0.19	0.154	O					4.53
23.917	0.19	0.19	0.154	O					4.53
24.000	0.19	0.19	0.154	O					4.53
24.083	0.14	0.18	0.154	O					4.53
24.167	0.02	0.14	0.154	O					4.52
24.250	0.00	0.09	0.153	O					4.50
24.333	0.00	0.09	0.152	O					4.48
24.417	0.00	0.09	0.152	O					4.47
24.500	0.00	0.09	0.151	O					4.46
24.583	0.00	0.09	0.150	O					4.44
24.667	0.00	0.09	0.150	O					4.43
24.750	0.00	0.09	0.149	O					4.41
24.833	0.00	0.09	0.149	O					4.40
24.917	0.00	0.09	0.148	O					4.39
25.000	0.00	0.09	0.147	O					4.37
25.083	0.00	0.09	0.147	O					4.36
25.167	0.00	0.09	0.146	O					4.34
25.250	0.00	0.09	0.146	O					4.33
25.333	0.00	0.09	0.145	O					4.32
25.417	0.00	0.09	0.144	O					4.30
25.500	0.00	0.09	0.144	O					4.29
25.583	0.00	0.09	0.143	O					4.27
25.667	0.00	0.09	0.142	O					4.26
25.750	0.00	0.09	0.142	O					4.25
25.833	0.00	0.09	0.141	O					4.23
25.917	0.00	0.09	0.141	O					4.22
26.000	0.00	0.09	0.140	O					4.20
26.083	0.00	0.09	0.139	O					4.19
26.167	0.00	0.09	0.139	O					4.17
26.250	0.00	0.09	0.138	O					4.16
26.333	0.00	0.09	0.137	O					4.15
26.417	0.00	0.09	0.137	O					4.13
26.500	0.00	0.09	0.136	O					4.12
26.583	0.00	0.09	0.136	O					4.10
26.667	0.00	0.09	0.135	O					4.09
26.750	0.00	0.09	0.134	O					4.08
26.833	0.00	0.09	0.134	O					4.06
26.917	0.00	0.09	0.133	O					4.05
27.000	0.00	0.09	0.133	O					4.03
27.083	0.00	0.09	0.132	O					4.02
27.167	0.00	0.09	0.131	O					4.01
27.250	0.00	0.09	0.131	O					3.99
27.333	0.00	0.09	0.130	O					3.98
27.417	0.00	0.09	0.129	O					3.96
27.500	0.00	0.09	0.129	O					3.95

27.583	0.00	0.09	0.128	O	|	|	|	|	3.93
27.667	0.00	0.09	0.128	O	|	|	|	|	3.92
27.750	0.00	0.09	0.127	O	|	|	|	|	3.90
27.833	0.00	0.09	0.126	O	|	|	|	|	3.89
27.917	0.00	0.09	0.126	O	|	|	|	|	3.87
28.000	0.00	0.09	0.125	O	|	|	|	|	3.86
28.083	0.00	0.09	0.124	O	|	|	|	|	3.84
28.167	0.00	0.09	0.124	O	|	|	|	|	3.83
28.250	0.00	0.09	0.123	O	|	|	|	|	3.81
28.333	0.00	0.09	0.123	O	|	|	|	|	3.80
28.417	0.00	0.09	0.122	O	|	|	|	|	3.78
28.500	0.00	0.09	0.121	O	|	|	|	|	3.77
28.583	0.00	0.09	0.121	O	|	|	|	|	3.76
28.667	0.00	0.09	0.120	O	|	|	|	|	3.74
28.750	0.00	0.09	0.119	O	|	|	|	|	3.73
28.833	0.00	0.09	0.119	O	|	|	|	|	3.71
28.917	0.00	0.09	0.118	O	|	|	|	|	3.70
29.000	0.00	0.09	0.118	O	|	|	|	|	3.68
29.083	0.00	0.09	0.117	O	|	|	|	|	3.67
29.167	0.00	0.09	0.116	O	|	|	|	|	3.65
29.250	0.00	0.09	0.116	O	|	|	|	|	3.64
29.333	0.00	0.09	0.115	O	|	|	|	|	3.62
29.417	0.00	0.09	0.115	O	|	|	|	|	3.61
29.500	0.00	0.09	0.114	O	|	|	|	|	3.59
29.583	0.00	0.09	0.113	O	|	|	|	|	3.58
29.667	0.00	0.09	0.113	O	|	|	|	|	3.56
29.750	0.00	0.09	0.112	O	|	|	|	|	3.55
29.833	0.00	0.09	0.111	O	|	|	|	|	3.53
29.917	0.00	0.09	0.111	O	|	|	|	|	3.52
30.000	0.00	0.09	0.110	O	|	|	|	|	3.50
30.083	0.00	0.09	0.110	O	|	|	|	|	3.49
30.167	0.00	0.09	0.109	O	|	|	|	|	3.47
30.250	0.00	0.09	0.108	O	|	|	|	|	3.46
30.333	0.00	0.09	0.108	O	|	|	|	|	3.45
30.417	0.00	0.09	0.107	O	|	|	|	|	3.43
30.500	0.00	0.09	0.106	O	|	|	|	|	3.42
30.583	0.00	0.09	0.106	O	|	|	|	|	3.40
30.667	0.00	0.09	0.105	O	|	|	|	|	3.39
30.750	0.00	0.09	0.105	O	|	|	|	|	3.37
30.833	0.00	0.09	0.104	O	|	|	|	|	3.36
30.917	0.00	0.09	0.103	O	|	|	|	|	3.34
31.000	0.00	0.09	0.103	O	|	|	|	|	3.33
31.083	0.00	0.09	0.102	O	|	|	|	|	3.31
31.167	0.00	0.09	0.102	O	|	|	|	|	3.30
31.250	0.00	0.09	0.101	O	|	|	|	|	3.28
31.333	0.00	0.09	0.100	O	|	|	|	|	3.27
31.417	0.00	0.09	0.100	O	|	|	|	|	3.25
31.500	0.00	0.09	0.099	O	|	|	|	|	3.24
31.583	0.00	0.09	0.098	O	|	|	|	|	3.22
31.667	0.00	0.09	0.098	O	|	|	|	|	3.21
31.750	0.00	0.09	0.097	O	|	|	|	|	3.19
31.833	0.00	0.09	0.097	O	|	|	|	|	3.18
31.917	0.00	0.09	0.096	O	|	|	|	|	3.17
32.000	0.00	0.09	0.095	O	|	|	|	|	3.15
32.083	0.00	0.09	0.095	O	|	|	|	|	3.14
32.167	0.00	0.09	0.094	O	|	|	|	|	3.12
32.250	0.00	0.09	0.093	O	|	|	|	|	3.11
32.333	0.00	0.09	0.093	O	|	|	|	|	3.09
32.417	0.00	0.09	0.092	O	|	|	|	|	3.08

32.500	0.00	0.09	0.092	O				3.06
32.583	0.00	0.09	0.091	O				3.05
32.667	0.00	0.09	0.090	O				3.03
32.750	0.00	0.09	0.090	O				3.02
32.833	0.00	0.09	0.089	O				3.00
32.917	0.00	0.09	0.088	O				2.99
33.000	0.00	0.09	0.088	O				2.97
33.083	0.00	0.09	0.087	O				2.95
33.167	0.00	0.09	0.087	O				2.94
33.250	0.00	0.09	0.086	O				2.92
33.333	0.00	0.09	0.085	O				2.91
33.417	0.00	0.09	0.085	O				2.89
33.500	0.00	0.09	0.084	O				2.87
33.583	0.00	0.09	0.084	O				2.86
33.667	0.00	0.09	0.083	O				2.84
33.750	0.00	0.09	0.082	O				2.82
33.833	0.00	0.09	0.082	O				2.81
33.917	0.00	0.09	0.081	O				2.79
34.000	0.00	0.09	0.080	O				2.77
34.083	0.00	0.09	0.080	O				2.76
34.167	0.00	0.09	0.079	O				2.74
34.250	0.00	0.09	0.079	O				2.73
34.333	0.00	0.09	0.078	O				2.71
34.417	0.00	0.09	0.077	O				2.69
34.500	0.00	0.09	0.077	O				2.68
34.583	0.00	0.09	0.076	O				2.66
34.667	0.00	0.09	0.075	O				2.64
34.750	0.00	0.09	0.075	O				2.63
34.833	0.00	0.09	0.074	O				2.61
34.917	0.00	0.09	0.074	O				2.60
35.000	0.00	0.09	0.073	O				2.58
35.083	0.00	0.09	0.072	O				2.56
35.167	0.00	0.09	0.072	O				2.55
35.250	0.00	0.09	0.071	O				2.53
35.333	0.00	0.09	0.071	O				2.51
35.417	0.00	0.09	0.070	O				2.50
35.500	0.00	0.09	0.069	O				2.48
35.583	0.00	0.09	0.069	O				2.46
35.667	0.00	0.09	0.068	O				2.45
35.750	0.00	0.09	0.067	O				2.43
35.833	0.00	0.09	0.067	O				2.42
35.917	0.00	0.09	0.066	O				2.40
36.000	0.00	0.09	0.066	O				2.38
36.083	0.00	0.09	0.065	O				2.37
36.167	0.00	0.09	0.064	O				2.35
36.250	0.00	0.09	0.064	O				2.33
36.333	0.00	0.09	0.063	O				2.32
36.417	0.00	0.09	0.062	O				2.30
36.500	0.00	0.09	0.062	O				2.29
36.583	0.00	0.09	0.061	O				2.27
36.667	0.00	0.09	0.061	O				2.25
36.750	0.00	0.09	0.060	O				2.24
36.833	0.00	0.09	0.059	O				2.22
36.917	0.00	0.09	0.059	O				2.20
37.000	0.00	0.09	0.058	O				2.19
37.083	0.00	0.09	0.058	O				2.17
37.167	0.00	0.09	0.057	O				2.15
37.250	0.00	0.09	0.056	O				2.14
37.333	0.00	0.09	0.056	O				2.12

