PRELIMINARY HYDROLOGY REPORT

For

TCC – Knox VIII
PP210130

APN: 295-310-016, 295-310-037, 295-310-038, 295-310-039 and 295-310-040

PROJECT LOCATION

Southeast corner of Decker Road and Harley Knox Boulevard
in County of Riverside

DEVELOPER

Trammell Crow So. Cal. Development, Inc
c/o Trammell Crow Company
3501 Jamboree Road, Suite 230
Newport Beach, CA 92660

PREPARED BY

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David White, P.E.
C52921, Exp 12/31/2022

PREPARATION DATE

July 1st, 2021
REVISED September 10, 2021
REVISED November 1, 2021

HZ PROJECT NUMBER
R313684.01

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Introduction
This preliminary hydrology analysis has been prepared for Trammell Crow So. Cal. Development, Inc, c/o Trammell Crow Company. The project is a new development of an industrial warehouse facility located at the southeast corner of Harley Knox Boulevard and Decker Road in the County of Riverside, California. The proposed building is approximately 240,000 square feet in size on approximately 12 net acres of undeveloped land.

Purpose
The purpose of this report is to present the drainage concept for the project and to determine the design flow rates for the project site. The hydrology maps and calculations reflect the tributary areas and 100-year storm event runoff flows.

Existing Condition
The project site is a rectangular-shape parcel and is currently vacant. The project site generally slopes ±3% from the southwest side to the northeast side of the property. The maximum site elevation, located at the southwest property corner, is approximately 1589± feet mean sea level (msl). The minimum site elevation located at the northeast property corner is 1557± feet msl. Runoff from the existing site is collected at two locations: the middle of the north Right of Way line and near the southeast property corner.

Proposed Condition
For the proposed condition, the project area runoff will be directed to the on-site bio-retention basin located along the east property line. The bio-retention basin outlet will discharge through storm drain Line C to an existing 48" public storm drain in Harley Knox Blvd. See Appendix A for proposed on-site hydrology map.

Site runoff from the south half of the building roof, south west parking lot, and truck court will be collected by catch basins. The collected runoff will then be conveyed through the proposed on-site storm drain Line A and discharged to the bio-retention basin.

Site runoff from the north half of the building roof, swale along the west side of the building, the swale along the north side of the building and the drive aisle and parking along the east side of the building will be collected by catch basins. The collected runoff will then be conveyed through the proposed on-site storm drain Line B and discharged to the bio-retention basin.

The basin outlet is located six inches above the basin bottom. Excess volume beyond the design capture volume will be detained and then released at a controlled rate. The outlet size will be restricted to mitigate the peak storm and restrict post-development flow from exceeding pre-development flow. The overflow from the basin will be collected by a 24-inch riser with an 18-inch orifice plate and flow to a proposed 24-inch storm drain (line C) which connects to the existing 48" public storm drain in Harley Knox Blvd.

The County requires water quality treatment of the off-site runoff along the project frontage, which includes Harley Knox, Decker, and Rowland. Street runoff will be captured in the street catch basins and low flows will be diverted to the on-site water quality basin. High flows will be discharged directly to Laterals B-8 and B-8A respectively.

Hydrologic Analysis
The hydrologic analysis has been prepared in accordance with the Riverside County Flood Control & Water Conservation District (RCFC&WCD) Hydrology Manual Rational method using CIVILD software version 7.1. CIVILD hydrology calculations are included in Appendix B and indicate flow data at each node. Unit hydrograph and detention routing calculations are included in Appendices C and D.

The 100-year, 1 hour rainfall and the 2-year, 1 hour rainfall rates were taken from the isohyetal maps in the Hydrology Manual. The hydrologic soil type for the site is "C" and was taken from the soils map in the Hydrology Manual. See Appendix C for reference maps. A "commercial" land use was used for the project site with AMC II.

Master Plan Discussion
With the development of PP25954 (PM 37054) at the northeast corner of Decker Road and Harley Knox, runoff from the northwest portion of the subject site was cut off from reaching Lateral B-9 in Blanding Way. Webb's Final Hydrology Report dated October 2016 established that runoff from the subject site would be diverted to Lateral B-8 and that the total tributary flow to B-8 would be limited to 182 cfs due to downstream constraints, namely the impacted Caltrans box culvert.

Project PP190011 is intercepting the upstream off-site tributary flows and discharging them to the proposed extension of Lateral B-8 in Harley Knox and Decker. Project PP190011 is also constructing street improvements along Decker with catch basins on the west side of the street to collect street runoff. The Final Hydrology Report for PP190011 prepared by Michael Baker International dated April 20, 2021 has further analyzed the tributary flows to Lateral B-8 and have mitigated their on-site flows so that the total flow rate from all upstream areas is 134 cfs. This allows 48 cfs to be discharged to Lateral B-8 from subarea R which consists of the subject property and abutting half streets for Harley Knox, Decker, and Rowland as well as a portion of the property to our south. Our gross acreage is 15.2 acres which is 56% of subarea R which results in an allowable discharge of 26.8 cfs from our development. Our proposed discharge from on-site after basin routing is only 11 cfs and the unmitigated discharge from the public streets is about 8 cfs.

Runoff from the project site to our south (PP180033) will continue to drain from west to east towards the existing concrete swale along the east property line. The swale conveys runoff to Lateral B-8A. The construction of Rowland Lane will prevent any run-on from the adjacent vacant site.

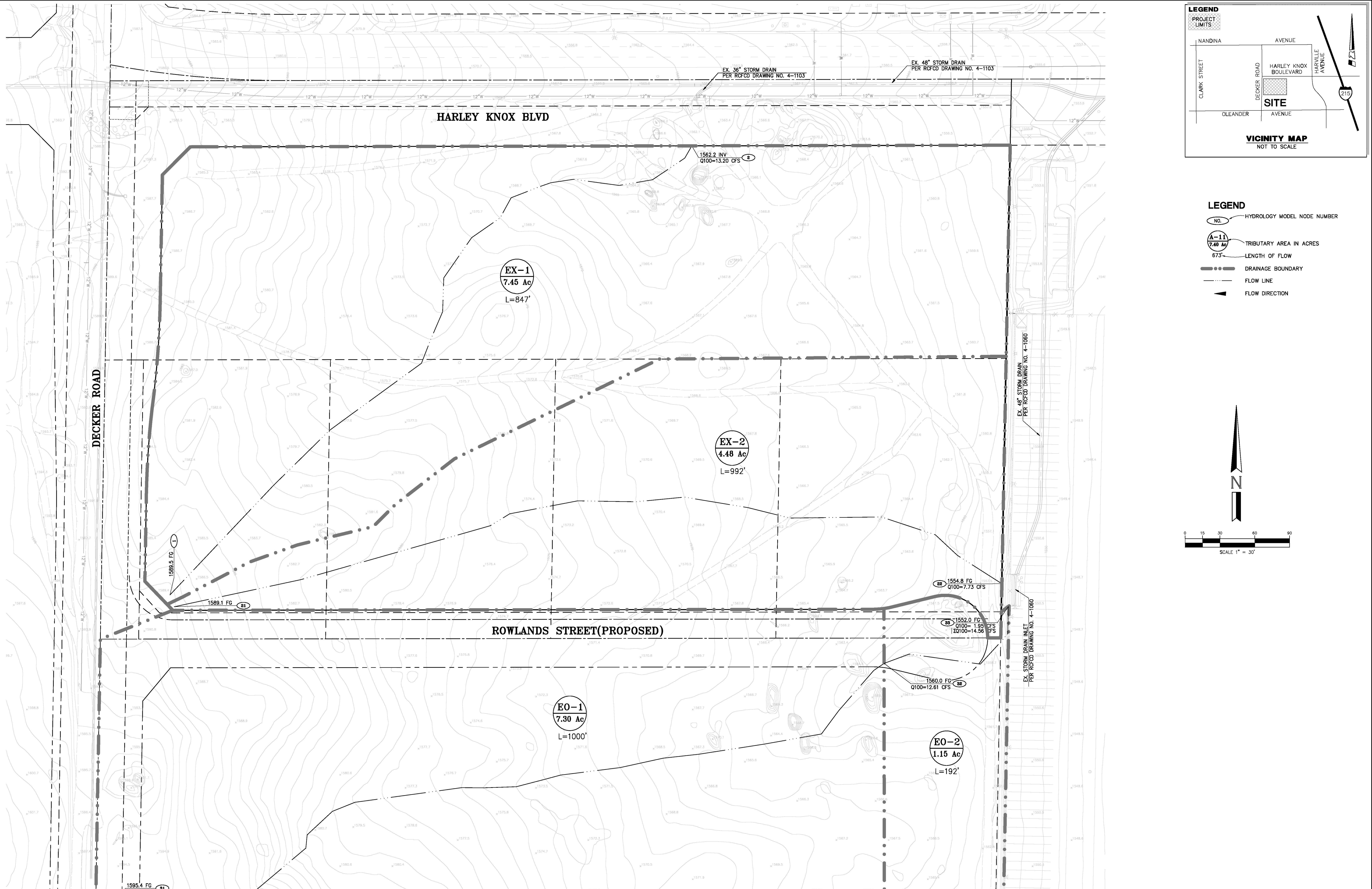
Results
The required water quality capture volume is 24,938 cubic feet, which includes the off-site half street runoff for Harley Knox, Decker, and Rowland. The basin has been sized to capture and treat 26,281 cubic feet of storm water. Although Michael Baker's Final Hydrology Report (see Appendix F for ultimate condition hydrology map) considered the subject property as "developed", unit hydrograph calculations were prepared to establish existing condition flows (Q's) for the 100-year storm at 1 hour, 3 hour, 6 hour, and 24 hour durations. Results from the on-site detention routing calculations indicate the proposed peak Q's are mitigated utilizing an

18-inch orifice outlet control. The highest water surface elevation in the basin occurs during the 6 hour storm and is 1553.11 msl, which is lower than the top of the basin and drains within 24 hours in all cases.

100 YEAR STORM	1 Hour	3 Hour	6 Hour	24 Hour
Existing Condition Q Out (CFS) From Unit Hydrograph Study for Two Existing Sub-Areas	**19.56**	**14.20**	**13.11**	**5.87**
Proposed Condition Max. Q Out (CFS) after Routing From Routing Study	**8.55**	**10.55**	**10.80**	**6.40**
WSE	**1553.79**	**1554.04**	**1554.11**	**1553.54**

All proposed on-site drainage and storm drain facilities will be sized adequately for 100-year storm event. Additional calculations, including on-site storm drain hydraulics and catch basin sizing in addition to any other storm event models will be provided in the final drainage report.