37.417	0.00	0.09	0.055	O	|	|	|	|	2.11
37.500	0.00	0.09	0.054	O	|	|	|	|	2.09
37.583	0.00	0.09	0.054	O	|	|	|	|	2.07
37.667	0.00	0.09	0.053	O	|	|	|	|	2.06
37.750	0.00	0.09	0.053	O	|	|	|	|	2.04
37.833	0.00	0.09	0.052	O	|	|	|	|	2.02
37.917	0.00	0.09	0.051	O	|	|	|	|	2.01
38.000	0.00	0.09	0.051	O	|	|	|	|	1.99
38.083	0.00	0.09	0.050	O	|	|	|	|	1.97
38.167	0.00	0.09	0.049	O	|	|	|	|	1.95
38.250	0.00	0.09	0.049	O	|	|	|	|	1.94
38.333	0.00	0.09	0.048	O	|	|	|	|	1.92
38.417	0.00	0.09	0.048	O	|	|	|	|	1.90
38.500	0.00	0.09	0.047	O	|	|	|	|	1.88
38.583	0.00	0.09	0.046	O	|	|	|	|	1.86
38.667	0.00	0.09	0.046	O	|	|	|	|	1.84
38.750	0.00	0.09	0.045	O	|	|	|	|	1.83
38.833	0.00	0.09	0.044	O	|	|	|	|	1.81
38.917	0.00	0.09	0.044	O	|	|	|	|	1.79
39.000	0.00	0.09	0.043	O	|	|	|	|	1.77
39.083	0.00	0.09	0.043	O	|	|	|	|	1.75
39.167	0.00	0.09	0.042	O	|	|	|	|	1.74
39.250	0.00	0.09	0.041	O	|	|	|	|	1.72
39.333	0.00	0.09	0.041	O	|	|	|	|	1.70
39.417	0.00	0.09	0.040	O	|	|	|	|	1.68
39.500	0.00	0.09	0.040	O	|	|	|	|	1.66
39.583	0.00	0.09	0.039	O	|	|	|	|	1.64
39.667	0.00	0.09	0.038	O	|	|	|	|	1.63
39.750	0.00	0.09	0.038	O	|	|	|	|	1.61
39.833	0.00	0.09	0.037	O	|	|	|	|	1.59
39.917	0.00	0.09	0.036	O	|	|	|	|	1.57
40.000	0.00	0.09	0.036	O	|	|	|	|	1.55
40.083	0.00	0.09	0.035	O	|	|	|	|	1.53
40.167	0.00	0.09	0.035	O	|	|	|	|	1.52
40.250	0.00	0.09	0.034	O	|	|	|	|	1.50
40.333	0.00	0.09	0.033	O	|	|	|	|	1.48
40.417	0.00	0.09	0.033	O	|	|	|	|	1.45
40.500	0.00	0.09	0.032	O	|	|	|	|	1.43
40.583	0.00	0.09	0.031	O	|	|	|	|	1.41
40.667	0.00	0.09	0.031	O	|	|	|	|	1.39
40.750	0.00	0.09	0.030	O	|	|	|	|	1.37
40.833	0.00	0.09	0.030	O	|	|	|	|	1.34
40.917	0.00	0.09	0.029	O	|	|	|	|	1.32
41.000	0.00	0.09	0.028	O	|	|	|	|	1.30
41.083	0.00	0.09	0.028	O	|	|	|	|	1.28
41.167	0.00	0.09	0.027	O	|	|	|	|	1.25
41.250	0.00	0.09	0.027	O	|	|	|	|	1.23
41.333	0.00	0.09	0.026	O	|	|	|	|	1.21
41.417	0.00	0.09	0.025	O	|	|	|	|	1.19
41.500	0.00	0.09	0.025	O	|	|	|	|	1.17
41.583	0.00	0.09	0.024	O	|	|	|	|	1.14
41.667	0.00	0.09	0.023	O	|	|	|	|	1.12
41.750	0.00	0.09	0.023	O	|	|	|	|	1.10
41.833	0.00	0.09	0.022	O	|	|	|	|	1.08
41.917	0.00	0.09	0.022	O	|	|	|	|	1.06
42.000	0.00	0.09	0.021	O	|	|	|	|	1.03
42.083	0.00	0.09	0.020	O	|	|	|	|	1.01
42.167	0.00	0.09	0.020	O	|	|	|	|	0.98
42.250	0.00	0.09	0.019	O	|	|	|	|	0.95

42.333	0.00	0.09	0.018	O	|	|	|	|	0.92
42.417	0.00	0.09	0.018	O	|	|	|	|	0.89
42.500	0.00	0.09	0.017	O	|	|	|	|	0.86
42.583	0.00	0.09	0.017	O	|	|	|	|	0.83
42.667	0.00	0.09	0.016	O	|	|	|	|	0.80
42.750	0.00	0.09	0.015	O	|	|	|	|	0.77
42.833	0.00	0.09	0.015	O	|	|	|	|	0.74
42.917	0.00	0.09	0.014	O	|	|	|	|	0.71
43.000	0.00	0.09	0.013	O	|	|	|	|	0.67
43.083	0.00	0.09	0.013	O	|	|	|	|	0.64
43.167	0.00	0.09	0.012	O	|	|	|	|	0.61
43.250	0.00	0.09	0.012	O	|	|	|	|	0.58
43.333	0.00	0.09	0.011	O	|	|	|	|	0.55
43.417	0.00	0.09	0.010	O	|	|	|	|	0.52
43.500	0.00	0.09	0.010	O	|	|	|	|	0.49
43.583	0.00	0.08	0.009	O	|	|	|	|	0.46
43.667	0.00	0.08	0.009	O	|	|	|	|	0.43
43.750	0.00	0.07	0.008	O	|	|	|	|	0.41
43.833	0.00	0.07	0.008	O	|	|	|	|	0.38
43.917	0.00	0.06	0.007	O	|	|	|	|	0.36
44.000	0.00	0.06	0.007	O	|	|	|	|	0.34
44.083	0.00	0.06	0.006	O	|	|	|	|	0.32
44.167	0.00	0.05	0.006	O	|	|	|	|	0.30
44.250	0.00	0.05	0.006	O	|	|	|	|	0.28
44.333	0.00	0.05	0.005	O	|	|	|	|	0.26
44.417	0.00	0.04	0.005	O	|	|	|	|	0.25
44.500	0.00	0.04	0.005	O	|	|	|	|	0.23
44.583	0.00	0.04	0.004	O	|	|	|	|	0.22
44.667	0.00	0.04	0.004	O	|	|	|	|	0.21
44.750	0.00	0.03	0.004	O	|	|	|	|	0.19
44.833	0.00	0.03	0.004	O	|	|	|	|	0.18
44.917	0.00	0.03	0.003	O	|	|	|	|	0.17
45.000	0.00	0.03	0.003	O	|	|	|	|	0.16
45.083	0.00	0.03	0.003	O	|	|	|	|	0.15
45.167	0.00	0.03	0.003	O	|	|	|	|	0.14
45.250	0.00	0.02	0.003	O	|	|	|	|	0.13
45.333	0.00	0.02	0.002	O	|	|	|	|	0.12
45.417	0.00	0.02	0.002	O	|	|	|	|	0.12
45.500	0.00	0.02	0.002	O	|	|	|	|	0.11
45.583	0.00	0.02	0.002	O	|	|	|	|	0.10
45.667	0.00	0.02	0.002	O	|	|	|	|	0.10
45.750	0.00	0.02	0.002	O	|	|	|	|	0.09
45.833	0.00	0.02	0.002	O	|	|	|	|	0.09
45.917	0.00	0.01	0.002	O	|	|	|	|	0.08
46.000	0.00	0.01	0.002	O	|	|	|	|	0.08
46.083	0.00	0.01	0.001	O	|	|	|	|	0.07
46.167	0.00	0.01	0.001	O	|	|	|	|	0.07
46.250	0.00	0.01	0.001	O	|	|	|	|	0.06
46.333	0.00	0.01	0.001	O	|	|	|	|	0.06
46.417	0.00	0.01	0.001	O	|	|	|	|	0.06
46.500	0.00	0.01	0.001	O	|	|	|	|	0.05
46.583	0.00	0.01	0.001	O	|	|	|	|	0.05
46.667	0.00	0.01	0.001	O	|	|	|	|	0.05
46.750	0.00	0.01	0.001	O	|	|	|	|	0.04
46.833	0.00	0.01	0.001	O	|	|	|	|	0.04
46.917	0.00	0.01	0.001	O	|	|	|	|	0.04
47.000	0.00	0.01	0.001	O	|	|	|	|	0.04
47.083	0.00	0.01	0.001	O	|	|	|	|	0.03
47.167	0.00	0.01	0.001	O	|	|	|	|	0.03

47.250	0.00	0.01	0.001	O	|	|	|	|	0.03
47.333	0.00	0.01	0.001	O	|	|	|	|	0.03
47.417	0.00	0.00	0.001	O	|	|	|	|	0.03
47.500	0.00	0.00	0.000	O	|	|	|	|	0.02
47.583	0.00	0.00	0.000	O	|	|	|	|	0.02
47.667	0.00	0.00	0.000	O	|	|	|	|	0.02
47.750	0.00	0.00	0.000	O	|	|	|	|	0.02
47.833	0.00	0.00	0.000	O	|	|	|	|	0.02
47.917	0.00	0.00	0.000	O	|	|	|	|	0.02
48.000	0.00	0.00	0.000	O	|	|	|	|	0.02
48.083	0.00	0.00	0.000	O	|	|	|	|	0.02
48.167	0.00	0.00	0.000	O	|	|	|	|	0.02
48.250	0.00	0.00	0.000	O	|	|	|	|	0.01
48.333	0.00	0.00	0.000	O	|	|	|	|	0.01
48.417	0.00	0.00	0.000	O	|	|	|	|	0.01
48.500	0.00	0.00	0.000	O	|	|	|	|	0.01
48.583	0.00	0.00	0.000	O	|	|	|	|	0.01
48.667	0.00	0.00	0.000	O	|	|	|	|	0.01
48.750	0.00	0.00	0.000	O	|	|	|	|	0.01
48.833	0.00	0.00	0.000	O	|	|	|	|	0.01
48.917	0.00	0.00	0.000	O	|	|	|	|	0.01
49.000	0.00	0.00	0.000	O	|	|	|	|	0.01
49.083	0.00	0.00	0.000	O	|	|	|	|	0.01
49.167	0.00	0.00	0.000	O	|	|	|	|	0.01
49.250	0.00	0.00	0.000	O	|	|	|	|	0.01
49.333	0.00	0.00	0.000	O	|	|	|	|	0.01
49.417	0.00	0.00	0.000	O	|	|	|	|	0.01
49.500	0.00	0.00	0.000	O	|	|	|	|	0.01
49.583	0.00	0.00	0.000	O	|	|	|	|	0.01

**********HYDROGRAPH DATA**********

Number of intervals = 595
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 1.590 (CFS)
Total volume = 0.770 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

APPENDIX F.6: 100-YEAR BASIN ROUTING CALCULATION

FLOOD HYDROGRAPH ROUTING PROGRAM
Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2014
Study date: 04/25/25

320.05 BUFFALO GROVE
BASIN ROUTING; BASIN B
100-YR, 24-HR STORM

Program License Serial Number 6279

********** HYDROGRAPH INFORMATION **********

From study/file name: UPB100.rte
**********HYDROGRAPH DATA**********
Number of intervals = 290
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 9.291 (CFS)
Total volume = 1.082 (Ac.Ft)
Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

++
Process from Point/Station 101.000 to Point/Station 102.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 290
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.500	0.010	0.090	0.010	0.010
1.000	0.020	0.090	0.020	0.020

1.500	0.034	0.090	0.034	0.034
2.000	0.051	0.090	0.051	0.051
2.500	0.070	0.090	0.070	0.070
3.000	0.089	0.090	0.089	0.089
3.500	0.110	0.090	0.110	0.110
4.000	0.131	0.090	0.131	0.131
4.500	0.153	0.090	0.153	0.153
5.000	0.174	1.590	0.169	0.179
5.500	0.196	1.590	0.191	0.201
6.000	0.216	1.590	0.211	0.221
6.500	0.236	1.590	0.231	0.241
7.000	0.255	1.590	0.250	0.260
7.500	0.272	1.590	0.267	0.277
8.000	0.286	1.590	0.281	0.291
8.500	0.296	1.590	0.291	0.301
9.000	0.306	1.590	0.301	0.311

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0 2.3 4.65 6.97 9.29	Depth (Ft.)
0.083	0.07	0.00	0.000	O	0.01
0.167	0.24	0.01	0.001	O	0.06
0.250	0.27	0.03	0.003	O	0.14
0.333	0.27	0.04	0.004	O	0.22
0.417	0.27	0.05	0.006	O	0.30
0.500	0.27	0.07	0.007	O	0.37
0.583	0.27	0.08	0.009	O	0.44
0.667	0.27	0.09	0.010	O	0.50
0.750	0.27	0.09	0.011	O	0.56
0.833	0.27	0.09	0.013	O	0.63
0.917	0.27	0.09	0.014	O	0.69
1.000	0.27	0.09	0.015	O	0.75
1.083	0.27	0.09	0.016	O	0.82
1.167	0.27	0.09	0.018	O	0.88
1.250	0.28	0.09	0.019	O	0.94
1.333	0.28	0.09	0.020	O	1.00
1.417	0.28	0.09	0.021	O	1.05
1.500	0.28	0.09	0.023	O	1.10
1.583	0.28	0.09	0.024	O	1.14
1.667	0.28	0.09	0.025	O	1.19
1.750	0.28	0.09	0.027	O	1.24
1.833	0.28	0.09	0.028	O	1.28
1.917	0.28	0.09	0.029	O	1.33
2.000	0.28	0.09	0.031	O	1.38
2.083	0.28	0.09	0.032	O	1.42
2.167	0.28	0.09	0.033	O	1.47
2.250	0.29	0.09	0.035	O	1.52
2.333	0.29	0.09	0.036	O	1.56
2.417	0.29	0.09	0.037	O	1.60
2.500	0.29	0.09	0.039	O	1.64
2.583	0.29	0.09	0.040	O	1.68
2.667	0.29	0.09	0.041	O	1.72
2.750	0.29	0.09	0.043	OI	1.76
2.833	0.29	0.09	0.044	OI	1.80
2.917	0.29	0.09	0.045	OI	1.84

3.000	0.29	0.09	0.047	OI					1.88
3.083	0.29	0.09	0.048	OI					1.92
3.167	0.30	0.09	0.050	OI					1.96
3.250	0.30	0.09	0.051	OI					2.00
3.333	0.30	0.09	0.053	OI					2.04
3.417	0.30	0.09	0.054	OI					2.08
3.500	0.30	0.09	0.055	OI					2.12
3.583	0.30	0.09	0.057	OI					2.15
3.667	0.30	0.09	0.058	OI					2.19
3.750	0.30	0.09	0.060	OI					2.23
3.833	0.30	0.09	0.061	OI					2.27
3.917	0.30	0.09	0.063	OI					2.31
4.000	0.31	0.09	0.064	OI					2.35
4.083	0.31	0.09	0.066	OI					2.39
4.167	0.31	0.09	0.067	OI					2.42
4.250	0.31	0.09	0.069	OI					2.46
4.333	0.31	0.09	0.070	OI					2.50
4.417	0.31	0.09	0.072	OI					2.54
4.500	0.31	0.09	0.073	OI					2.58
4.583	0.31	0.09	0.075	OI					2.62
4.667	0.31	0.09	0.076	OI					2.66
4.750	0.32	0.09	0.078	OI					2.71
4.833	0.32	0.09	0.079	OI					2.75
4.917	0.32	0.09	0.081	OI					2.79
5.000	0.32	0.09	0.082	OI					2.83
5.083	0.32	0.09	0.084	OI					2.87
5.167	0.32	0.09	0.086	OI					2.91
5.250	0.32	0.09	0.087	OI					2.95
5.333	0.32	0.09	0.089	OI					3.00
5.417	0.32	0.09	0.090	OI					3.04
5.500	0.33	0.09	0.092	OI					3.07
5.583	0.33	0.09	0.094	OI					3.11
5.667	0.33	0.09	0.095	OI					3.15
5.750	0.33	0.09	0.097	OI					3.19
5.833	0.33	0.09	0.099	OI					3.23
5.917	0.33	0.09	0.100	OI					3.27
6.000	0.33	0.09	0.102	OI					3.31
6.083	0.34	0.09	0.104	OI					3.35
6.167	0.34	0.09	0.105	OI					3.39
6.250	0.34	0.09	0.107	OI					3.43
6.333	0.34	0.09	0.109	OI					3.47
6.417	0.34	0.09	0.111	OI					3.51
6.500	0.34	0.09	0.112	OI					3.55
6.583	0.34	0.09	0.114	OI					3.60
6.667	0.35	0.09	0.116	OI					3.64
6.750	0.35	0.09	0.118	OI					3.68
6.833	0.35	0.09	0.119	OI					3.72
6.917	0.35	0.09	0.121	OI					3.76
7.000	0.35	0.09	0.123	OI					3.81
7.083	0.35	0.09	0.125	OI					3.85
7.167	0.36	0.09	0.127	OI					3.89
7.250	0.36	0.09	0.128	OI					3.94
7.333	0.36	0.09	0.130	OI					3.98
7.417	0.36	0.09	0.132	OI					4.02
7.500	0.36	0.09	0.134	OI					4.07
7.583	0.36	0.09	0.136	OI					4.11
7.667	0.37	0.09	0.138	OI					4.15
7.750	0.37	0.09	0.140	OI					4.20
7.833	0.37	0.09	0.142	OI					4.24

7.917	0.37	0.09	0.143	OI	|	|	|	|	4.28
8.000	0.37	0.09	0.145	OI	|	|	|	|	4.33
8.083	0.38	0.09	0.147	OI	|	|	|	|	4.37
8.167	0.38	0.09	0.149	OI	|	|	|	|	4.42
8.250	0.38	0.09	0.151	OI	|	|	|	|	4.46
8.333	0.38	0.11	0.153	OI	|	|	|	|	4.51
8.417	0.38	0.22	0.155	OI	|	|	|	|	4.54
8.500	0.39	0.28	0.156	OI	|	|	|	|	4.56
8.583	0.39	0.32	0.156	|O	|	|	|	|	4.58
8.667	0.39	0.35	0.157	|O	|	|	|	|	4.59
8.750	0.39	0.37	0.157	|O	|	|	|	|	4.59
8.833	0.39	0.38	0.157	|O	|	|	|	|	4.60
8.917	0.40	0.38	0.157	|O	|	|	|	|	4.60
9.000	0.40	0.39	0.157	|O	|	|	|	|	4.60
9.083	0.40	0.39	0.157	|O	|	|	|	|	4.60
9.167	0.40	0.40	0.157	|O	|	|	|	|	4.60
9.250	0.41	0.40	0.157	|O	|	|	|	|	4.60
9.333	0.41	0.40	0.157	|O	|	|	|	|	4.60
9.417	0.41	0.41	0.157	|O	|	|	|	|	4.61
9.500	0.41	0.41	0.157	|O	|	|	|	|	4.61
9.583	0.42	0.41	0.157	|O	|	|	|	|	4.61
9.667	0.42	0.41	0.158	|O	|	|	|	|	4.61
9.750	0.42	0.42	0.158	|O	|	|	|	|	4.61
9.833	0.42	0.42	0.158	|O	|	|	|	|	4.61
9.917	0.43	0.42	0.158	|O	|	|	|	|	4.61
10.000	0.43	0.42	0.158	|O	|	|	|	|	4.61
10.083	0.43	0.43	0.158	|O	|	|	|	|	4.61
10.167	0.44	0.43	0.158	|O	|	|	|	|	4.61
10.250	0.44	0.43	0.158	|O	|	|	|	|	4.61
10.333	0.44	0.44	0.158	|O	|	|	|	|	4.62
10.417	0.45	0.44	0.158	|O	|	|	|	|	4.62
10.500	0.45	0.44	0.158	|O	|	|	|	|	4.62
10.583	0.45	0.45	0.158	|O	|	|	|	|	4.62
10.667	0.46	0.45	0.158	|O	|	|	|	|	4.62
10.750	0.46	0.45	0.158	|O	|	|	|	|	4.62
10.833	0.46	0.46	0.158	|O	|	|	|	|	4.62
10.917	0.47	0.46	0.158	|O	|	|	|	|	4.62
11.000	0.47	0.46	0.158	|O	|	|	|	|	4.62
11.083	0.47	0.47	0.158	|O	|	|	|	|	4.63
11.167	0.48	0.47	0.158	|O	|	|	|	|	4.63
11.250	0.48	0.48	0.158	|O	|	|	|	|	4.63
11.333	0.49	0.48	0.158	|O	|	|	|	|	4.63
11.417	0.49	0.48	0.159	|O	|	|	|	|	4.63
11.500	0.50	0.49	0.159	|O	|	|	|	|	4.63
11.583	0.50	0.49	0.159	|O	|	|	|	|	4.63
11.667	0.51	0.50	0.159	|O	|	|	|	|	4.64
11.750	0.51	0.50	0.159	|O	|	|	|	|	4.64
11.833	0.52	0.51	0.159	|O	|	|	|	|	4.64
11.917	0.52	0.51	0.159	|O	|	|	|	|	4.64
12.000	0.53	0.52	0.159	|O	|	|	|	|	4.64
12.083	0.54	0.52	0.159	|O	|	|	|	|	4.64
12.167	0.57	0.54	0.159	|O	|	|	|	|	4.65
12.250	0.58	0.55	0.159	|O	|	|	|	|	4.65
12.333	0.59	0.56	0.160	|OI	|	|	|	|	4.66
12.417	0.59	0.57	0.160	|OI	|	|	|	|	4.66
12.500	0.60	0.58	0.160	| O	|	|	|	|	4.66
12.583	0.60	0.59	0.160	| O	|	|	|	|	4.67
12.667	0.61	0.60	0.160	| O	|	|	|	|	4.67
12.750	0.62	0.60	0.160	| O	|	|	|	|	4.67

12.833	0.63	0.61	0.160	O					4.67
12.917	0.63	0.62	0.160	O					4.68
13.000	0.64	0.63	0.161	O					4.68
13.083	0.65	0.63	0.161	O					4.68
13.167	0.66	0.64	0.161	O					4.68
13.250	0.67	0.65	0.161	O					4.69
13.333	0.68	0.66	0.161	O					4.69
13.417	0.69	0.67	0.161	O					4.69
13.500	0.70	0.68	0.161	O					4.70
13.583	0.71	0.69	0.161	O					4.70
13.667	0.72	0.70	0.161	O					4.70
13.750	0.73	0.71	0.162	O					4.71
13.833	0.74	0.72	0.162	O					4.71
13.917	0.75	0.73	0.162	O					4.71
14.000	0.77	0.74	0.162	O					4.72
14.083	0.78	0.76	0.162	O					4.72
14.167	0.80	0.77	0.163	O					4.73
14.250	0.81	0.78	0.163	O					4.73
14.333	0.83	0.80	0.163	O					4.74
14.417	0.85	0.82	0.163	O					4.74
14.500	0.87	0.83	0.163	OI					4.75
14.583	0.89	0.85	0.164	OI					4.75
14.667	0.92	0.87	0.164	O					4.76
14.750	0.94	0.90	0.164	O					4.77
14.833	0.97	0.92	0.165	O					4.78
14.917	1.00	0.95	0.165	O					4.79
15.000	1.04	0.97	0.165	O					4.79
15.083	1.07	1.00	0.166	O					4.80
15.167	1.12	1.04	0.166	O					4.82
15.250	1.16	1.08	0.167	O					4.83
15.333	1.22	1.12	0.167	OI					4.84
15.417	1.19	1.16	0.168	OI					4.86
15.500	1.07	1.15	0.168	O					4.85
15.583	1.12	1.13	0.167	O					4.85
15.667	1.25	1.15	0.168	OI					4.85
15.750	1.40	1.22	0.169	O					4.88
15.833	1.65	1.34	0.170	OI					4.92
15.917	2.08	1.55	0.173	O I					4.99
16.000	3.00	1.59	0.180	O	I				5.14
16.083	6.18	1.59	0.201	O		I			5.62
16.167	9.29	1.59	0.243	O				I	6.69
16.250	3.06	1.59	0.275	O	I				7.60
16.333	1.45	1.59	0.279	IO					7.76
16.417	1.22	1.59	0.278	IO					7.70
16.500	1.26	1.59	0.275	IO					7.61
16.583	1.17	1.59	0.273	IO					7.52
16.667	1.07	1.59	0.269	I O					7.42
16.750	1.00	1.59	0.265	I O					7.31
16.833	0.94	1.59	0.261	I O					7.18
16.917	0.89	1.59	0.257	I O					7.05
17.000	0.85	1.59	0.252	I O					6.91
17.083	0.82	1.59	0.246	I O					6.78
17.167	0.78	1.59	0.241	I O					6.63
17.250	0.76	1.59	0.235	I O					6.48
17.333	0.73	1.59	0.230	I O					6.34
17.417	0.71	1.59	0.224	I O					6.19
17.500	0.69	1.59	0.217	I O					6.03
17.583	0.67	1.59	0.211	I O					5.88
17.667	0.65	1.59	0.205	I O					5.72