Appendix A
Preliminary Hydrology Map



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EXISTING HYDROLOGY MAP
FOR
TCC KNOX - VIII
COUNTY OF RIVERSIDE PP210130

HUITT-ZOLLARS
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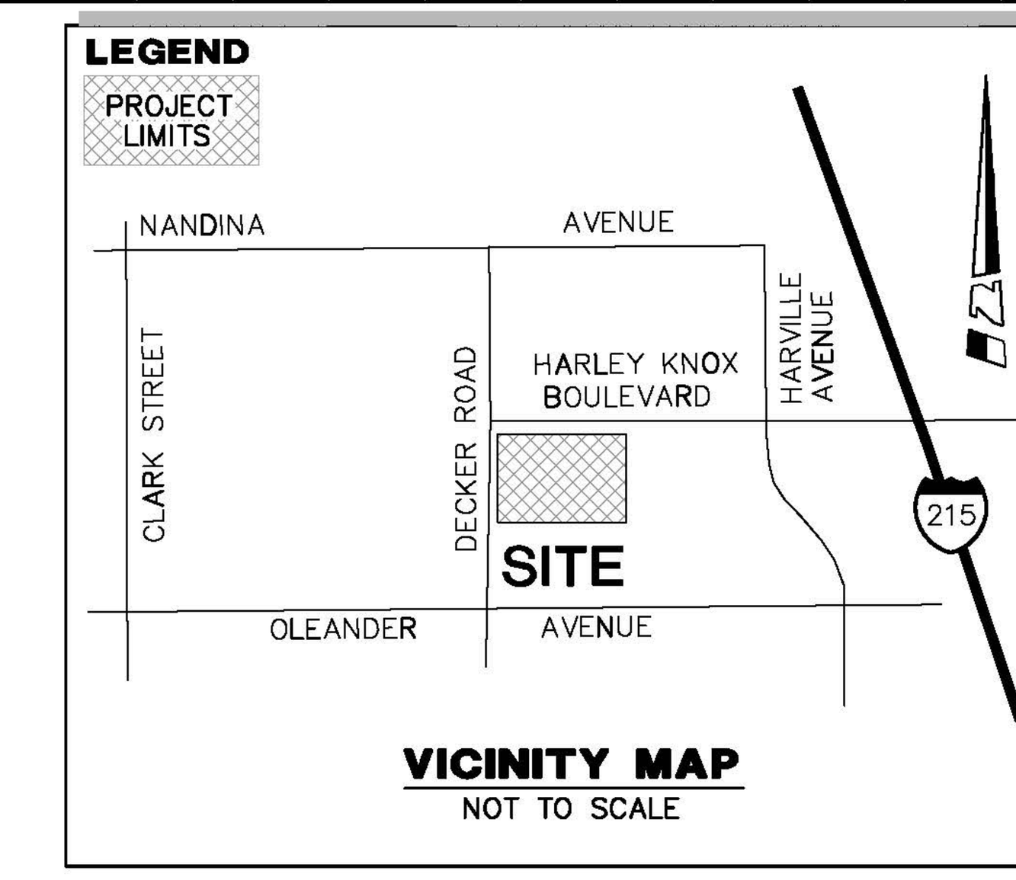
DESIGNED BY	HZ STAFF
DRAWN BY	HZ STAFF
CHECKED BY	J.M.
FIELD BOOK	
SHEET	1 OF 1 SHEETS
JOB NO.	R313684.01



VICINITY MAP
NOT TO SCALE

OWNER/DEVELOPER
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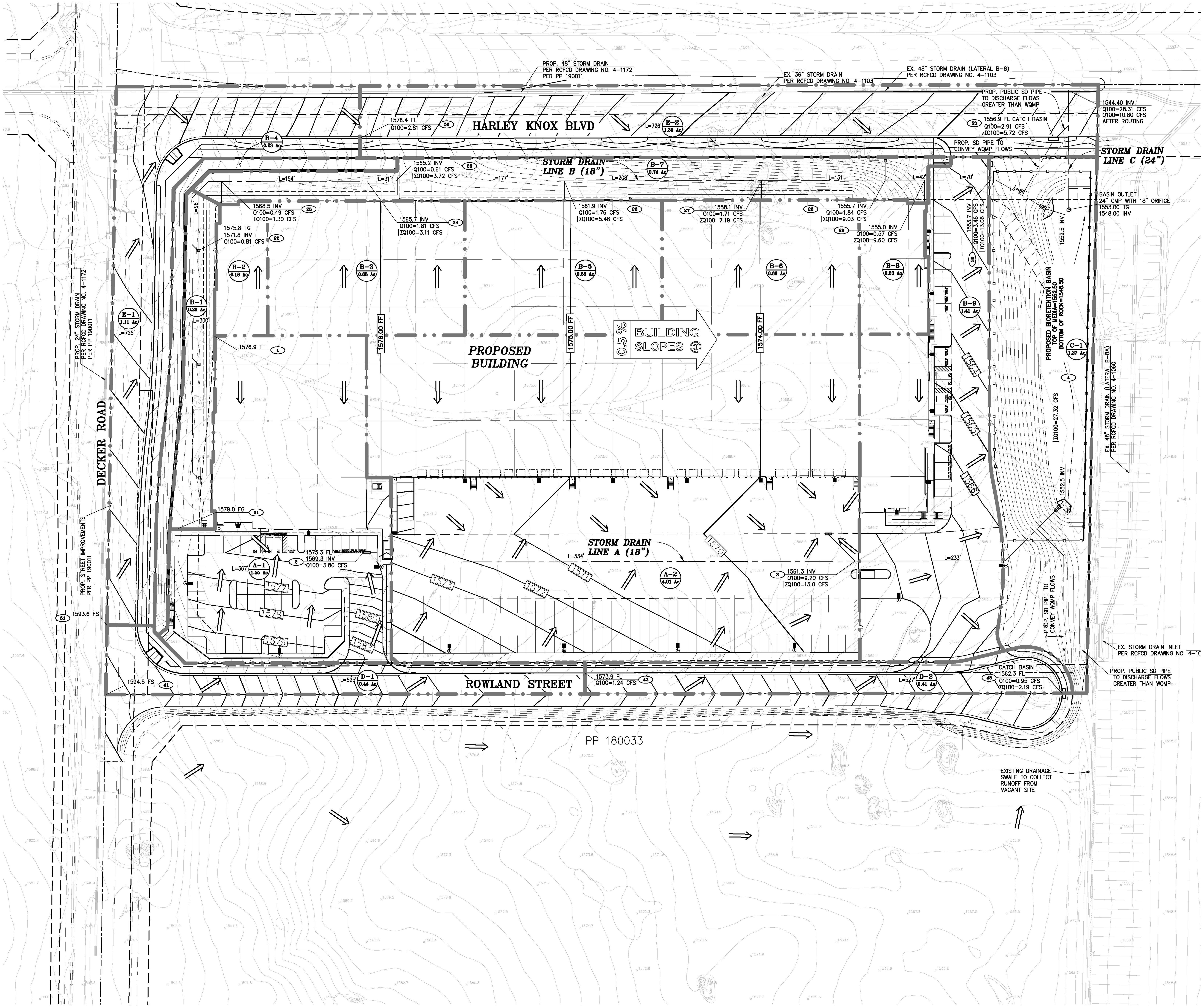
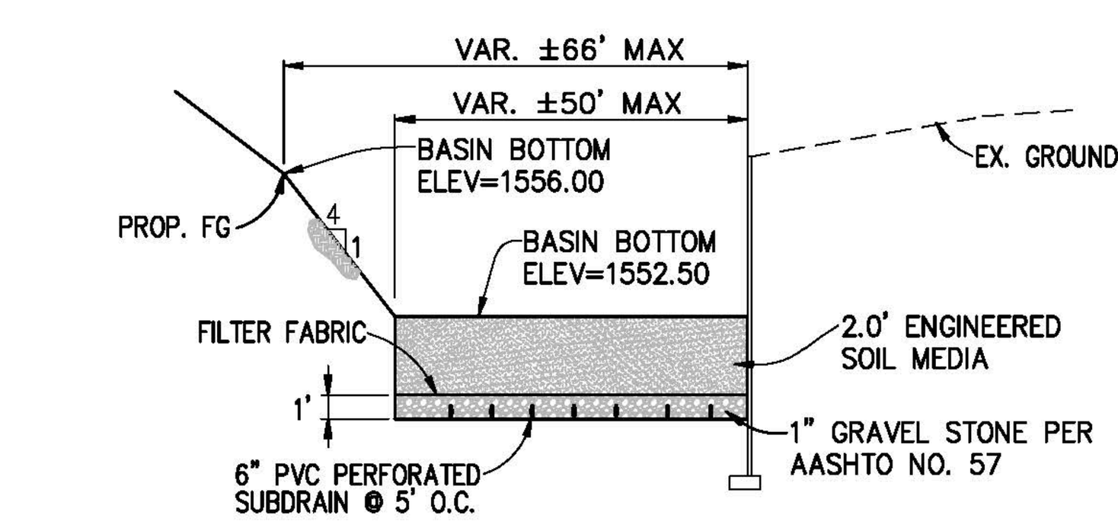
LEGEND
- (NO.) HYDROLOGY MODEL NODE NUMBER
- (A-11 / 7.40 Ac) TRIBUTARY AREA IN ACRES
- 673' LENGTH OF FLOW
- DRAINAGE BOUNDARY





BIO-RETENTION TYPICAL SECTION
N.T.S.

SCALE 1" = 30'

PROPOSED HYDROLOGY MAP
FOR
TCC KNOX - VIII
COUNTY OF RIVERSIDE PP210130

HUITT-ZOLLARS
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SHEET 1 OF 1 SHEETS

Appendix B
100-year Rational Method Hydrologic Analysis

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2005 Version 7.1
Rational Hydrology Study Date: 09/10/21 File:3684Q100E1.out

TCC - KNOX VIII
100 YEAR STORM EVENT EXISTING 1
3684Q100E1
DS

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

English (in-lb) Units used in input data file

Program License Serial Number 6145

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 100.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [Perris Valley] area used.
10 year storm 10 minute intensity = 1.880(In/Hr)
10 year storm 60 minute intensity = 0.780(In/Hr)
100 year storm 10 minute intensity = 2.690(In/Hr)
100 year storm 60 minute intensity = 1.120(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.120(In/Hr)
Slope of intensity duration curve = 0.4900

++

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

Initial area flow distance = 847.000(Ft.)
Top (of initial area) elevation = 1589.500(Ft.)
Bottom (of initial area) elevation = 1562.200(Ft.)
Difference in elevation = 27.300(Ft.)
Slope = 0.03223 s(percent)= 3.22
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 15.623 min.
Rainfall intensity = 2.166(In/Hr) for a 100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.818
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 86.00
Pervious area fraction = 1.000; Impervious fraction = 0.000

```
Initial subarea runoff =     13.197(CFS)
Total initial stream area =        7.450(Ac.)
Pervious area fraction = 1.000
End of computations, total study area =            7.45 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  86.0
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Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2005 Version 7.1
Rational Hydrology Study Date: 09/10/21 File:3684Q100E2.out

TCC - KNOX VIII
100 YEAR STORM EVENT EXISTING 2
3684Q100E2
DS

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

English (in-lb) Units used in input data file

Program License Serial Number 6145

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 100.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [Perris Valley] area used.
10 year storm 10 minute intensity = 1.880(In/Hr)
10 year storm 60 minute intensity = 0.780(In/Hr)
100 year storm 10 minute intensity = 2.690(In/Hr)
100 year storm 60 minute intensity = 1.120(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.120(In/Hr)
Slope of intensity duration curve = 0.4900

++

Process from Point/Station 21.000 to Point/Station 22.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 992.000(Ft.)
Top (of initial area) elevation = 1589.100(Ft.)
Bottom (of initial area) elevation = 1554.800(Ft.)
Difference in elevation = 34.300(Ft.)
Slope = 0.03458 s(percent)= 3.46
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 16.411 min.
Rainfall intensity = 2.114(In/Hr) for a 100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.816
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 86.00
Pervious area fraction = 1.000; Impervious fraction = 0.000

```
Initial subarea runoff =      7.730(CFS)
Total initial stream area =        4.480(Ac.)
Pervious area fraction = 1.000
End of computations, total study area =            4.48 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  86.0
```

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2005 Version 7.1
Rational Hydrology Study Date: 09/10/21 File:3684Q100OFFE.out

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TCC - KNOX VIII
100 YEAR STORM EVENT OFFSITE SOUTH EXISTING
3684Q100OFFE
DS

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

English (in-lb) Units used in input data file

Program License Serial Number 6145

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 100.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [Perris Valley] area used.
10 year storm 10 minute intensity = 1.880(In/Hr)
10 year storm 60 minute intensity = 0.780(In/Hr)
100 year storm 10 minute intensity = 2.690(In/Hr)
100 year storm 60 minute intensity = 1.120(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.120(In/Hr)
Slope of intensity duration curve = 0.4900

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Process from Point/Station 31.000 to Point/Station 32.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 1000.000(Ft.)
Top (of initial area) elevation = 1595.400(Ft.)
Bottom (of initial area) elevation = 1560.000(Ft.)
Difference in elevation = 35.400(Ft.)
Slope = 0.03540 s(percent)= 3.54
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 16.386 min.
Rainfall intensity = 2.116(In/Hr) for a 100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.816
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 86.00
Pervious area fraction = 1.000; Impervious fraction = 0.000