17.750	0.63	1.59	0.198	| I O |	|	|	|	5.55
17.833	0.62	1.59	0.192	| I O |	|	|	|	5.40
17.917	0.61	1.59	0.185	| I O |	|	|	|	5.24
18.000	0.59	1.59	0.178	| I O |	|	|	|	5.09
18.083	0.57	1.42	0.172	|I O |	|	|	|	4.94
18.167	0.53	1.08	0.167	|I O |	|	|	|	4.83
18.250	0.52	0.86	0.164	|IO |	|	|	|	4.76
18.333	0.51	0.72	0.162	|IO |	|	|	|	4.71
18.417	0.50	0.64	0.161	|IO |	|	|	|	4.68
18.500	0.49	0.58	0.160	|IO |	|	|	|	4.66
18.583	0.48	0.54	0.159	|O |	|	|	|	4.65
18.667	0.48	0.52	0.159	|O |	|	|	|	4.64
18.750	0.47	0.50	0.159	|O |	|	|	|	4.64
18.833	0.46	0.49	0.159	|O |	|	|	|	4.63
18.917	0.45	0.47	0.158	|O |	|	|	|	4.63
19.000	0.45	0.46	0.158	|O |	|	|	|	4.62
19.083	0.44	0.46	0.158	|O |	|	|	|	4.62
19.167	0.43	0.45	0.158	|O |	|	|	|	4.62
19.250	0.43	0.44	0.158	|O |	|	|	|	4.62
19.333	0.42	0.43	0.158	|O |	|	|	|	4.61
19.417	0.42	0.43	0.158	|O |	|	|	|	4.61
19.500	0.41	0.42	0.158	|O |	|	|	|	4.61
19.583	0.41	0.42	0.158	|O |	|	|	|	4.61
19.667	0.40	0.41	0.158	|O |	|	|	|	4.61
19.750	0.40	0.41	0.157	|O |	|	|	|	4.61
19.833	0.39	0.40	0.157	|O |	|	|	|	4.60
19.917	0.39	0.40	0.157	|O |	|	|	|	4.60
20.000	0.38	0.39	0.157	|O |	|	|	|	4.60
20.083	0.38	0.39	0.157	|O |	|	|	|	4.60
20.167	0.38	0.38	0.157	|O |	|	|	|	4.60
20.250	0.37	0.38	0.157	|O |	|	|	|	4.60
20.333	0.37	0.38	0.157	|O |	|	|	|	4.60
20.417	0.36	0.37	0.157	|O |	|	|	|	4.59
20.500	0.36	0.37	0.157	|O |	|	|	|	4.59
20.583	0.36	0.36	0.157	|O |	|	|	|	4.59
20.667	0.35	0.36	0.157	|O |	|	|	|	4.59
20.750	0.35	0.36	0.157	|O |	|	|	|	4.59
20.833	0.35	0.35	0.157	|O |	|	|	|	4.59
20.917	0.34	0.35	0.157	|O |	|	|	|	4.59
21.000	0.34	0.35	0.157	|O |	|	|	|	4.59
21.083	0.34	0.34	0.157	|O |	|	|	|	4.58
21.167	0.34	0.34	0.157	|O |	|	|	|	4.58
21.250	0.33	0.34	0.156	|O |	|	|	|	4.58
21.333	0.33	0.34	0.156	|O |	|	|	|	4.58
21.417	0.33	0.33	0.156	|O |	|	|	|	4.58
21.500	0.32	0.33	0.156	|O |	|	|	|	4.58
21.583	0.32	0.33	0.156	|O |	|	|	|	4.58
21.667	0.32	0.33	0.156	|O |	|	|	|	4.58
21.750	0.32	0.32	0.156	|O |	|	|	|	4.58
21.833	0.32	0.32	0.156	|O |	|	|	|	4.58
21.917	0.31	0.32	0.156	|O |	|	|	|	4.58
22.000	0.31	0.32	0.156	|O |	|	|	|	4.58
22.083	0.31	0.31	0.156	|O |	|	|	|	4.57
22.167	0.31	0.31	0.156	|O |	|	|	|	4.57
22.250	0.30	0.31	0.156	|O |	|	|	|	4.57
22.333	0.30	0.31	0.156	|O |	|	|	|	4.57
22.417	0.30	0.30	0.156	|O |	|	|	|	4.57
22.500	0.30	0.30	0.156	|O |	|	|	|	4.57
22.583	0.30	0.30	0.156	|O |	|	|	|	4.57

22.667	0.29	0.30	0.156	|O	|	|	|	|	4.57
22.750	0.29	0.30	0.156	|O	|	|	|	|	4.57
22.833	0.29	0.29	0.156	|O	|	|	|	|	4.57
22.917	0.29	0.29	0.156	IO	|	|	|	|	4.57
23.000	0.29	0.29	0.156	IO	|	|	|	|	4.57
23.083	0.29	0.29	0.156	O	|	|	|	|	4.57
23.167	0.28	0.29	0.156	O	|	|	|	|	4.57
23.250	0.28	0.29	0.156	O	|	|	|	|	4.57
23.333	0.28	0.28	0.156	O	|	|	|	|	4.56
23.417	0.28	0.28	0.156	O	|	|	|	|	4.56
23.500	0.28	0.28	0.156	O	|	|	|	|	4.56
23.583	0.28	0.28	0.156	O	|	|	|	|	4.56
23.667	0.27	0.28	0.156	O	|	|	|	|	4.56
23.750	0.27	0.28	0.156	O	|	|	|	|	4.56
23.833	0.27	0.27	0.156	O	|	|	|	|	4.56
23.917	0.27	0.27	0.156	O	|	|	|	|	4.56
24.000	0.27	0.27	0.156	O	|	|	|	|	4.56
24.083	0.20	0.26	0.155	O	|	|	|	|	4.56
24.167	0.03	0.20	0.155	O	|	|	|	|	4.54
24.250	0.00	0.13	0.153	O	|	|	|	|	4.51
24.333	0.00	0.09	0.153	O	|	|	|	|	4.49
24.417	0.00	0.09	0.152	O	|	|	|	|	4.48
24.500	0.00	0.09	0.152	O	|	|	|	|	4.47
24.583	0.00	0.09	0.151	O	|	|	|	|	4.45
24.667	0.00	0.09	0.150	O	|	|	|	|	4.44
24.750	0.00	0.09	0.150	O	|	|	|	|	4.42
24.833	0.00	0.09	0.149	O	|	|	|	|	4.41
24.917	0.00	0.09	0.148	O	|	|	|	|	4.40
25.000	0.00	0.09	0.148	O	|	|	|	|	4.38
25.083	0.00	0.09	0.147	O	|	|	|	|	4.37
25.167	0.00	0.09	0.147	O	|	|	|	|	4.35
25.250	0.00	0.09	0.146	O	|	|	|	|	4.34
25.333	0.00	0.09	0.145	O	|	|	|	|	4.33
25.417	0.00	0.09	0.145	O	|	|	|	|	4.31
25.500	0.00	0.09	0.144	O	|	|	|	|	4.30
25.583	0.00	0.09	0.143	O	|	|	|	|	4.28
25.667	0.00	0.09	0.143	O	|	|	|	|	4.27
25.750	0.00	0.09	0.142	O	|	|	|	|	4.25
25.833	0.00	0.09	0.142	O	|	|	|	|	4.24
25.917	0.00	0.09	0.141	O	|	|	|	|	4.23
26.000	0.00	0.09	0.140	O	|	|	|	|	4.21
26.083	0.00	0.09	0.140	O	|	|	|	|	4.20
26.167	0.00	0.09	0.139	O	|	|	|	|	4.18
26.250	0.00	0.09	0.138	O	|	|	|	|	4.17
26.333	0.00	0.09	0.138	O	|	|	|	|	4.16
26.417	0.00	0.09	0.137	O	|	|	|	|	4.14
26.500	0.00	0.09	0.137	O	|	|	|	|	4.13
26.583	0.00	0.09	0.136	O	|	|	|	|	4.11
26.667	0.00	0.09	0.135	O	|	|	|	|	4.10
26.750	0.00	0.09	0.135	O	|	|	|	|	4.09
26.833	0.00	0.09	0.134	O	|	|	|	|	4.07
26.917	0.00	0.09	0.134	O	|	|	|	|	4.06
27.000	0.00	0.09	0.133	O	|	|	|	|	4.04
27.083	0.00	0.09	0.132	O	|	|	|	|	4.03
27.167	0.00	0.09	0.132	O	|	|	|	|	4.02
27.250	0.00	0.09	0.131	O	|	|	|	|	4.00
27.333	0.00	0.09	0.130	O	|	|	|	|	3.99
27.417	0.00	0.09	0.130	O	|	|	|	|	3.97
27.500	0.00	0.09	0.129	O	|	|	|	|	3.96

27.583	0.00	0.09	0.129	O	|	|	|	|	3.94
27.667	0.00	0.09	0.128	O	|	|	|	|	3.93
27.750	0.00	0.09	0.127	O	|	|	|	|	3.91
27.833	0.00	0.09	0.127	O	|	|	|	|	3.90
27.917	0.00	0.09	0.126	O	|	|	|	|	3.88
28.000	0.00	0.09	0.125	O	|	|	|	|	3.87
28.083	0.00	0.09	0.125	O	|	|	|	|	3.85
28.167	0.00	0.09	0.124	O	|	|	|	|	3.84
28.250	0.00	0.09	0.124	O	|	|	|	|	3.82
28.333	0.00	0.09	0.123	O	|	|	|	|	3.81
28.417	0.00	0.09	0.122	O	|	|	|	|	3.79
28.500	0.00	0.09	0.122	O	|	|	|	|	3.78
28.583	0.00	0.09	0.121	O	|	|	|	|	3.77
28.667	0.00	0.09	0.121	O	|	|	|	|	3.75
28.750	0.00	0.09	0.120	O	|	|	|	|	3.74
28.833	0.00	0.09	0.119	O	|	|	|	|	3.72
28.917	0.00	0.09	0.119	O	|	|	|	|	3.71
29.000	0.00	0.09	0.118	O	|	|	|	|	3.69
29.083	0.00	0.09	0.117	O	|	|	|	|	3.68
29.167	0.00	0.09	0.117	O	|	|	|	|	3.66
29.250	0.00	0.09	0.116	O	|	|	|	|	3.65
29.333	0.00	0.09	0.116	O	|	|	|	|	3.63
29.417	0.00	0.09	0.115	O	|	|	|	|	3.62
29.500	0.00	0.09	0.114	O	|	|	|	|	3.60
29.583	0.00	0.09	0.114	O	|	|	|	|	3.59
29.667	0.00	0.09	0.113	O	|	|	|	|	3.57
29.750	0.00	0.09	0.112	O	|	|	|	|	3.56
29.833	0.00	0.09	0.112	O	|	|	|	|	3.54
29.917	0.00	0.09	0.111	O	|	|	|	|	3.53
30.000	0.00	0.09	0.111	O	|	|	|	|	3.51
30.083	0.00	0.09	0.110	O	|	|	|	|	3.50
30.167	0.00	0.09	0.109	O	|	|	|	|	3.48
30.250	0.00	0.09	0.109	O	|	|	|	|	3.47
30.333	0.00	0.09	0.108	O	|	|	|	|	3.46
30.417	0.00	0.09	0.108	O	|	|	|	|	3.44
30.500	0.00	0.09	0.107	O	|	|	|	|	3.43
30.583	0.00	0.09	0.106	O	|	|	|	|	3.41
30.667	0.00	0.09	0.106	O	|	|	|	|	3.40
30.750	0.00	0.09	0.105	O	|	|	|	|	3.38
30.833	0.00	0.09	0.104	O	|	|	|	|	3.37
30.917	0.00	0.09	0.104	O	|	|	|	|	3.35
31.000	0.00	0.09	0.103	O	|	|	|	|	3.34
31.083	0.00	0.09	0.103	O	|	|	|	|	3.32
31.167	0.00	0.09	0.102	O	|	|	|	|	3.31
31.250	0.00	0.09	0.101	O	|	|	|	|	3.29
31.333	0.00	0.09	0.101	O	|	|	|	|	3.28
31.417	0.00	0.09	0.100	O	|	|	|	|	3.26
31.500	0.00	0.09	0.099	O	|	|	|	|	3.25
31.583	0.00	0.09	0.099	O	|	|	|	|	3.23
31.667	0.00	0.09	0.098	O	|	|	|	|	3.22
31.750	0.00	0.09	0.098	O	|	|	|	|	3.20
31.833	0.00	0.09	0.097	O	|	|	|	|	3.19
31.917	0.00	0.09	0.096	O	|	|	|	|	3.17
32.000	0.00	0.09	0.096	O	|	|	|	|	3.16
32.083	0.00	0.09	0.095	O	|	|	|	|	3.15
32.167	0.00	0.09	0.094	O	|	|	|	|	3.13
32.250	0.00	0.09	0.094	O	|	|	|	|	3.12
32.333	0.00	0.09	0.093	O	|	|	|	|	3.10
32.417	0.00	0.09	0.093	O	|	|	|	|	3.09