```
Initial subarea runoff =     12.606(CFS)
Total initial stream area =        7.300(Ac.)
Pervious area fraction = 1.000


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Process from Point/Station       32.000 to Point/Station       33.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of natural channel elevation =   1560.000(Ft.)
End of natural channel elevation =   1552.000(Ft.)
Length of natural channel  =   192.000(Ft.)
Estimated mean flow rate at midpoint of channel =     13.599(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   5.52(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0417
Corrected/adjusted channel slope =  0.0417
Travel time =    0.58 min.     TC =   16.97  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.815
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  86.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      2.080(In/Hr) for a   100.0 year storm
Subarea runoff =      1.949(CFS) for      1.150(Ac.)
Total runoff =     14.555(CFS)   Total area =       8.450(Ac.)
End of computations, total study area =            8.45 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  86.0
```

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2005 Version 7.1
Rational Hydrology Study Date: 09/10/21 File:3684Q100P.out

TCC - KNOX VIII
100 YEAR STORM EVENT PROPOSED
3684Q100P
DS

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

English (in-lb) Units used in input data file

Program License Serial Number 6145

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 100.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [Perris Valley] area used.
10 year storm 10 minute intensity = 1.880(In/Hr)
10 year storm 60 minute intensity = 0.780(In/Hr)
100 year storm 10 minute intensity = 2.690(In/Hr)
100 year storm 60 minute intensity = 1.120(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.120(In/Hr)
Slope of intensity duration curve = 0.4900

++

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

Initial area flow distance = 367.000(Ft.)
Top (of initial area) elevation = 1576.900(Ft.)
Bottom (of initial area) elevation = 1575.300(Ft.)
Difference in elevation = 1.600(Ft.)
Slope = 0.00436 s(percent)= 0.44
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 9.443 min.
Rainfall intensity = 2.771(In/Hr) for a 100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.884
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 69.00
Pervious area fraction = 0.100; Impervious fraction = 0.900

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Initial subarea runoff =      3.798(CFS)
Total initial stream area =        1.550(Ac.)
Pervious area fraction = 0.100


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Process from Point/Station        2.000 to Point/Station        3.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1569.300(Ft.)
Downstream point/station elevation =  1561.300(Ft.)
Pipe length  =   534.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =     3.798(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     3.798(CFS)
Normal flow depth in pipe =    8.14(In.)
Flow top width inside pipe =   11.21(In.)
Critical Depth =    9.95(In.)
Pipe flow velocity =      6.69(Ft/s)
Travel time through pipe =    1.33 min.
Time of concentration (TC) =    10.77 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        3.000 to Point/Station        3.000
**** SUBAREA FLOW ADDITION ****
________________________________________________________________________
COMMERCIAL subarea type
Runoff Coefficient = 0.883
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =    10.77 min.
Rainfall intensity =      2.598(In/Hr) for a   100.0 year storm
Subarea runoff =      9.201(CFS) for      4.010(Ac.)
Total runoff =     12.998(CFS)   Total area =       5.560(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        3.000 to Point/Station        4.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1561.300(Ft.)
Downstream point/station elevation =  1552.500(Ft.)
Pipe length  =   233.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =    12.998(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =    12.998(CFS)
Normal flow depth in pipe =   11.74(In.)
Flow top width inside pipe =   12.37(In.)
Critical depth could not be calculated.
Pipe flow velocity =     12.62(Ft/s)
Travel time through pipe =    0.31 min.
Time of concentration (TC) =    11.08 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        4.000 to Point/Station        4.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
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Along Main Stream number: 1 in normal stream number 1
Stream flow area =      5.560(Ac.)
Runoff from this stream =     12.998(CFS)
Time of concentration =   11.08 min.
Rainfall intensity =     2.562(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       21.000 to Point/Station       22.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =  1579.000(Ft.)
Bottom (of initial area) elevation =  1575.800(Ft.)
Difference in elevation =     3.200(Ft.)
Slope =    0.01067  s(percent)=       1.07
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.284 min.
Rainfall intensity =      3.147(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.886
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      0.808(CFS)
Total initial stream area =        0.290(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       22.000 to Point/Station       23.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  1571.800(Ft.)
Downstream point/station elevation =  1568.500(Ft.)
Pipe length  =    96.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =     0.808(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     0.808(CFS)
Normal flow depth in pipe =    3.76(In.)
Flow top width inside pipe =    5.80(In.)
Critical Depth =    5.35(In.)
Pipe flow velocity =      6.24(Ft/s)
Travel time through pipe =    0.26 min.
Time of concentration (TC) =     7.54 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       23.000 to Point/Station       23.000
**** SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Runoff Coefficient = 0.885
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =     7.54 min.
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```
Rainfall intensity =      3.095(In/Hr) for a   100.0 year storm
Subarea runoff =      0.493(CFS) for      0.180(Ac.)
Total runoff =      1.302(CFS)    Total area =       0.470(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       23.000 to Point/Station       24.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  1568.500(Ft.)
Downstream point/station elevation =  1565.700(Ft.)
Pipe length  =   154.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =     1.302(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     1.302(CFS)
Normal flow depth in pipe =    4.71(In.)
Flow top width inside pipe =    8.99(In.)
Critical Depth =    6.31(In.)
Pipe flow velocity =      5.57(Ft/s)
Travel time through pipe =    0.46 min.
Time of concentration (TC) =     8.00 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       24.000 to Point/Station       24.000
**** SUBAREA FLOW ADDITION ****
______________________________________________________________________________
COMMERCIAL subarea type
Runoff Coefficient = 0.885
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =     8.00 min.
Rainfall intensity =      3.006(In/Hr) for a   100.0 year storm
Subarea runoff =      1.809(CFS) for      0.680(Ac.)
Total runoff =      3.111(CFS)    Total area =       1.150(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       24.000 to Point/Station       25.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  1565.700(Ft.)
Downstream point/station elevation =  1565.200(Ft.)
Pipe length  =    31.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =     3.111(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     3.111(CFS)
Normal flow depth in pipe =    6.94(In.)
Flow top width inside pipe =   11.85(In.)
Critical Depth =    9.07(In.)
Pipe flow velocity =      6.61(Ft/s)
Travel time through pipe =    0.08 min.
Time of concentration (TC) =     8.08 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       25.000 to Point/Station       25.000
**** SUBAREA FLOW ADDITION ****
______________________________________________________________________________
```

```
COMMERCIAL subarea type
Runoff Coefficient = 0.885
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =     8.08 min.
Rainfall intensity =      2.992(In/Hr) for a   100.0 year storm
Subarea runoff =      0.609(CFS) for      0.230(Ac.)
Total runoff =      3.720(CFS)   Total area =       1.380(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       25.000 to Point/Station       26.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------
Upstream point/station elevation =  1565.200(Ft.)
Downstream point/station elevation =  1561.900(Ft.)
Pipe length  =   177.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =     3.720(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     3.720(CFS)
Normal flow depth in pipe =    7.44(In.)
Flow top width inside pipe =   11.65(In.)
Critical Depth =    9.85(In.)
Pipe flow velocity =      7.27(Ft/s)
Travel time through pipe =    0.41 min.
Time of concentration (TC) =     8.48 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       26.000 to Point/Station       26.000
**** SUBAREA FLOW ADDITION ****
----------------------------------------------------------------------
COMMERCIAL subarea type
Runoff Coefficient = 0.885
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =     8.48 min.
Rainfall intensity =      2.921(In/Hr) for a   100.0 year storm
Subarea runoff =      1.757(CFS) for      0.680(Ac.)
Total runoff =      5.477(CFS)   Total area =       2.060(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       26.000 to Point/Station       27.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------
Upstream point/station elevation =  1561.900(Ft.)
Downstream point/station elevation =  1558.100(Ft.)
Pipe length  =   208.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =     5.477(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     5.477(CFS)
Normal flow depth in pipe =    8.19(In.)
Flow top width inside pipe =   14.94(In.)
Critical Depth =   11.38(In.)
```

```
Pipe flow velocity =      7.99(Ft/s)
Travel time through pipe =    0.43 min.
Time of concentration (TC) =     8.92 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       27.000 to Point/Station       27.000
**** SUBAREA FLOW ADDITION ****
______________________________________________________________________________
COMMERCIAL subarea type
Runoff Coefficient = 0.884
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =     8.92 min.
Rainfall intensity =      2.850(In/Hr) for a   100.0 year storm
Subarea runoff =      1.714(CFS) for      0.680(Ac.)
Total runoff =      7.191(CFS)    Total area =       2.740(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       27.000 to Point/Station       28.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  1558.100(Ft.)
Downstream point/station elevation =  1555.700(Ft.)
Pipe length  =   131.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =     7.191(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     7.191(CFS)
Normal flow depth in pipe =    9.77(In.)
Flow top width inside pipe =   14.29(In.)
Critical Depth =   12.86(In.)
Pipe flow velocity =      8.49(Ft/s)
Travel time through pipe =    0.26 min.
Time of concentration (TC) =     9.18 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       28.000 to Point/Station       28.000
**** SUBAREA FLOW ADDITION ****
______________________________________________________________________________
COMMERCIAL subarea type
Runoff Coefficient = 0.884
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =     9.18 min.
Rainfall intensity =      2.811(In/Hr) for a   100.0 year storm
Subarea runoff =      1.839(CFS) for      0.740(Ac.)
Total runoff =      9.030(CFS)    Total area =       3.480(Ac.)


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

```
Upstream point/station elevation =  1555.700(Ft.)
Downstream point/station elevation =  1555.000(Ft.)
Pipe length  =    42.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =     9.030(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     9.030(CFS)
Normal flow depth in pipe =   15.00(In.)
Flow top width inside pipe =    0.00(In.)
Critical Depth =   13.88(In.)
Pipe flow velocity =      7.36(Ft/s)
Travel time through pipe =    0.10 min.
Time of concentration (TC) =     9.27 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       29.000 to Point/Station       29.000
**** SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------
COMMERCIAL subarea type
Runoff Coefficient = 0.884
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =     9.27 min.
Rainfall intensity =      2.797(In/Hr) for a   100.0 year storm
Subarea runoff =      0.569(CFS) for      0.230(Ac.)
Total runoff =      9.598(CFS)   Total area =       3.710(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       29.000 to Point/Station       30.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------
Upstream point/station elevation =  1555.000(Ft.)
Downstream point/station elevation =  1553.700(Ft.)
Pipe length  =    70.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =     9.598(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =     9.598(CFS)
Normal flow depth in pipe =   10.24(In.)
Flow top width inside pipe =   17.83(In.)
Critical Depth =   14.36(In.)
Pipe flow velocity =      9.24(Ft/s)
Travel time through pipe =    0.13 min.
Time of concentration (TC) =     9.40 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       30.000 to Point/Station       30.000
**** SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------
COMMERCIAL subarea type
Runoff Coefficient = 0.884
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =     9.40 min.
```