32.500	0.00	0.09	0.092	O					3.07
32.583	0.00	0.09	0.091	O					3.06
32.667	0.00	0.09	0.091	O					3.04
32.750	0.00	0.09	0.090	O					3.03
32.833	0.00	0.09	0.090	O					3.01
32.917	0.00	0.09	0.089	O					3.00
33.000	0.00	0.09	0.088	O					2.98
33.083	0.00	0.09	0.088	O					2.97
33.167	0.00	0.09	0.087	O					2.95
33.250	0.00	0.09	0.086	O					2.93
33.333	0.00	0.09	0.086	O					2.92
33.417	0.00	0.09	0.085	O					2.90
33.500	0.00	0.09	0.085	O					2.88
33.583	0.00	0.09	0.084	O					2.87
33.667	0.00	0.09	0.083	O					2.85
33.750	0.00	0.09	0.083	O					2.83
33.833	0.00	0.09	0.082	O					2.82
33.917	0.00	0.09	0.081	O					2.80
34.000	0.00	0.09	0.081	O					2.79
34.083	0.00	0.09	0.080	O					2.77
34.167	0.00	0.09	0.080	O					2.75
34.250	0.00	0.09	0.079	O					2.74
34.333	0.00	0.09	0.078	O					2.72
34.417	0.00	0.09	0.078	O					2.70
34.500	0.00	0.09	0.077	O					2.69
34.583	0.00	0.09	0.077	O					2.67
34.667	0.00	0.09	0.076	O					2.66
34.750	0.00	0.09	0.075	O					2.64
34.833	0.00	0.09	0.075	O					2.62
34.917	0.00	0.09	0.074	O					2.61
35.000	0.00	0.09	0.073	O					2.59
35.083	0.00	0.09	0.073	O					2.57
35.167	0.00	0.09	0.072	O					2.56
35.250	0.00	0.09	0.072	O					2.54
35.333	0.00	0.09	0.071	O					2.52
35.417	0.00	0.09	0.070	O					2.51
35.500	0.00	0.09	0.070	O					2.49
35.583	0.00	0.09	0.069	O					2.48
35.667	0.00	0.09	0.068	O					2.46
35.750	0.00	0.09	0.068	O					2.44
35.833	0.00	0.09	0.067	O					2.43
35.917	0.00	0.09	0.067	O					2.41
36.000	0.00	0.09	0.066	O					2.39
36.083	0.00	0.09	0.065	O					2.38
36.167	0.00	0.09	0.065	O					2.36
36.250	0.00	0.09	0.064	O					2.35
36.333	0.00	0.09	0.063	O					2.33
36.417	0.00	0.09	0.063	O					2.31
36.500	0.00	0.09	0.062	O					2.30
36.583	0.00	0.09	0.062	O					2.28
36.667	0.00	0.09	0.061	O					2.26
36.750	0.00	0.09	0.060	O					2.25
36.833	0.00	0.09	0.060	O					2.23
36.917	0.00	0.09	0.059	O					2.21
37.000	0.00	0.09	0.059	O					2.20
37.083	0.00	0.09	0.058	O					2.18
37.167	0.00	0.09	0.057	O					2.17
37.250	0.00	0.09	0.057	O					2.15
37.333	0.00	0.09	0.056	O					2.13

37.417	0.00	0.09	0.055	O	|	|	|	|	2.12
37.500	0.00	0.09	0.055	O	|	|	|	|	2.10
37.583	0.00	0.09	0.054	O	|	|	|	|	2.08
37.667	0.00	0.09	0.054	O	|	|	|	|	2.07
37.750	0.00	0.09	0.053	O	|	|	|	|	2.05
37.833	0.00	0.09	0.052	O	|	|	|	|	2.04
37.917	0.00	0.09	0.052	O	|	|	|	|	2.02
38.000	0.00	0.09	0.051	O	|	|	|	|	2.00
38.083	0.00	0.09	0.050	O	|	|	|	|	1.98
38.167	0.00	0.09	0.050	O	|	|	|	|	1.97
38.250	0.00	0.09	0.049	O	|	|	|	|	1.95
38.333	0.00	0.09	0.049	O	|	|	|	|	1.93
38.417	0.00	0.09	0.048	O	|	|	|	|	1.91
38.500	0.00	0.09	0.047	O	|	|	|	|	1.89
38.583	0.00	0.09	0.047	O	|	|	|	|	1.88
38.667	0.00	0.09	0.046	O	|	|	|	|	1.86
38.750	0.00	0.09	0.046	O	|	|	|	|	1.84
38.833	0.00	0.09	0.045	O	|	|	|	|	1.82
38.917	0.00	0.09	0.044	O	|	|	|	|	1.80
39.000	0.00	0.09	0.044	O	|	|	|	|	1.78
39.083	0.00	0.09	0.043	O	|	|	|	|	1.77
39.167	0.00	0.09	0.042	O	|	|	|	|	1.75
39.250	0.00	0.09	0.042	O	|	|	|	|	1.73
39.333	0.00	0.09	0.041	O	|	|	|	|	1.71
39.417	0.00	0.09	0.041	O	|	|	|	|	1.69
39.500	0.00	0.09	0.040	O	|	|	|	|	1.67
39.583	0.00	0.09	0.039	O	|	|	|	|	1.66
39.667	0.00	0.09	0.039	O	|	|	|	|	1.64
39.750	0.00	0.09	0.038	O	|	|	|	|	1.62
39.833	0.00	0.09	0.037	O	|	|	|	|	1.60
39.917	0.00	0.09	0.037	O	|	|	|	|	1.58
40.000	0.00	0.09	0.036	O	|	|	|	|	1.57
40.083	0.00	0.09	0.036	O	|	|	|	|	1.55
40.167	0.00	0.09	0.035	O	|	|	|	|	1.53
40.250	0.00	0.09	0.034	O	|	|	|	|	1.51
40.333	0.00	0.09	0.034	O	|	|	|	|	1.49
40.417	0.00	0.09	0.033	O	|	|	|	|	1.47
40.500	0.00	0.09	0.033	O	|	|	|	|	1.45
40.583	0.00	0.09	0.032	O	|	|	|	|	1.42
40.667	0.00	0.09	0.031	O	|	|	|	|	1.40
40.750	0.00	0.09	0.031	O	|	|	|	|	1.38
40.833	0.00	0.09	0.030	O	|	|	|	|	1.36
40.917	0.00	0.09	0.029	O	|	|	|	|	1.34
41.000	0.00	0.09	0.029	O	|	|	|	|	1.31
41.083	0.00	0.09	0.028	O	|	|	|	|	1.29
41.167	0.00	0.09	0.028	O	|	|	|	|	1.27
41.250	0.00	0.09	0.027	O	|	|	|	|	1.25
41.333	0.00	0.09	0.026	O	|	|	|	|	1.23
41.417	0.00	0.09	0.026	O	|	|	|	|	1.20
41.500	0.00	0.09	0.025	O	|	|	|	|	1.18
41.583	0.00	0.09	0.024	O	|	|	|	|	1.16
41.667	0.00	0.09	0.024	O	|	|	|	|	1.14
41.750	0.00	0.09	0.023	O	|	|	|	|	1.11
41.833	0.00	0.09	0.023	O	|	|	|	|	1.09
41.917	0.00	0.09	0.022	O	|	|	|	|	1.07
42.000	0.00	0.09	0.021	O	|	|	|	|	1.05
42.083	0.00	0.09	0.021	O	|	|	|	|	1.03
42.167	0.00	0.09	0.020	O	|	|	|	|	1.00
42.250	0.00	0.09	0.019	O	|	|	|	|	0.97

42.333	0.00	0.09	0.019	O	|	|	|	|	0.94
42.417	0.00	0.09	0.018	O	|	|	|	|	0.91
42.500	0.00	0.09	0.018	O	|	|	|	|	0.88
42.583	0.00	0.09	0.017	O	|	|	|	|	0.85
42.667	0.00	0.09	0.016	O	|	|	|	|	0.82
42.750	0.00	0.09	0.016	O	|	|	|	|	0.79
42.833	0.00	0.09	0.015	O	|	|	|	|	0.76
42.917	0.00	0.09	0.015	O	|	|	|	|	0.73
43.000	0.00	0.09	0.014	O	|	|	|	|	0.70
43.083	0.00	0.09	0.013	O	|	|	|	|	0.66
43.167	0.00	0.09	0.013	O	|	|	|	|	0.63
43.250	0.00	0.09	0.012	O	|	|	|	|	0.60
43.333	0.00	0.09	0.011	O	|	|	|	|	0.57
43.417	0.00	0.09	0.011	O	|	|	|	|	0.54
43.500	0.00	0.09	0.010	O	|	|	|	|	0.51
43.583	0.00	0.09	0.010	O	|	|	|	|	0.48
43.667	0.00	0.08	0.009	O	|	|	|	|	0.45
43.750	0.00	0.08	0.008	O	|	|	|	|	0.42
43.833	0.00	0.07	0.008	O	|	|	|	|	0.40
43.917	0.00	0.07	0.007	O	|	|	|	|	0.37
44.000	0.00	0.06	0.007	O	|	|	|	|	0.35
44.083	0.00	0.06	0.007	O	|	|	|	|	0.33
44.167	0.00	0.06	0.006	O	|	|	|	|	0.31
44.250	0.00	0.05	0.006	O	|	|	|	|	0.29
44.333	0.00	0.05	0.005	O	|	|	|	|	0.27
44.417	0.00	0.05	0.005	O	|	|	|	|	0.26
44.500	0.00	0.04	0.005	O	|	|	|	|	0.24
44.583	0.00	0.04	0.005	O	|	|	|	|	0.23
44.667	0.00	0.04	0.004	O	|	|	|	|	0.21
44.750	0.00	0.04	0.004	O	|	|	|	|	0.20
44.833	0.00	0.03	0.004	O	|	|	|	|	0.19
44.917	0.00	0.03	0.004	O	|	|	|	|	0.18
45.000	0.00	0.03	0.003	O	|	|	|	|	0.17
45.083	0.00	0.03	0.003	O	|	|	|	|	0.16
45.167	0.00	0.03	0.003	O	|	|	|	|	0.15
45.250	0.00	0.02	0.003	O	|	|	|	|	0.14
45.333	0.00	0.02	0.003	O	|	|	|	|	0.13
45.417	0.00	0.02	0.002	O	|	|	|	|	0.12
45.500	0.00	0.02	0.002	O	|	|	|	|	0.12
45.583	0.00	0.02	0.002	O	|	|	|	|	0.11
45.667	0.00	0.02	0.002	O	|	|	|	|	0.10
45.750	0.00	0.02	0.002	O	|	|	|	|	0.10
45.833	0.00	0.02	0.002	O	|	|	|	|	0.09
45.917	0.00	0.02	0.002	O	|	|	|	|	0.08
46.000	0.00	0.01	0.002	O	|	|	|	|	0.08
46.083	0.00	0.01	0.001	O	|	|	|	|	0.07
46.167	0.00	0.01	0.001	O	|	|	|	|	0.07
46.250	0.00	0.01	0.001	O	|	|	|	|	0.07
46.333	0.00	0.01	0.001	O	|	|	|	|	0.06
46.417	0.00	0.01	0.001	O	|	|	|	|	0.06
46.500	0.00	0.01	0.001	O	|	|	|	|	0.05
46.583	0.00	0.01	0.001	O	|	|	|	|	0.05
46.667	0.00	0.01	0.001	O	|	|	|	|	0.05
46.750	0.00	0.01	0.001	O	|	|	|	|	0.05
46.833	0.00	0.01	0.001	O	|	|	|	|	0.04
46.917	0.00	0.01	0.001	O	|	|	|	|	0.04
47.000	0.00	0.01	0.001	O	|	|	|	|	0.04
47.083	0.00	0.01	0.001	O	|	|	|	|	0.04
47.167	0.00	0.01	0.001	O	|	|	|	|	0.03