```
Rainfall intensity =      2.778(In/Hr) for a   100.0 year storm
Subarea runoff =      3.463(CFS) for      1.410(Ac.)
Total runoff =     13.061(CFS)    Total area =       5.120(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       30.000 to Point/Station        4.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  1553.700(Ft.)
Downstream point/station elevation =  1552.500(Ft.)
Pipe length  =    66.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =    13.061(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =    13.061(CFS)
Normal flow depth in pipe =   12.76(In.)
Flow top width inside pipe =   16.35(In.)
Critical Depth =   16.24(In.)
Pipe flow velocity =      9.75(Ft/s)
Travel time through pipe =    0.11 min.
Time of concentration (TC) =     9.51 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        4.000 to Point/Station        4.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      5.120(Ac.)
Runoff from this stream =     13.061(CFS)
Time of concentration =    9.51 min.
Rainfall intensity =     2.762(In/Hr)
Summary of stream data:

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


1       12.998     11.08                2.562
2       13.061      9.51                2.762
Largest stream flow has longer or shorter time of concentration
Qp =     13.061 + sum of
         Qa          Tb/Ta
         12.998 *    0.858 =     11.155
Qp =     24.216

Total of 2 streams to confluence:
Flow rates before confluence point:
      12.998      13.061
Area of streams before confluence:
        5.560        5.120
Results of confluence:
Total flow rate =     24.216(CFS)
Time of concentration =     9.510 min.
Effective stream area after confluence =     10.680(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        4.000 to Point/Station        4.000
**** SUBAREA FLOW ADDITION ****
______________________________________________________________________________
COMMERCIAL subarea type
Runoff Coefficient = 0.884
```

```
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =     9.51 min.
Rainfall intensity =      2.762(In/Hr) for a   100.0 year storm
Subarea runoff =      3.101(CFS) for      1.270(Ac.)
Total runoff =     27.317(CFS)   Total area =      11.950(Ac.)
End of computations, total study area =           11.95 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  69.0
```

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2005 Version 7.1
Rational Hydrology Study Date: 09/10/21 File:3684Q100PRS.out

TCC - KNOX VIII
100 YEAR STORM EVENT PROPOSED ROWLAND STREET
3684Q100PRS
CB

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

English (in-lb) Units used in input data file

Program License Serial Number 6145

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 100.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [Perris Valley] area used.
10 year storm 10 minute intensity = 1.880(In/Hr)
10 year storm 60 minute intensity = 0.780(In/Hr)
100 year storm 10 minute intensity = 2.690(In/Hr)
100 year storm 60 minute intensity = 1.120(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.120(In/Hr)
Slope of intensity duration curve = 0.4900

++

Process from Point/Station 41.000 to Point/Station 42.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 525.000(Ft.)
Top (of initial area) elevation = 1593.600(Ft.)
Bottom (of initial area) elevation = 1573.900(Ft.)
Difference in elevation = 19.700(Ft.)
Slope = 0.03752 s(percent)= 3.75
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 7.085 min.
Rainfall intensity = 3.190(In/Hr) for a 100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.886
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 69.00
Pervious area fraction = 0.100; Impervious fraction = 0.900

```
Initial subarea runoff =      1.243(CFS)
Total initial stream area =        0.440(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       42.000 to Point/Station       43.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of natural channel elevation =   1573.900(Ft.)
End of natural channel elevation =   1562.300(Ft.)
Length of natural channel  =   527.000(Ft.)
Estimated mean flow rate at midpoint of channel =      1.823(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   2.50(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0220
Corrected/adjusted channel slope =  0.0220
Travel time =    3.51 min.     TC =   10.59  min.


 Adding area flow to channel
COMMERCIAL subarea type
Runoff Coefficient = 0.883
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      2.620(In/Hr) for a   100.0 year storm
Subarea runoff =      0.949(CFS) for      0.410(Ac.)
Total runoff =      2.192(CFS)   Total area =       0.850(Ac.)
End of computations, total study area =            0.85 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  69.0
```

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2005 Version 7.1
Rational Hydrology Study Date: 09/10/21 File:3684Q100PHKB.out

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TCC - KNOX VIII
100 YEAR STORM EVENT PROPOSED HARLEY KNOX BOULEVARD
3684Q100PHKB
CB

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

English (in-lb) Units used in input data file

Program License Serial Number 6145

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 100.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [Perris Valley] area used.
10 year storm 10 minute intensity = 1.880(In/Hr)
10 year storm 60 minute intensity = 0.780(In/Hr)
100 year storm 10 minute intensity = 2.690(In/Hr)
100 year storm 60 minute intensity = 1.120(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.120(In/Hr)
Slope of intensity duration curve = 0.4900

++

Process from Point/Station 51.000 to Point/Station 52.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 725.000(Ft.)
Top (of initial area) elevation = 1593.600(Ft.)
Bottom (of initial area) elevation = 1576.400(Ft.)
Difference in elevation = 17.200(Ft.)
Slope = 0.02372 s(percent)= 2.37
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 8.835 min.
Rainfall intensity = 2.863(In/Hr) for a 100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.884
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 69.00
Pervious area fraction = 0.100; Impervious fraction = 0.900

```
Initial subarea runoff =      2.811(CFS)
Total initial stream area =        1.110(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       52.000 to Point/Station       53.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of natural channel elevation =   1576.400(Ft.)
End of natural channel elevation =   1556.900(Ft.)
Length of natural channel  =   726.000(Ft.)
Estimated mean flow rate at midpoint of channel =      4.533(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   3.38(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0269
Corrected/adjusted channel slope =  0.0269
Travel time =    3.58 min.     TC =   12.42  min.