47.250	0.00	0.01	0.001	O	|	|	|	|	0.03
47.333	0.00	0.01	0.001	O	|	|	|	|	0.03
47.417	0.00	0.00	0.001	O	|	|	|	|	0.03
47.500	0.00	0.00	0.001	O	|	|	|	|	0.03
47.583	0.00	0.00	0.000	O	|	|	|	|	0.02
47.667	0.00	0.00	0.000	O	|	|	|	|	0.02
47.750	0.00	0.00	0.000	O	|	|	|	|	0.02
47.833	0.00	0.00	0.000	O	|	|	|	|	0.02
47.917	0.00	0.00	0.000	O	|	|	|	|	0.02
48.000	0.00	0.00	0.000	O	|	|	|	|	0.02
48.083	0.00	0.00	0.000	O	|	|	|	|	0.02
48.167	0.00	0.00	0.000	O	|	|	|	|	0.02
48.250	0.00	0.00	0.000	O	|	|	|	|	0.01
48.333	0.00	0.00	0.000	O	|	|	|	|	0.01
48.417	0.00	0.00	0.000	O	|	|	|	|	0.01
48.500	0.00	0.00	0.000	O	|	|	|	|	0.01
48.583	0.00	0.00	0.000	O	|	|	|	|	0.01
48.667	0.00	0.00	0.000	O	|	|	|	|	0.01
48.750	0.00	0.00	0.000	O	|	|	|	|	0.01
48.833	0.00	0.00	0.000	O	|	|	|	|	0.01
48.917	0.00	0.00	0.000	O	|	|	|	|	0.01
49.000	0.00	0.00	0.000	O	|	|	|	|	0.01
49.083	0.00	0.00	0.000	O	|	|	|	|	0.01
49.167	0.00	0.00	0.000	O	|	|	|	|	0.01
49.250	0.00	0.00	0.000	O	|	|	|	|	0.01
49.333	0.00	0.00	0.000	O	|	|	|	|	0.01
49.417	0.00	0.00	0.000	O	|	|	|	|	0.01
49.500	0.00	0.00	0.000	O	|	|	|	|	0.01
49.583	0.00	0.00	0.000	O	|	|	|	|	0.01

**********HYDROGRAPH DATA**********

Number of intervals = 595
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 1.590 (CFS)
Total volume = 1.082 (Ac.Ft)

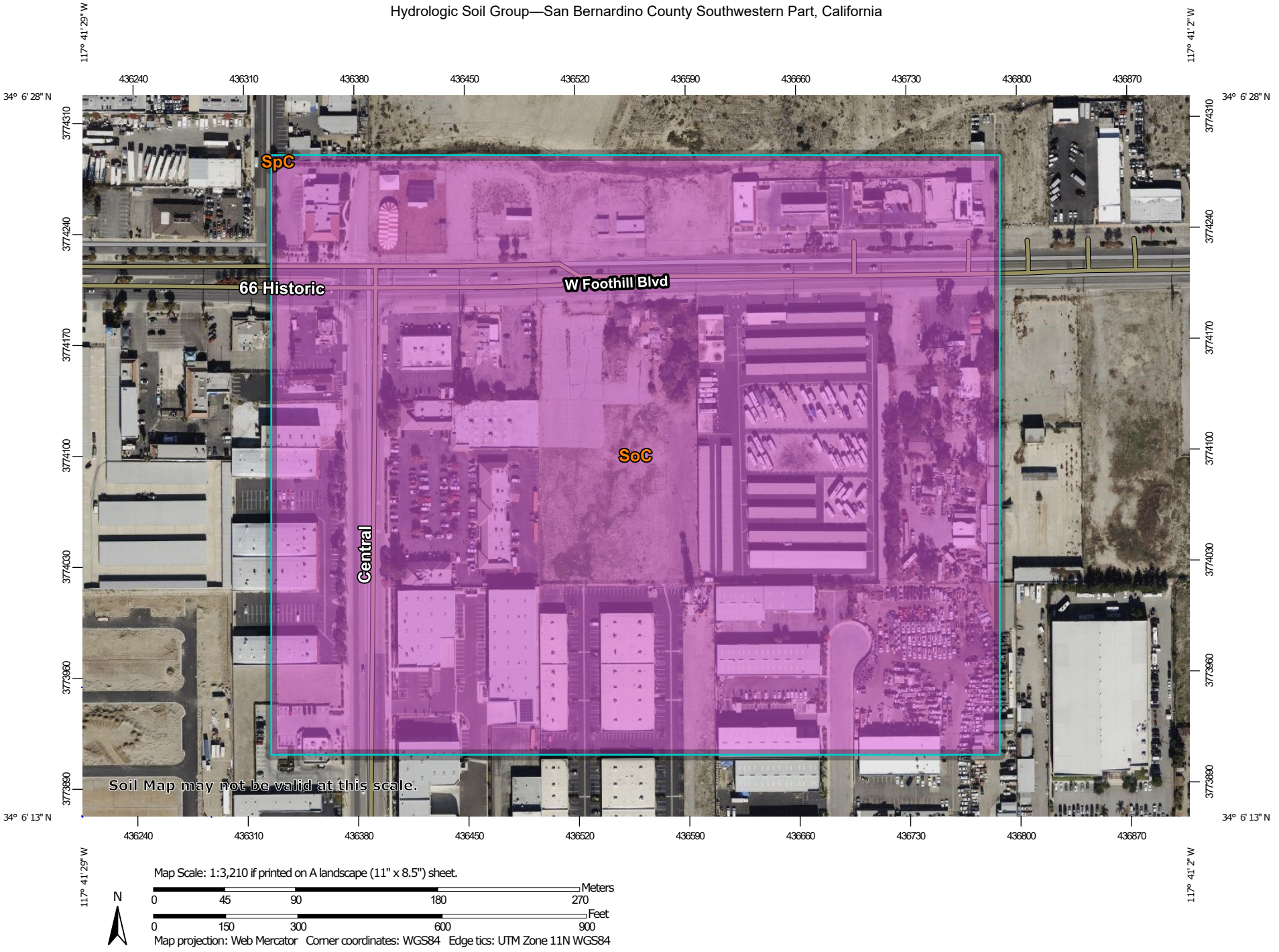
Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

EXCERPTS

EXCERPT A: NRCS HYDRAULIC SOILS MAP



Map Scale: 1:3,210 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 45 90 180 270

Feet: 0 150 300 600 900

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

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

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

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: San Bernardino County Southwestern Part, California
Survey Area Data: Version 16, Aug 30, 2024

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

Date(s) aerial images were photographed: Nov 20, 2022—Nov 25, 2022

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
SoC	Soboba gravelly loamy sand, 0 to 9 percent slopes	A	43.4	100.0%
SpC	Soboba stony loamy sand, 2 to 9 percent slopes	A	0.0	0.0%
Totals for Area of Interest			**43.4**	**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

EXCERPT B: NOAA ATLAS 14 RAINFALL DATA

NOAA Atlas 14, Volume 6, Version 2
Location name: Upland, California, USA*
Latitude: 34.1064°, Longitude: -117.6883°
Elevation: 1346 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