 Adding area flow to channel
COMMERCIAL subarea type
Runoff Coefficient = 0.882
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      2.424(In/Hr) for a   100.0 year storm
Subarea runoff =      2.908(CFS) for      1.360(Ac.)
Total runoff =      5.719(CFS)   Total area =       2.470(Ac.)
End of computations, total study area =            2.47 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  69.0
```

Appendix C
100-year Unit Hydrographs

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

Study date 11/01/21 File: 3684q100uhe11100.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6145

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

TCC - KNOX VIII
100 YEAR UNIT HYDROGRAPH EXISTING AREA EX-1
3684Q100UHE1
DS

Drainage Area = 7.45(Ac.) = 0.012 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 7.45(Ac.) = 0.012 Sq. Mi.
USER Entry of lag time in hours
Lag time = 0.260 Hr.
Lag time = 15.62 Min.
25% of lag time = 3.91 Min.
40% of lag time = 6.25 Min.
Unit time = 5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
7.45	0.50	3.73

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
7.45	1.27	9.46

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 0.500(In)
Area Averaged 100-Year Rainfall = 1.270(In)

Point rain (area averaged) = 1.270(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 1.270(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
7.450	86.00	0.000

Total Area Entered = 7.45(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
86.0	86.0	0.176	0.000	0.176	1.000	0.176
					Sum (F) =	0.176

Area averaged mean soil loss (F) (In/Hr) = 0.176
Minimum soil loss rate ((In/Hr)) = 0.088
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

Slope of intensity-duration curve for a 1 hour storm =0.5000

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	32.002	3.167	0.238
2	0.167	64.004	11.960	0.898
3	0.250	96.006	20.516	1.540
4	0.333	128.008	20.312	1.525
5	0.417	160.010	11.717	0.880
6	0.500	192.012	6.687	0.502
7	0.583	224.014	4.576	0.344
8	0.667	256.016	3.561	0.267
9	0.750	288.018	2.901	0.218
10	0.833	320.020	2.319	0.174
11	0.917	352.023	1.946	0.146
12	1.000	384.025	1.633	0.123
13	1.083	416.027	1.360	0.102
14	1.167	448.029	1.072	0.080
15	1.250	480.031	0.996	0.075
16	1.333	512.033	0.942	0.071
17	1.417	544.035	0.754	0.057
18	1.500	576.037	0.662	0.050
19	1.583	608.039	0.574	0.043
20	1.667	640.041	0.484	0.036

21	1.750	672.043	0.418	0.031
22	1.833	704.045	0.326	0.024
23	1.917	736.047	0.320	0.024
24	2.000	768.049	0.320	0.024
25	2.083	800.051	0.480	0.036
			Sum = 100.000 Sum=	7.508

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	4.20	0.640	0.176	---	0.46
2	0.17	4.30	0.655	0.176	---	0.48
3	0.25	5.00	0.762	0.176	---	0.59
4	0.33	5.00	0.762	0.176	---	0.59
5	0.42	5.80	0.884	0.176	---	0.71
6	0.50	6.50	0.991	0.176	---	0.81
7	0.58	7.40	1.128	0.176	---	0.95
8	0.67	8.60	1.311	0.176	---	1.13
9	0.75	12.30	1.874	0.176	---	1.70
10	0.83	29.10	4.435	0.176	---	4.26
11	0.92	6.80	1.036	0.176	---	0.86
12	1.00	5.00	0.762	0.176	---	0.59
Sum =		100.0			Sum =	13.1

Flood volume = Effective rainfall 1.09(In)
times area 7.5(Ac.)/[(In)/(Ft.)] = 0.7(Ac.Ft)
Total soil loss = 0.18(In)
Total soil loss = 0.109(Ac.Ft)
Total rainfall = 1.27(In)
Flood volume = 29594.1 Cubic Feet
Total soil loss = 4748.8 Cubic Feet

Peak flow rate of this hydrograph = 12.372(CFS)

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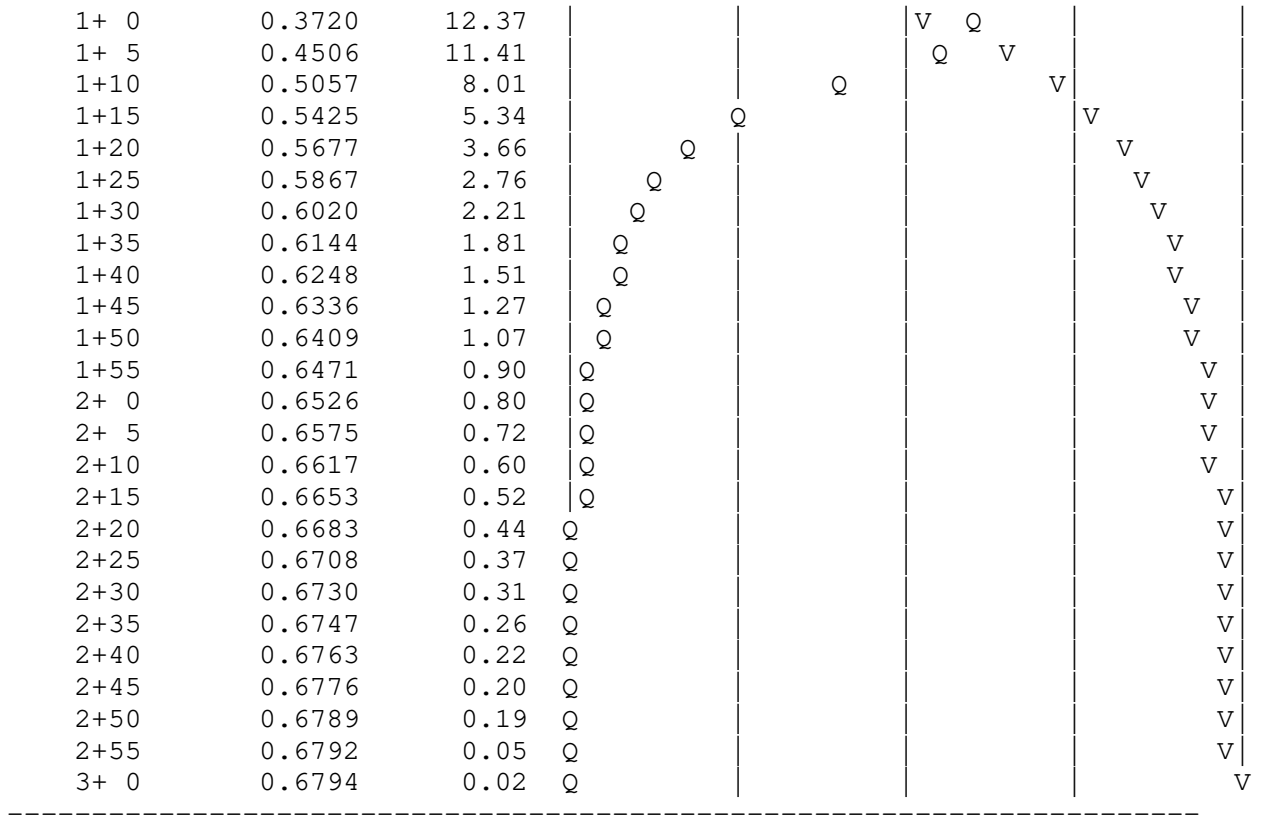
1 - H O U R S T O R M
R u n o f f H y d r o g r a p h

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	0.0008	0.11	Q				
0+10	0.0044	0.53	VQ				
0+15	0.0133	1.29	V Q				
0+20	0.0278	2.11	V Q				
0+25	0.0467	2.74	V Q				
0+30	0.0693	3.28	V Q				
0+35	0.0959	3.86	V Q				
0+40	0.1273	4.56	V Q				
0+45	0.1651	5.48	VQ				
0+50	0.2158	7.36	V Q				
0+55	0.2868	10.31	V Q				


1+ 0 0.3720 12.37
1+ 5 0.4506 11.41
1+10 0.5057 8.01
1+15 0.5425 5.34
1+20 0.5677 3.66
1+25 0.5867 2.76
1+30 0.6020 2.21
1+35 0.6144 1.81
1+40 0.6248 1.51
1+45 0.6336 1.27
1+50 0.6409 1.07
1+55 0.6471 0.90
2+ 0 0.6526 0.80
2+ 5 0.6575 0.72
2+10 0.6617 0.60
2+15 0.6653 0.52
2+20 0.6683 0.44
2+25 0.6708 0.37
2+30 0.6730 0.31
2+35 0.6747 0.26
2+40 0.6763 0.22
2+45 0.6776 0.20
2+50 0.6789 0.19
2+55 0.6792 0.05
3+ 0 0.6794 0.02

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

Study date 11/01/21 File: 3684q100uhe13100.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6145

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

TCC - KNOX VIII
100 YEAR UNIT HYDROGRAPH EXISTING AREA EX-1
3684Q100UHE1
DS

Drainage Area = 7.45(Ac.) = 0.012 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 7.45(Ac.) = 0.012 Sq. Mi.
USER Entry of lag time in hours
Lag time = 0.260 Hr.
Lag time = 15.62 Min.
25% of lag time = 3.91 Min.
40% of lag time = 6.25 Min.
Unit time = 5.00 Min.
Duration of storm = 3 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
7.45	0.80	5.96

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
7.45	1.95	14.53

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 0.800(In)
Area Averaged 100-Year Rainfall = 1.950(In)

Point rain (area averaged) = 1.950(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 1.950(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
7.450	86.00	0.000

Total Area Entered = 7.45(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
86.0	86.0	0.176	0.000	0.176	1.000	0.176
					Sum (F) =	0.176

Area averaged mean soil loss (F) (In/Hr) = 0.176
Minimum soil loss rate ((In/Hr)) = 0.088
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	32.002	3.167	0.238
2	0.167	64.004	11.960	0.898
3	0.250	96.006	20.516	1.540
4	0.333	128.008	20.312	1.525
5	0.417	160.010	11.717	0.880
6	0.500	192.012	6.687	0.502
7	0.583	224.014	4.576	0.344
8	0.667	256.016	3.561	0.267
9	0.750	288.018	2.901	0.218
10	0.833	320.020	2.319	0.174
11	0.917	352.023	1.946	0.146
12	1.000	384.025	1.633	0.123
13	1.083	416.027	1.360	0.102
14	1.167	448.029	1.072	0.080
15	1.250	480.031	0.996	0.075
16	1.333	512.033	0.942	0.071
17	1.417	544.035	0.754	0.057
18	1.500	576.037	0.662	0.050
19	1.583	608.039	0.574	0.043
20	1.667	640.041	0.484	0.036
21	1.750	672.043	0.418	0.031
22	1.833	704.045	0.326	0.024

23	1.917	736.047	0.320	0.024
24	2.000	768.049	0.320	0.024
25	2.083	800.051	0.480	0.036
			Sum = 100.000 Sum=	7.508

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	1.30	0.304	0.176	---	0.13
2	0.17	1.30	0.304	0.176	---	0.13
3	0.25	1.10	0.257	0.176	---	0.08
4	0.33	1.50	0.351	0.176	---	0.18
5	0.42	1.50	0.351	0.176	---	0.18
6	0.50	1.80	0.421	0.176	---	0.25
7	0.58	1.50	0.351	0.176	---	0.18
8	0.67	1.80	0.421	0.176	---	0.25
9	0.75	1.80	0.421	0.176	---	0.25
10	0.83	1.50	0.351	0.176	---	0.18
11	0.92	1.60	0.374	0.176	---	0.20
12	1.00	1.80	0.421	0.176	---	0.25
13	1.08	2.20	0.515	0.176	---	0.34
14	1.17	2.20	0.515	0.176	---	0.34
15	1.25	2.20	0.515	0.176	---	0.34
16	1.33	2.00	0.468	0.176	---	0.29
17	1.42	2.60	0.608	0.176	---	0.43
18	1.50	2.70	0.632	0.176	---	0.46
19	1.58	2.40	0.562	0.176	---	0.39
20	1.67	2.70	0.632	0.176	---	0.46
21	1.75	3.30	0.772	0.176	---	0.60
22	1.83	3.10	0.725	0.176	---	0.55
23	1.92	2.90	0.679	0.176	---	0.50