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

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.124** (0.104-0.151)	**0.164** (0.137-0.199)	**0.217** (0.180-0.264)	**0.261** (0.215-0.320)	**0.323** (0.256-0.410)	**0.371** (0.289-0.482)	**0.422** (0.320-0.561)	**0.475** (0.350-0.651)	**0.549** (0.387-0.786)	**0.609** (0.414-0.903)
10-min	**0.178** (0.149-0.216)	**0.235** (0.196-0.285)	**0.311** (0.258-0.378)	**0.374** (0.308-0.459)	**0.462** (0.368-0.587)	**0.532** (0.414-0.691)	**0.604** (0.458-0.805)	**0.681** (0.501-0.933)	**0.787** (0.555-1.13)	**0.872** (0.594-1.30)
15-min	**0.216** (0.180-0.261)	**0.284** (0.237-0.345)	**0.376** (0.312-0.458)	**0.453** (0.373-0.555)	**0.559** (0.445-0.710)	**0.643** (0.500-0.835)	**0.731** (0.554-0.973)	**0.823** (0.606-1.13)	**0.952** (0.672-1.36)	**1.06** (0.718-1.57)
30-min	**0.315** (0.263-0.382)	**0.416** (0.346-0.504)	**0.550** (0.457-0.669)	**0.662** (0.545-0.812)	**0.817** (0.650-1.04)	**0.940** (0.732-1.22)	**1.07** (0.810-1.42)	**1.20** (0.886-1.65)	**1.39** (0.982-1.99)	**1.54** (1.05-2.29)
60-min	**0.474** (0.395-0.574)	**0.625** (0.521-0.758)	**0.827** (0.687-1.01)	**0.995** (0.819-1.22)	**1.23** (0.977-1.56)	**1.41** (1.10-1.84)	**1.61** (1.22-2.14)	**1.81** (1.33-2.48)	**2.09** (1.48-3.00)	**2.32** (1.58-3.44)
2-hr	**0.721** (0.601-0.874)	**0.938** (0.781-1.14)	**1.23** (1.02-1.49)	**1.47** (1.21-1.80)	**1.80** (1.43-2.29)	**2.06** (1.61-2.68)	**2.34** (1.77-3.11)	**2.62** (1.93-3.60)	**3.03** (2.14-4.33)	**3.35** (2.28-4.96)
3-hr	**0.916** (0.764-1.11)	**1.18** (0.987-1.44)	**1.54** (1.28-1.88)	**1.84** (1.52-2.26)	**2.25** (1.79-2.86)	**2.58** (2.00-3.35)	**2.91** (2.21-3.88)	**3.27** (2.41-4.48)	**3.76** (2.65-5.38)	**4.16** (2.83-6.17)
6-hr	**1.32** (1.10-1.60)	**1.71** (1.42-2.07)	**2.22** (1.84-2.70)	**2.64** (2.17-3.24)	**3.22** (2.56-4.09)	**3.68** (2.86-4.78)	**4.16** (3.15-5.54)	**4.66** (3.43-6.39)	**5.36** (3.78-7.67)	**5.91** (4.03-8.78)
12-hr	**1.76** (1.47-2.13)	**2.28** (1.90-2.77)	**2.98** (2.47-3.62)	**3.56** (2.93-4.36)	**4.36** (3.47-5.54)	**4.99** (3.88-6.48)	**5.64** (4.28-7.52)	**6.33** (4.66-8.68)	**7.29** (5.14-10.4)	**8.05** (5.48-11.9)
24-hr	**2.46** (2.18-2.83)	**3.23** (2.86-3.73)	**4.26** (3.76-4.93)	**5.13** (4.48-5.98)	**6.33** (5.36-7.63)	**7.28** (6.04-8.95)	**8.26** (6.69-10.4)	**9.30** (7.33-12.0)	**10.7** (8.13-14.5)	**11.9** (8.70-16.6)
2-day	**3.09** (2.74-3.56)	**4.13** (3.65-4.77)	**5.54** (4.89-6.41)	**6.72** (5.88-7.84)	**8.39** (7.10-10.1)	**9.71** (8.06-12.0)	**11.1** (8.99-14.0)	**12.6** (9.90-16.3)	**14.6** (11.1-19.7)	**16.3** (11.9-22.7)
3-day	**3.40** (3.01-3.92)	**4.60** (4.06-5.30)	**6.23** (5.49-7.21)	**7.61** (6.66-8.88)	**9.55** (8.09-11.5)	**11.1** (9.21-13.7)	**12.7** (10.3-16.1)	**14.5** (11.4-18.8)	**16.9** (12.8-22.9)	**18.9** (13.8-26.4)
4-day	**3.67** (3.25-4.23)	**5.01** (4.43-5.78)	**6.84** (6.03-7.92)	**8.38** (7.34-9.78)	**10.6** (8.95-12.7)	**12.3** (10.2-15.2)	**14.2** (11.5-17.8)	**16.1** (12.7-20.9)	**18.9** (14.3-25.5)	**21.1** (15.4-29.5)
7-day	**4.16** (3.69-4.80)	**5.77** (5.10-6.66)	**7.96** (7.02-9.22)	**9.81** (8.58-11.4)	**12.4** (10.5-15.0)	**14.5** (12.0-17.9)	**16.7** (13.5-21.1)	**19.1** (15.0-24.7)	**22.4** (16.9-30.2)	**25.0** (18.3-35.0)
10-day	**4.50** (3.98-5.18)	**6.28** (5.56-7.25)	**8.71** (7.68-10.1)	**10.8** (9.42-12.6)	**13.7** (11.6-16.5)	**16.0** (13.3-19.7)	**18.4** (14.9-23.2)	**21.0** (16.6-27.3)	**24.7** (18.7-33.4)	**27.7** (20.2-38.7)
20-day	**5.39** (4.77-6.21)	**7.57** (6.69-8.73)	**10.6** (9.31-12.2)	**13.1** (11.5-15.3)	**16.7** (14.1-20.1)	**19.6** (16.3-24.1)	**22.7** (18.4-28.6)	**26.0** (20.4-33.6)	**30.6** (23.1-41.3)	**34.4** (25.1-48.0)
30-day	**6.32** (5.59-7.28)	**8.83** (7.81-10.2)	**12.3** (10.8-14.2)	**15.3** (13.4-17.8)	**19.5** (16.5-23.5)	**22.9** (19.0-28.2)	**26.5** (21.5-33.4)	**30.4** (24.0-39.4)	**36.0** (27.2-48.5)	**40.5** (29.6-56.5)
45-day	**7.55** (6.68-8.70)	**10.4** (9.22-12.0)	**14.4** (12.7-16.7)	**17.8** (15.6-20.8)	**22.8** (19.3-27.4)	**26.8** (22.2-32.9)	**31.1** (25.1-39.1)	**35.7** (28.1-46.2)	**42.3** (32.0-57.1)	**47.7** (34.9-66.6)
60-day	**8.79** (7.78-10.1)	**12.0** (10.6-13.8)	**16.4** (14.4-18.9)	**20.2** (17.7-23.5)	**25.7** (21.8-31.0)	**30.2** (25.1-37.2)	**35.1** (28.4-44.2)	**40.3** (31.8-52.2)	**47.9** (36.2-64.6)	**54.1** (39.6-75.6)

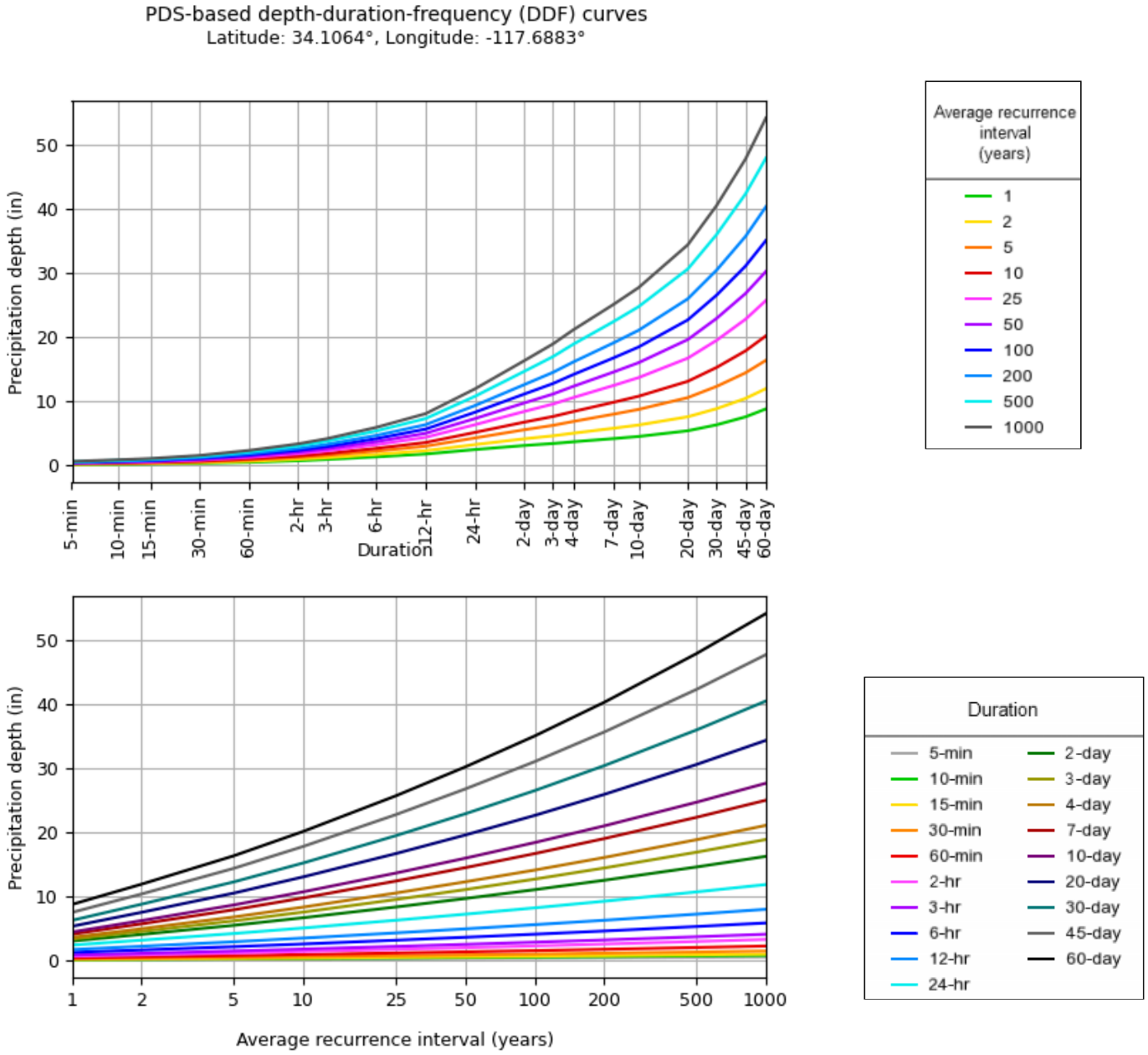
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

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

Please refer to NOAA Atlas 14 document for more information.

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PF graphical



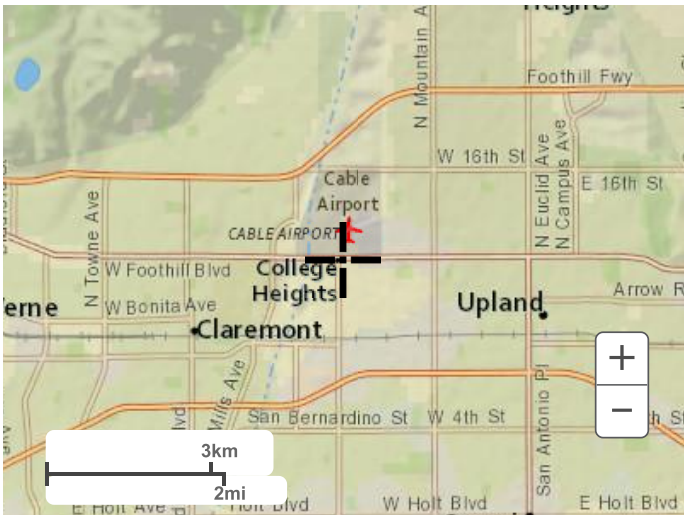
NOAA Atlas 14, Volume 6, Version 2

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Maps & aerials

Small scale terrain



Large scale terrain



Large scale map



Large scale aerial



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National Weather Service
National Water Center
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Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

EXHIBITS

EXHIBIT A: PRE-PROJECT CONDITION SITE HYDROLOGY MAP

BUFFALO GROVE

IN THE CITY OF UPLAND, COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA

PRE-PROJECT CONDITION SITE HYDROLOGY MAP



RATIONAL METHOD RESULTS								
NODE TO NODE	2-YEAR WITH 2-YEAR RAINFALL (AMC I)		10-YEAR WITH 5-YEAR RAINFALL (AMC II)		25-YEAR WITH 10-YEAR RAINFALL (AMC II)		100-YEAR WITH 25-YEAR RAINFALL (AMC II)	
	Q (CFS)	TC (MIN)	Q (CFS)	TC (MIN)	Q (CFS)	TC (MIN)	Q (CFS)	TC (MIN)
101-103	2.22	12.91	4.51	12.91	5.78	12.91	7.51	12.91
102-103	1.29	8.19	2.26	8.19	2.84	8.19	3.64	8.19
*102-103	3.65	8.19	6.36	8.19	8.01	8.19	10.24	8.19

*DENOTES CONFLUENCE POINT

LEGEND:

- XXX.X / XXXX — NODE/CONCENTRATION POINT / FLOWLINE ELEVATION
- XXXX.X — APPROXIMATE INVERT ELEVATION
- XXX / X.X — SUB AREA / ACRES
- L=XXX' — FLOW DISTANCE
- FLOW PATH
- WATERSHED BOUNDARY
- WATERSHED SUB-BOUNDARY

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EXHIBIT "A"