24	2.00	3.00	0.702	0.176	---	0.53
25	2.08	3.10	0.725	0.176	---	0.55
26	2.17	4.20	0.983	0.176	---	0.81
27	2.25	5.00	1.170	0.176	---	0.99
28	2.33	3.50	0.819	0.176	---	0.64
29	2.42	6.80	1.591	0.176	---	1.42
30	2.50	7.30	1.708	0.176	---	1.53
31	2.58	8.20	1.919	0.176	---	1.74
32	2.67	5.90	1.381	0.176	---	1.20
33	2.75	2.00	0.468	0.176	---	0.29
34	2.83	1.80	0.421	0.176	---	0.25
35	2.92	1.80	0.421	0.176	---	0.25
36	3.00	0.60	0.140	0.176	0.126	0.01
	Sum =	100.0			Sum =	17.1

Flood volume = Effective rainfall 1.43(In)
times area 7.5(Ac.)/[(In)/(Ft.)] = 0.9(Ac.Ft)
Total soil loss = 0.52(In)
Total soil loss = 0.325(Ac.Ft)
Total rainfall = 1.95(In)
Flood volume = 38597.6 Cubic Feet
Total soil loss = 14135.5 Cubic Feet

Peak flow rate of this hydrograph = 8.916(CFS)

3 - 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	0.0012	0.15	Q				
0+15	0.0035	0.33	VQ				
0+20	0.0070	0.51	V Q				
0+25	0.0114	0.63	V Q				
0+30	0.0168	0.79	V Q				
0+35	0.0236	0.98	V Q				
0+40	0.0314	1.14	V Q				
0+45	0.0401	1.26	V Q				
0+50	0.0493	1.35	V Q				
0+55	0.0590	1.40	V Q				
1+ 0	0.0687	1.40	V Q				
1+ 5	0.0786	1.45	V Q				
1+10	0.0898	1.62	V Q				
1+15	0.1026	1.85	V Q				
1+20	0.1166	2.04	V Q				
1+25	0.1314	2.15	V Q				
1+30	0.1471	2.28	V Q				
1+35	0.1643	2.49	V Q				
1+40	0.1828	2.69	V Q				
1+45	0.2024	2.85	V Q				
1+50	0.2236	3.07	V Q				
1+55	0.2467	3.35	V Q				
2+ 0	0.2711	3.54	V Q				
2+ 5	0.2959	3.61	VQ				
2+10	0.3216	3.72	Q				
2+15	0.3497	4.09	VQ				
2+20	0.3818	4.66	VQ				
2+25	0.4180	5.26	V Q				
2+30	0.4593	6.00	V Q				
2+35	0.5084	7.13	V Q				
2+40	0.5667	8.46	V Q				
2+45	0.6281	8.92	V Q				
2+50	0.6836	8.07	V Q				
2+55	0.7272	6.32	Q V				
3+ 0	0.7595	4.69	Q V				
3+ 5	0.7844	3.62	Q V				
3+10	0.8035	2.78	Q V				
3+15	0.8181	2.11	Q V				
3+20	0.8296	1.66	Q V				
3+25	0.8390	1.37	Q V				
3+30	0.8468	1.14	Q V				
3+35	0.8533	0.95	Q V				

3+40	0.8589	0.81	Q				V
3+45	0.8637	0.70	Q				V
3+50	0.8678	0.60	Q				V
3+55	0.8713	0.51	Q				V
4+ 0	0.8743	0.43	Q				V
4+ 5	0.8768	0.37	Q				V
4+10	0.8790	0.31	Q				V
4+15	0.8808	0.26	Q				V
4+20	0.8822	0.21	Q				V
4+25	0.8835	0.19	Q				V
4+30	0.8845	0.15	Q				V
4+35	0.8853	0.11	Q				V
4+40	0.8858	0.06	Q				V
4+45	0.8859	0.02	Q				V
4+50	0.8860	0.02	Q				V
4+55	0.8861	0.01	Q				V
5+ 0	0.8861	0.00	Q				V

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

Study date 11/01/21 File: 3684q100uhe16100.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6145

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

TCC - KNOX VIII
100 YEAR UNIT HYDROGRAPH EXISTING AREA EX-1
3684Q100UHE1
DS

Drainage Area = 7.45(Ac.) = 0.012 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 7.45(Ac.) = 0.012 Sq. Mi.
USER Entry of lag time in hours
Lag time = 0.260 Hr.
Lag time = 15.62 Min.
25% of lag time = 3.91 Min.
40% of lag time = 6.25 Min.
Unit time = 5.00 Min.
Duration of storm = 6 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
7.45	1.10	8.20

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
7.45	2.75	20.49

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.100(In)
Area Averaged 100-Year Rainfall = 2.750(In)

Point rain (area averaged) = 2.750(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 2.750(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
7.450	86.00	0.000

Total Area Entered = 7.45(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
86.0	86.0	0.176	0.000	0.176	1.000	0.176
					Sum (F) =	0.176

Area averaged mean soil loss (F) (In/Hr) = 0.176
Minimum soil loss rate ((In/Hr)) = 0.088
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	32.002	3.167	0.238
2	0.167	64.004	11.960	0.898
3	0.250	96.006	20.516	1.540
4	0.333	128.008	20.312	1.525
5	0.417	160.010	11.717	0.880
6	0.500	192.012	6.687	0.502
7	0.583	224.014	4.576	0.344
8	0.667	256.016	3.561	0.267
9	0.750	288.018	2.901	0.218
10	0.833	320.020	2.319	0.174
11	0.917	352.023	1.946	0.146
12	1.000	384.025	1.633	0.123
13	1.083	416.027	1.360	0.102
14	1.167	448.029	1.072	0.080
15	1.250	480.031	0.996	0.075
16	1.333	512.033	0.942	0.071
17	1.417	544.035	0.754	0.057
18	1.500	576.037	0.662	0.050
19	1.583	608.039	0.574	0.043
20	1.667	640.041	0.484	0.036
21	1.750	672.043	0.418	0.031
22	1.833	704.045	0.326	0.024

23	1.917	736.047	0.320	0.024
24	2.000	768.049	0.320	0.024
25	2.083	800.051	0.480	0.036
			Sum = 100.000 Sum=	7.508

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.50	0.165	0.176	0.148	0.02
2	0.17	0.60	0.198	0.176	---	0.02
3	0.25	0.60	0.198	0.176	---	0.02
4	0.33	0.60	0.198	0.176	---	0.02
5	0.42	0.60	0.198	0.176	---	0.02
6	0.50	0.70	0.231	0.176	---	0.06
7	0.58	0.70	0.231	0.176	---	0.06
8	0.67	0.70	0.231	0.176	---	0.06
9	0.75	0.70	0.231	0.176	---	0.06
10	0.83	0.70	0.231	0.176	---	0.06
11	0.92	0.70	0.231	0.176	---	0.06
12	1.00	0.80	0.264	0.176	---	0.09
13	1.08	0.80	0.264	0.176	---	0.09
14	1.17	0.80	0.264	0.176	---	0.09
15	1.25	0.80	0.264	0.176	---	0.09
16	1.33	0.80	0.264	0.176	---	0.09
17	1.42	0.80	0.264	0.176	---	0.09
18	1.50	0.80	0.264	0.176	---	0.09
19	1.58	0.80	0.264	0.176	---	0.09
20	1.67	0.80	0.264	0.176	---	0.09
21	1.75	0.80	0.264	0.176	---	0.09
22	1.83	0.80	0.264	0.176	---	0.09
23	1.92	0.80	0.264	0.176	---	0.09
24	2.00	0.90	0.297	0.176	---	0.12
25	2.08	0.80	0.264	0.176	---	0.09
26	2.17	0.90	0.297	0.176	---	0.12
27	2.25	0.90	0.297	0.176	---	0.12
28	2.33	0.90	0.297	0.176	---	0.12
29	2.42	0.90	0.297	0.176	---	0.12
30	2.50	0.90	0.297	0.176	---	0.12
31	2.58	0.90	0.297	0.176	---	0.12
32	2.67	0.90	0.297	0.176	---	0.12
33	2.75	1.00	0.330	0.176	---	0.15
34	2.83	1.00	0.330	0.176	---	0.15
35	2.92	1.00	0.330	0.176	---	0.15
36	3.00	1.00	0.330	0.176	---	0.15
37	3.08	1.00	0.330	0.176	---	0.15
38	3.17	1.10	0.363	0.176	---	0.19
39	3.25	1.10	0.363	0.176	---	0.19
40	3.33	1.10	0.363	0.176	---	0.19
41	3.42	1.20	0.396	0.176	---	0.22
42	3.50	1.30	0.429	0.176	---	0.25
43	3.58	1.40	0.462	0.176	---	0.29
44	3.67	1.40	0.462	0.176	---	0.29
45	3.75	1.50	0.495	0.176	---	0.32

46	3.83	1.50	0.495	0.176	---	0.32
47	3.92	1.60	0.528	0.176	---	0.35
48	4.00	1.60	0.528	0.176	---	0.35
49	4.08	1.70	0.561	0.176	---	0.39
50	4.17	1.80	0.594	0.176	---	0.42
51	4.25	1.90	0.627	0.176	---	0.45
52	4.33	2.00	0.660	0.176	---	0.48
53	4.42	2.10	0.693	0.176	---	0.52
54	4.50	2.10	0.693	0.176	---	0.52
55	4.58	2.20	0.726	0.176	---	0.55
56	4.67	2.30	0.759	0.176	---	0.58
57	4.75	2.40	0.792	0.176	---	0.62
58	4.83	2.40	0.792	0.176	---	0.62
59	4.92	2.50	0.825	0.176	---	0.65
60	5.00	2.60	0.858	0.176	---	0.68
61	5.08	3.10	1.023	0.176	---	0.85
62	5.17	3.60	1.188	0.176	---	1.01
63	5.25	3.90	1.287	0.176	---	1.11
64	5.33	4.20	1.386	0.176	---	1.21
65	5.42	4.70	1.551	0.176	---	1.38
66	5.50	5.60	1.848	0.176	---	1.67
67	5.58	1.90	0.627	0.176	---	0.45
68	5.67	0.90	0.297	0.176	---	0.12
69	5.75	0.60	0.198	0.176	---	0.02
70	5.83	0.50	0.165	0.176	0.148	0.02
71	5.92	0.30	0.099	0.176	0.089	0.01
72	6.00	0.20	0.066	0.176	0.059	0.01
Sum =	100.0				Sum =	20.6

Flood volume = Effective rainfall 1.72(In)
times area 7.5(Ac.)/[(In)/(Ft.)] = 1.1(Ac.Ft)
Total soil loss = 1.03(In)
Total soil loss = 0.641(Ac.Ft)
Total rainfall = 2.75(In)
Flood volume = 46453.7 Cubic Feet
Total soil loss = 27914.0 Cubic Feet

Peak flow rate of this hydrograph = 8.238(CFS)

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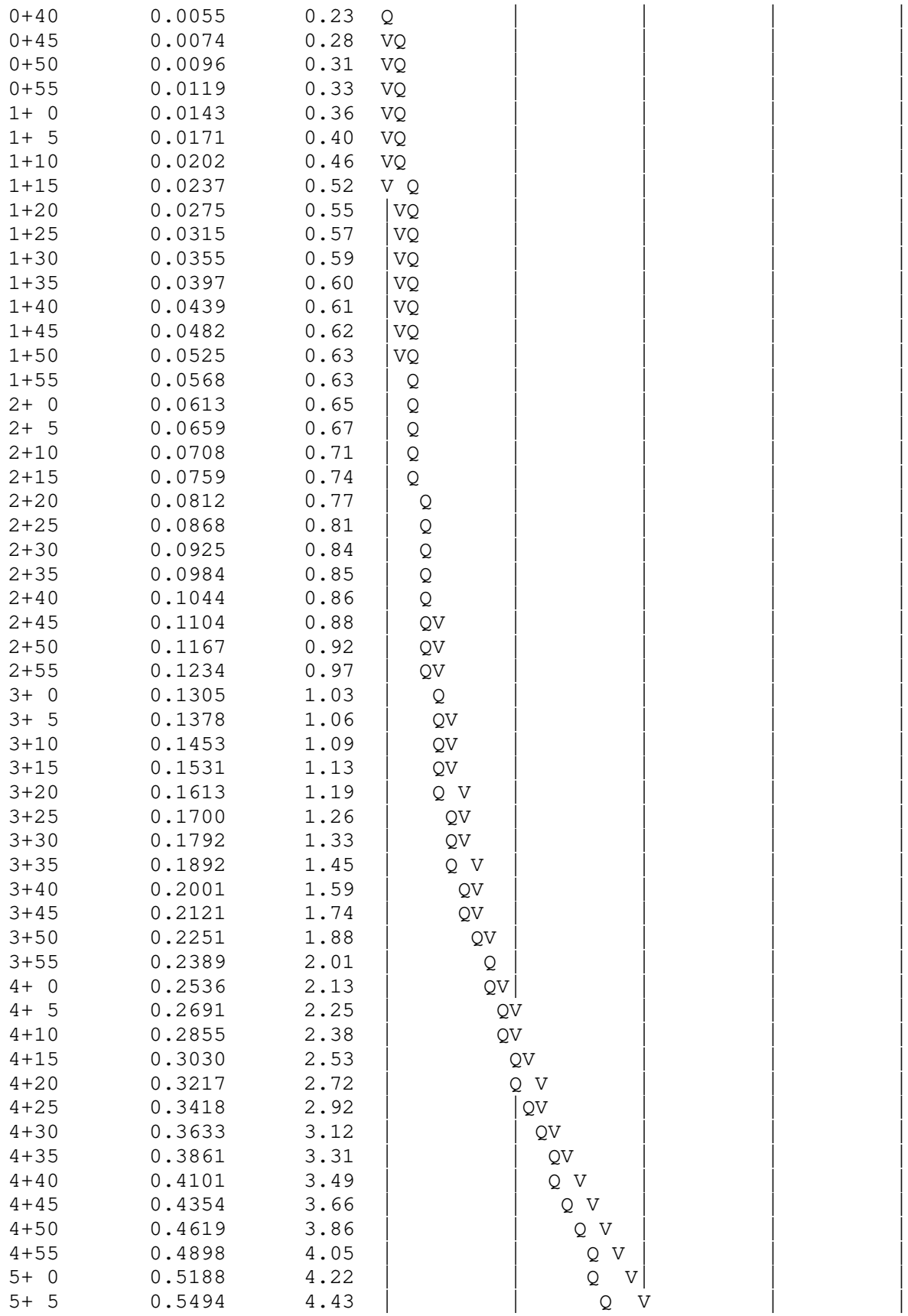
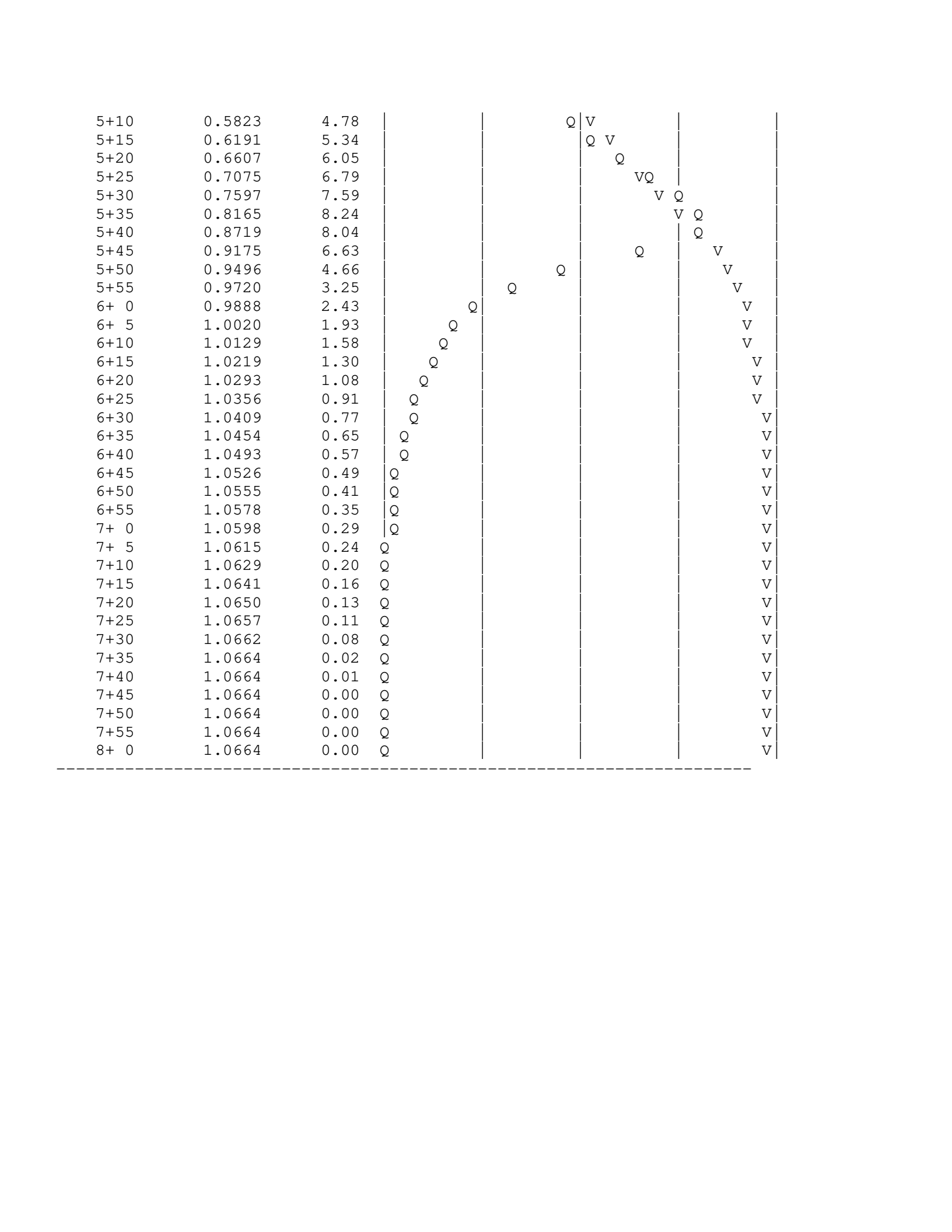
6 - H O U R S T O R M
R u n o f f H y d r o g r a p h

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	0.0000	0.00	Q	|	|	|	|
0+10	0.0002	0.02	Q	|	|	|	|
0+15	0.0005	0.05	Q	|	|	|	|
0+20	0.0011	0.09	Q	|	|	|	|
0+25	0.0019	0.11	Q	|	|	|	|
0+30	0.0027	0.13	Q	|	|	|	|
0+35	0.0039	0.17	Q	|	|	|	|


0+40 0.0055 0.23
0+45 0.0074 0.28
0+50 0.0096 0.31
0+55 0.0119 0.33
1+ 0 0.0143 0.36
1+ 5 0.0171 0.40
1+10 0.0202 0.46
1+15 0.0237 0.52
1+20 0.0275 0.55
1+25 0.0315 0.57
1+30 0.0355 0.59
1+35 0.0397 0.60
1+40 0.0439 0.61
1+45 0.0482 0.62
1+50 0.0525 0.63
1+55 0.0568 0.63
2+ 0 0.0613 0.65
2+ 5 0.0659 0.67
2+10 0.0708 0.71
2+15 0.0759 0.74
2+20 0.0812 0.77
2+25 0.0868 0.81
2+30 0.0925 0.84
2+35 0.0984 0.85
2+40 0.1044 0.86
2+45 0.1104 0.88
2+50 0.1167 0.92
2+55 0.1234 0.97
3+ 0 0.1305 1.03
3+ 5 0.1378 1.06
3+10 0.1453 1.09
3+15 0.1531 1.13
3+20 0.1613 1.19
3+25 0.1700 1.26
3+30 0.1792 1.33
3+35 0.1892 1.45
3+40 0.2001 1.59
3+45 0.2121 1.74
3+50 0.2251 1.88
3+55 0.2389 2.01
4+ 0 0.2536 2.13
4+ 5 0.2691 2.25
4+10 0.2855 2.38
4+15 0.3030 2.53
4+20 0.3217 2.72
4+25 0.3418 2.92
4+30 0.3633 3.12
4+35 0.3861 3.31
4+40 0.4101 3.49
4+45 0.4354 3.66
4+50 0.4619 3.86
4+55 0.4898 4.05
5+ 0 0.5188 4.22
5+ 5 0.5494 4.43


5+10 0.5823 4.78
5+15 0.6191 5.34
5+20 0.6607 6.05
5+25 0.7075 6.79
5+30 0.7597 7.59
5+35 0.8165 8.24
5+40 0.8719 8.04
5+45 0.9175 6.63
5+50 0.9496 4.66
5+55 0.9720 3.25
6+ 0 0.9888 2.43
6+ 5 1.0020 1.93
6+10 1.0129 1.58
6+15 1.0219 1.30
6+20 1.0293 1.08
6+25 1.0356 0.91
6+30 1.0409 0.77
6+35 1.0454 0.65
6+40 1.0493 0.57
6+45 1.0526 0.49
6+50 1.0555 0.41
6+55 1.0578 0.35
7+ 0 1.0598 0.29
7+ 5 1.0615 0.24
7+10 1.0629 0.20
7+15 1.0641 0.16
7+20 1.0650 0.13
7+25 1.0657 0.11
7+30 1.0662 0.08
7+35 1.0664 0.02
7+40 1.0664 0.01
7+45 1.0664 0.00
7+50 1.0664 0.00
7+55 1.0664 0.00
8+ 0 1.0664 0.00

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

Study date 11/01/21 File: 3684q100uhe124100.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6145

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

TCC - KNOX VIII
100 YEAR UNIT HYDROGRAPH EXISTING AREA EX-1
3684Q100UHE1
DS

Drainage Area = 7.45(Ac.) = 0.012 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 7.45(Ac.) = 0.012 Sq. Mi.
USER Entry of lag time in hours
Lag time = 0.260 Hr.
Lag time = 15.62 Min.
25% of lag time = 3.91 Min.
40% of lag time = 6.25 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
7.45	1.70	12.66

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
7.45	5.00	37.25

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.700(In)
Area Averaged 100-Year Rainfall = 5.000(In)

Point rain (area averaged) = 5.000(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 5.000(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
7.450	86.00	0.000

Total Area Entered = 7.45(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
86.0	86.0	0.176	0.000	0.176	1.000	0.176
					Sum (F) =	0.176

Area averaged mean soil loss (F) (In/Hr) = 0.176
Minimum soil loss rate ((In/Hr)) = 0.088
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	32.002	3.167	0.238
2	0.167	64.004	11.960	0.898
3	0.250	96.006	20.516	1.540
4	0.333	128.008	20.312	1.525
5	0.417	160.010	11.717	0.880
6	0.500	192.012	6.687	0.502
7	0.583	224.014	4.576	0.344
8	0.667	256.016	3.561	0.267
9	0.750	288.018	2.901	0.218
10	0.833	320.020	2.319	0.174
11	0.917	352.023	1.946	0.146
12	1.000	384.025	1.633	0.123
13	1.083	416.027	1.360	0.102
14	1.167	448.029	1.072	0.080
15	1.250	480.031	0.996	0.075
16	1.333	512.033	0.942	0.071
17	1.417	544.035	0.754	0.057
18	1.500	576.037	0.662	0.050
19	1.583	608.039	0.574	0.043
20	1.667	640.041	0.484	0.036
21	1.750	672.043	0.418	0.031
22	1.833	704.045	0.326	0.024

23	1.917	736.047	0.320	0.024
24	2.000	768.049	0.320	0.024
25	2.083	800.051	0.480	0.036
			Sum = 100.000 Sum=	7.508

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.040	0.311	0.036	0.00
2	0.17	0.07	0.040	0.310	0.036	0.00
3	0.25	0.07	0.040	0.309	0.036	0.00
4	0.33	0.10	0.060	0.308	0.054	0.01
5	0.42	0.10	0.060	0.306	0.054	0.01
6	0.50	0.10	0.060	0.305	0.054	0.01
7	0.58	0.10	0.060	0.304	0.054	0.01
8	0.67	0.10	0.060	0.303	0.054	0.01
9	0.75	0.10	0.060	0.302	0.054	0.01
10	0.83	0.13	0.080	0.301	0.072	0.01
11	0.92	0.13	0.080	0.299	0.072	0.01
12	1.00	0.13	0.080	0.298	0.072	0.01
13	1.08	0.10	0.060	0.297	0.054	0.01
14	1.17	0.10	0.060	0.296	0.054	0.01
15	1.25	0.10	0.060	0.295	0.054	0.01
16	1.33	0.10	0.060	0.293	0.054	0.01
17	1.42	0.10	0.060	0.292	0.054	0.01
18	1.50	0.10	0.060	0.291	0.054	0.01
19	1.58	0.10	0.060	0.290	0.054	0.01
20	1.67	0.10	0.060	0.289	0.054	0.01
21	1.75	0.10	0.060	0.288	0.054	0.01
22	1.83	0.13	0.080	0.287	0.072	0.01
23	1.92	0.13	0.080	0.285	0.072	0.01
24	2.00	0.13	0.080	0.284	0.072	0.01
25	2.08	0.13	0.080	0.283	0.072	0.01
26	2.17	0.13	0.080	0.282	0.072	0.01
27	2.25	0.13	0.080	0.281	0.072	0.01
28	2.33	0.13	0.080	0.280	0.072	0.01
29	2.42	0.13	0.080	0.278	0.072	0.01
30	2.50	0.13	0.080	0.277	0.072	0.01
31	2.58	0.17	0.100	0.276	0.090	0.01
32	2.67	0.17	0.100	0.275	0.090	0.01
33	2.75	0.17	0.100	0.274	0.090	0.01
34	2.83	0.17	0.100	0.273	0.090	0.01
35	2.92	0.17	0.100	0.272	0.090	0.01
36	3.00	0.17	0.100	0.271	0.090	0.01
37	3.08	0.17	0.100	0.269	0.090	0.01
38	3.17	0.17	0.100	0.268	0.090	0.01
39	3.25	0.17	0.100	0.267	0.090	0.01
40	3.33	0.17	0.100	0.266	0.090	0.01
41	3.42	0.17	0.100	0.265	0.090	0.01
42	3.50	0.17	0.100	0.264	0.090	0.01
43	3.58	0.17	0.100	0.263	0.090	0.01
44	3.67	0.17	0.100	0.262	0.090	0.01
45	3.75	0.17	0.100	0.261	0.090	0.01

46	3.83	0.20	0.120	0.259	0.108	0.01
47	3.92	0.20	0.120	0.258	0.108	0.01
48	4.00	0.20	0.120	0.257	0.108	0.01
49	4.08	0.20	0.120	0.256	0.108	0.01
50	4.17	0.20	0.120	0.255	0.108	0.01
51	4.25	0.20	0.120	0.254	0.108	0.01
52	4.33	0.23	0.140	0.253	0.126	0.01
53	4.42	0.23	0.140	0.252	0.126	0.01
54	4.50	0.23	0.140	0.251	0.126	0.01
55	4.58	0.23	0.140	0.250	0.126	0.01
56	4.67	0.23	0.140	0.249	0.126	0.01
57	4.75	0.23	0.140	0.248	0.126	0.01
58	4.83	0.27	0.160	0.246	0.144	0.02
59	4.92	0.27	0.160	0.245	0.144	0.02
60	5.00	0.27	0.160	0.244	0.144	0.02
61	5.08	0.20	0.120	0.243	0.108	0.01
62	5.17	0.20	0.120	0.242	0.108	0.01
63	5.25	0.20	0.120	0.241	0.108	0.01
64	5.33	0.23	0.140	0.240	0.126	0.01
65	5.42	0.23	0.140	0.239	0.126	0.01
66	5.50	0.23	0.140	0.238	0.126	0.01
67	5.58	0.27	0.160	0.237	0.144	0.02
68	5.67	0.27	0.160	0.236	0.144	0.02
69	5.75	0.27	0.160	0.235	0.144	0.02
70	5.83	0.27	0.160	0.234	0.144	0.02
71	5.92	0.27	0.160	0.233	0.144	0.02
72	6.00	0.27	0.160	0.232	0.144	0.02
73	6.08	0.30	0.180	0.231	0.162	0.02
74	6.17	0.30	0.180	0.230	0.162	0.02
75	6.25	0.30	0.180	0.229	0.162	0.02
76	6.33	0.30	0.180	0.228	0.162	0.02
77	6.42	0.30	0.180	0.227	0.162	0.02
78	6.50	0.30	0.180	0.226	0.162	0.02
79	6.58	0.33	0.200	0.225	0.180	0.02
80	6.67	0.33	0.200	0.224	0.180	0.02
81	6.75	0.33	0.200	0.223	0.180	0.02
82	6.83	0.33	0.200	0.222	0.180	0.02
83	6.92	0.33	0.200	0.221	0.180	0.02
84	7.00	0.33	0.200	0.220	0.180	0.02
85	7.08	0.33	0.200	0.219	0.180	0.02
86	7.17	0.33	0.200	0.218	0.180	0.02
87	7.25	0.33	0.200	0.217	0.180	0.02