BUFFALO GROVE

PRE-PROJECT CONDITION SITE HYDROLOGY MAP

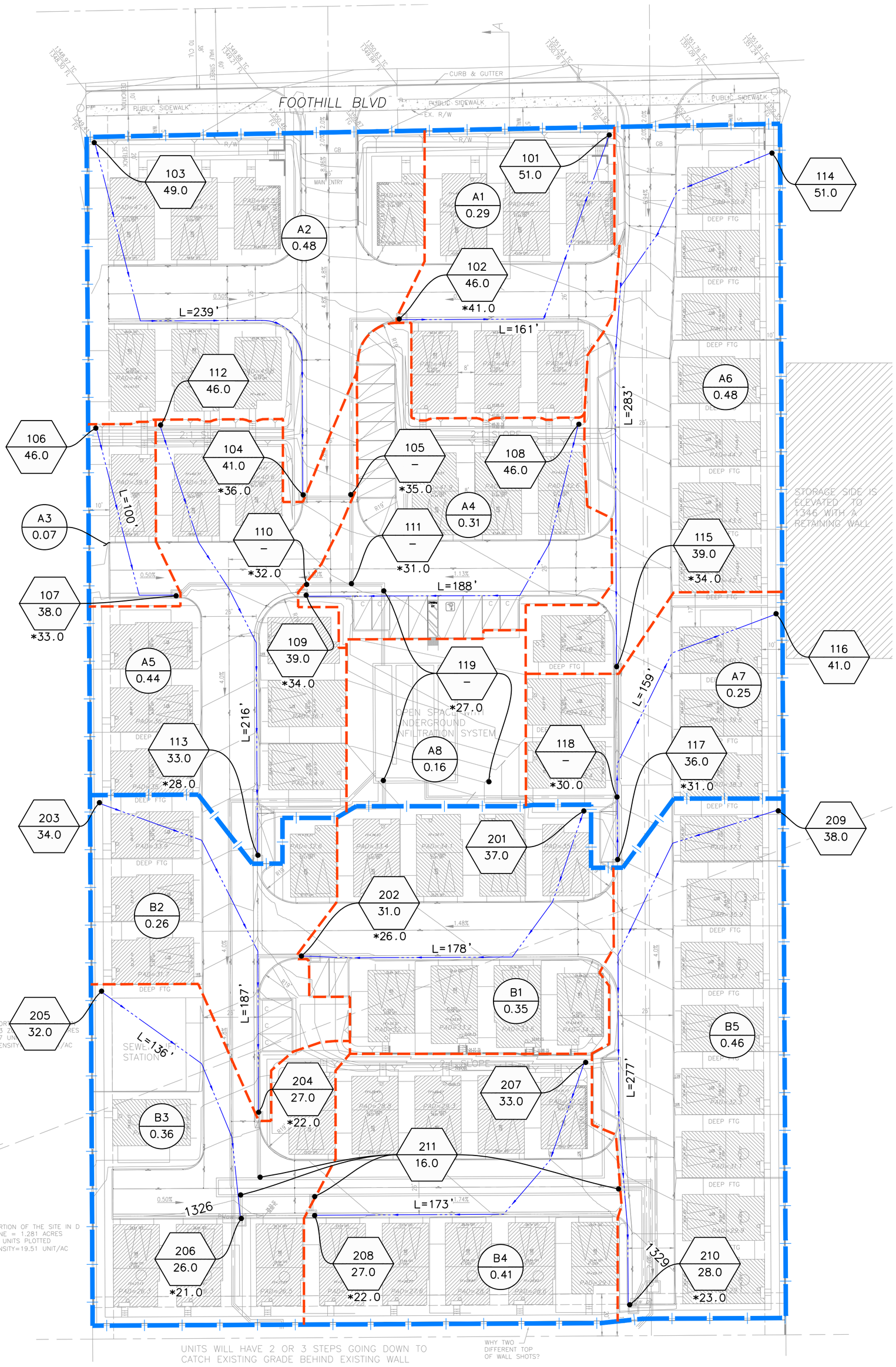
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EXHIBIT B: POST-PROJECT CONDITION SITE HYDROLOGY MAP

BUFFALO GROVE

IN THE CITY OF UPLAND, COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA

POST-PROJECT CONDITION SITE HYDROLOGY MAP



RATIONAL METHOD RESULTS - AREA A

NODE TO NODE	2-YEAR		10-YEAR		25-YEAR		100-YEAR	
	Q (CFS)	TC (MIN)	Q (CFS)	TC (MIN)	Q (CFS)	TC (MIN)	Q (CFS)	TC (MIN)
101-102	0.68	4.95	1.11	4.95	1.38	4.95	1.84	4.95
102-105	0.68	5.23	1.11	5.20	1.38	5.18	1.84	5.17
103-104	1.03	5.71	1.69	5.71	2.09	5.71	2.78	5.71
104-105	1.03	5.77	1.69	5.76	2.09	5.76	2.78	5.76
*104-105	1.68	5.23	2.74	5.20	3.40	5.18	4.50	5.17
105-111	1.68	5.30	2.74	5.26	3.40	5.24	4.50	5.22
106-107	0.21	3.39	0.34	3.39	0.42	3.39	0.56	3.39
107-110	0.21	3.72	0.34	3.68	0.42	3.66	0.56	3.65
108-109	0.72	5.08	1.17	5.08	1.46	5.08	1.93	5.08
109-110	0.72	5.09	1.17	5.09	1.46	5.09	1.93	5.09
*109-110	0.89	5.09	1.45	5.09	1.80	5.08	2.39	5.08
110-111	0.89	5.14	1.45	5.13	1.80	5.13	2.39	5.13
*110-111	2.55	5.30	4.17	5.26	5.17	5.24	6.87	5.22
111-119	2.55	5.32	4.17	5.28	5.17	5.26	6.87	5.24
112-113	1.04	4.88	1.71	4.88	2.12	4.88	2.81	4.88
113-119	1.04	5.28	1.71	5.23	2.12	5.21	2.81	5.19
114-115	1.02	5.83	1.67	5.83	2.07	5.83	2.75	5.83
115-118	1.02	5.95	1.67	5.94	2.07	5.93	2.75	5.92
116-117	0.59	4.92	0.97	4.92	1.20	4.92	1.59	4.92
117-118	0.59	5.01	0.97	5.00	1.20	4.99	1.59	4.99
*117-118	1.55	5.01	2.53	5.94	3.14	5.93	4.18	5.92
118-119	1.55	5.16	2.53	6.07	3.14	6.06	4.18	6.04
*118-119	5.11	5.28	8.27	5.28	10.26	5.26	13.62	5.24
119-119	5.21	5.28	8.58	5.28	10.67	5.26	14.26	5.24

*DENOTES CONFLUENCE POINT

RATIONAL METHOD RESULTS - AREA B

NODE TO NODE	2-YEAR		10-YEAR		25-YEAR		100-YEAR	
	Q (CFS)	TC (MIN)	Q (CFS)	TC (MIN)	Q (CFS)	TC (MIN)	Q (CFS)	TC (MIN)
201-202	0.82	5.07	1.32	5.07	1.65	5.07	2.18	5.07
202-204	0.82	5.31	1.32	5.29	1.65	5.27	2.18	5.26
203-204	0.62	5.07	0.98	5.07	1.22	5.07	1.62	5.07
*203-204	1.42	5.07	2.29	5.07	2.84	5.07	3.78	5.07
204-211	1.42	5.10	2.29	5.09	2.84	5.09	3.78	5.09
205-206	0.94	4.32	1.51	4.32	1.87	4.32	2.48	4.32
206-211	0.94	4.33	1.51	4.33	1.87	4.33	2.48	4.32
207-208	0.98	4.99	1.57	4.99	1.95	4.99	2.58	4.99
208-211	0.98	4.99	1.57	4.99	1.95	4.99	2.58	4.99
209-210	0.98	5.97	1.57	5.97	1.95	5.97	2.60	5.97
210-211	0.98	6.09	1.57	6.08	1.95	6.07	2.60	6.07
*210-211	4.16	4.99	6.68	4.99	8.29	4.99	11.01	4.99

*DENOTES CONFLUENCE POINT

LEGEND:

- XXX.X / XXXX — NODE/CONCENTRATION POINT / FLOWLINE ELEVATION
- XXXX.X — APPROXIMATE INVERT ELEVATION
- XXX / X.X — SUB AREA / ACRES
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EXHIBIT "B"

BUFFALO GROVE

POST-PROJECT CONDITION SITE HYDROLOGY MAP

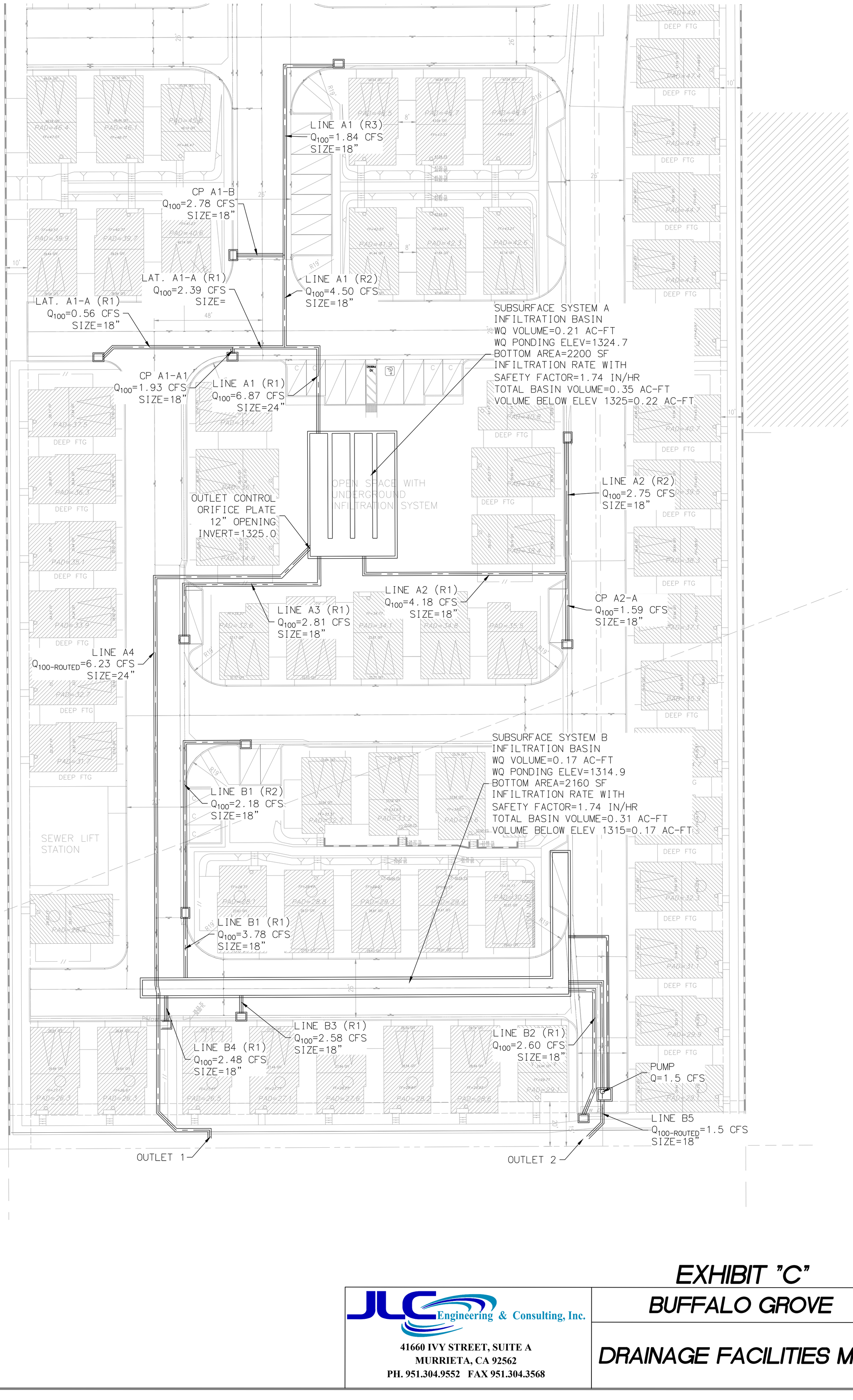
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EXHIBIT C: DRAINAGE FACILITIES MAPP

BUFFALO GROVE

IN THE CITY OF UPLAND, COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA

DRAINAGE FACILITIES MAP



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EXHIBIT "C"

BUFFALO GROVE

DRAINAGE FACILITIES MAP

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