88	7.33	0.37	0.220	0.216	---	0.00
89	7.42	0.37	0.220	0.215	---	0.01
90	7.50	0.37	0.220	0.214	---	0.01
91	7.58	0.40	0.240	0.213	---	0.03
92	7.67	0.40	0.240	0.212	---	0.03
93	7.75	0.40	0.240	0.211	---	0.03
94	7.83	0.43	0.260	0.210	---	0.05
95	7.92	0.43	0.260	0.209	---	0.05
96	8.00	0.43	0.260	0.208	---	0.05
97	8.08	0.50	0.300	0.207	---	0.09
98	8.17	0.50	0.300	0.206	---	0.09
99	8.25	0.50	0.300	0.205	---	0.10

100	8.33	0.50	0.300	0.204	---	0.10
101	8.42	0.50	0.300	0.203	---	0.10
102	8.50	0.50	0.300	0.202	---	0.10
103	8.58	0.53	0.320	0.201	---	0.12
104	8.67	0.53	0.320	0.200	---	0.12
105	8.75	0.53	0.320	0.199	---	0.12
106	8.83	0.57	0.340	0.198	---	0.14
107	8.92	0.57	0.340	0.197	---	0.14
108	9.00	0.57	0.340	0.196	---	0.14
109	9.08	0.63	0.380	0.195	---	0.18
110	9.17	0.63	0.380	0.195	---	0.19
111	9.25	0.63	0.380	0.194	---	0.19
112	9.33	0.67	0.400	0.193	---	0.21
113	9.42	0.67	0.400	0.192	---	0.21
114	9.50	0.67	0.400	0.191	---	0.21
115	9.58	0.70	0.420	0.190	---	0.23
116	9.67	0.70	0.420	0.189	---	0.23
117	9.75	0.70	0.420	0.188	---	0.23
118	9.83	0.73	0.440	0.187	---	0.25
119	9.92	0.73	0.440	0.186	---	0.25
120	10.00	0.73	0.440	0.185	---	0.25
121	10.08	0.50	0.300	0.185	---	0.12
122	10.17	0.50	0.300	0.184	---	0.12
123	10.25	0.50	0.300	0.183	---	0.12
124	10.33	0.50	0.300	0.182	---	0.12
125	10.42	0.50	0.300	0.181	---	0.12
126	10.50	0.50	0.300	0.180	---	0.12
127	10.58	0.67	0.400	0.179	---	0.22
128	10.67	0.67	0.400	0.178	---	0.22
129	10.75	0.67	0.400	0.177	---	0.22
130	10.83	0.67	0.400	0.177	---	0.22
131	10.92	0.67	0.400	0.176	---	0.22
132	11.00	0.67	0.400	0.175	---	0.23
133	11.08	0.63	0.380	0.174	---	0.21
134	11.17	0.63	0.380	0.173	---	0.21
135	11.25	0.63	0.380	0.172	---	0.21
136	11.33	0.63	0.380	0.171	---	0.21
137	11.42	0.63	0.380	0.171	---	0.21
138	11.50	0.63	0.380	0.170	---	0.21
139	11.58	0.57	0.340	0.169	---	0.17
140	11.67	0.57	0.340	0.168	---	0.17
141	11.75	0.57	0.340	0.167	---	0.17
142	11.83	0.60	0.360	0.166	---	0.19
143	11.92	0.60	0.360	0.166	---	0.19
144	12.00	0.60	0.360	0.165	---	0.20
145	12.08	0.83	0.500	0.164	---	0.34
146	12.17	0.83	0.500	0.163	---	0.34
147	12.25	0.83	0.500	0.162	---	0.34
148	12.33	0.87	0.520	0.161	---	0.36
149	12.42	0.87	0.520	0.161	---	0.36
150	12.50	0.87	0.520	0.160	---	0.36
151	12.58	0.93	0.560	0.159	---	0.40
152	12.67	0.93	0.560	0.158	---	0.40
153	12.75	0.93	0.560	0.157	---	0.40

154	12.83	0.97	0.580	0.157	---	0.42
155	12.92	0.97	0.580	0.156	---	0.42
156	13.00	0.97	0.580	0.155	---	0.42
157	13.08	1.13	0.680	0.154	---	0.53
158	13.17	1.13	0.680	0.154	---	0.53
159	13.25	1.13	0.680	0.153	---	0.53
160	13.33	1.13	0.680	0.152	---	0.53
161	13.42	1.13	0.680	0.151	---	0.53
162	13.50	1.13	0.680	0.150	---	0.53
163	13.58	0.77	0.460	0.150	---	0.31
164	13.67	0.77	0.460	0.149	---	0.31
165	13.75	0.77	0.460	0.148	---	0.31
166	13.83	0.77	0.460	0.147	---	0.31
167	13.92	0.77	0.460	0.147	---	0.31
168	14.00	0.77	0.460	0.146	---	0.31
169	14.08	0.90	0.540	0.145	---	0.39
170	14.17	0.90	0.540	0.144	---	0.40
171	14.25	0.90	0.540	0.144	---	0.40
172	14.33	0.87	0.520	0.143	---	0.38
173	14.42	0.87	0.520	0.142	---	0.38
174	14.50	0.87	0.520	0.141	---	0.38
175	14.58	0.87	0.520	0.141	---	0.38
176	14.67	0.87	0.520	0.140	---	0.38
177	14.75	0.87	0.520	0.139	---	0.38
178	14.83	0.83	0.500	0.139	---	0.36
179	14.92	0.83	0.500	0.138	---	0.36
180	15.00	0.83	0.500	0.137	---	0.36
181	15.08	0.80	0.480	0.136	---	0.34
182	15.17	0.80	0.480	0.136	---	0.34
183	15.25	0.80	0.480	0.135	---	0.34
184	15.33	0.77	0.460	0.134	---	0.33
185	15.42	0.77	0.460	0.134	---	0.33
186	15.50	0.77	0.460	0.133	---	0.33
187	15.58	0.63	0.380	0.132	---	0.25
188	15.67	0.63	0.380	0.132	---	0.25
189	15.75	0.63	0.380	0.131	---	0.25
190	15.83	0.63	0.380	0.130	---	0.25
191	15.92	0.63	0.380	0.130	---	0.25
192	16.00	0.63	0.380	0.129	---	0.25
193	16.08	0.13	0.080	0.128	0.072	0.01
194	16.17	0.13	0.080	0.128	0.072	0.01
195	16.25	0.13	0.080	0.127	0.072	0.01
196	16.33	0.13	0.080	0.126	0.072	0.01
197	16.42	0.13	0.080	0.126	0.072	0.01
198	16.50	0.13	0.080	0.125	0.072	0.01
199	16.58	0.10	0.060	0.124	0.054	0.01
200	16.67	0.10	0.060	0.124	0.054	0.01
201	16.75	0.10	0.060	0.123	0.054	0.01
202	16.83	0.10	0.060	0.123	0.054	0.01
203	16.92	0.10	0.060	0.122	0.054	0.01
204	17.00	0.10	0.060	0.121	0.054	0.01
205	17.08	0.17	0.100	0.121	0.090	0.01
206	17.17	0.17	0.100	0.120	0.090	0.01
207	17.25	0.17	0.100	0.119	0.090	0.01

208	17.33	0.17	0.100	0.119	0.090	0.01
209	17.42	0.17	0.100	0.118	0.090	0.01
210	17.50	0.17	0.100	0.118	0.090	0.01
211	17.58	0.17	0.100	0.117	0.090	0.01
212	17.67	0.17	0.100	0.117	0.090	0.01
213	17.75	0.17	0.100	0.116	0.090	0.01
214	17.83	0.13	0.080	0.115	0.072	0.01
215	17.92	0.13	0.080	0.115	0.072	0.01
216	18.00	0.13	0.080	0.114	0.072	0.01
217	18.08	0.13	0.080	0.114	0.072	0.01
218	18.17	0.13	0.080	0.113	0.072	0.01
219	18.25	0.13	0.080	0.113	0.072	0.01
220	18.33	0.13	0.080	0.112	0.072	0.01
221	18.42	0.13	0.080	0.111	0.072	0.01
222	18.50	0.13	0.080	0.111	0.072	0.01
223	18.58	0.10	0.060	0.110	0.054	0.01
224	18.67	0.10	0.060	0.110	0.054	0.01
225	18.75	0.10	0.060	0.109	0.054	0.01
226	18.83	0.07	0.040	0.109	0.036	0.00
227	18.92	0.07	0.040	0.108	0.036	0.00
228	19.00	0.07	0.040	0.108	0.036	0.00
229	19.08	0.10	0.060	0.107	0.054	0.01
230	19.17	0.10	0.060	0.107	0.054	0.01
231	19.25	0.10	0.060	0.106	0.054	0.01
232	19.33	0.13	0.080	0.106	0.072	0.01
233	19.42	0.13	0.080	0.105	0.072	0.01
234	19.50	0.13	0.080	0.105	0.072	0.01
235	19.58	0.10	0.060	0.104	0.054	0.01
236	19.67	0.10	0.060	0.104	0.054	0.01
237	19.75	0.10	0.060	0.103	0.054	0.01
238	19.83	0.07	0.040	0.103	0.036	0.00
239	19.92	0.07	0.040	0.102	0.036	0.00
240	20.00	0.07	0.040	0.102	0.036	0.00
241	20.08	0.10	0.060	0.102	0.054	0.01
242	20.17	0.10	0.060	0.101	0.054	0.01
243	20.25	0.10	0.060	0.101	0.054	0.01
244	20.33	0.10	0.060	0.100	0.054	0.01
245	20.42	0.10	0.060	0.100	0.054	0.01
246	20.50	0.10	0.060	0.099	0.054	0.01
247	20.58	0.10	0.060	0.099	0.054	0.01
248	20.67	0.10	0.060	0.099	0.054	0.01
249	20.75	0.10	0.060	0.098	0.054	0.01
250	20.83	0.07	0.040	0.098	0.036	0.00
251	20.92	0.07	0.040	0.097	0.036	0.00
252	21.00	0.07	0.040	0.097	0.036	0.00
253	21.08	0.10	0.060	0.097	0.054	0.01
254	21.17	0.10	0.060	0.096	0.054	0.01
255	21.25	0.10	0.060	0.096	0.054	0.01
256	21.33	0.07	0.040	0.095	0.036	0.00
257	21.42	0.07	0.040	0.095	0.036	0.00
258	21.50	0.07	0.040	0.095	0.036	0.00
259	21.58	0.10	0.060	0.094	0.054	0.01
260	21.67	0.10	0.060	0.094	0.054	0.01
261	21.75	0.10	0.060	0.094	0.054	0.01

262	21.83	0.07	0.040	0.093	0.036	0.00
263	21.92	0.07	0.040	0.093	0.036	0.00
264	22.00	0.07	0.040	0.093	0.036	0.00
265	22.08	0.10	0.060	0.092	0.054	0.01
266	22.17	0.10	0.060	0.092	0.054	0.01
267	22.25	0.10	0.060	0.092	0.054	0.01
268	22.33	0.07	0.040	0.092	0.036	0.00
269	22.42	0.07	0.040	0.091	0.036	0.00
270	22.50	0.07	0.040	0.091	0.036	0.00
271	22.58	0.07	0.040	0.091	0.036	0.00
272	22.67	0.07	0.040	0.090	0.036	0.00
273	22.75	0.07	0.040	0.090	0.036	0.00
274	22.83	0.07	0.040	0.090	0.036	0.00
275	22.92	0.07	0.040	0.090	0.036	0.00
276	23.00	0.07	0.040	0.090	0.036	0.00
277	23.08	0.07	0.040	0.089	0.036	0.00
278	23.17	0.07	0.040	0.089	0.036	0.00
279	23.25	0.07	0.040	0.089	0.036	0.00
280	23.33	0.07	0.040	0.089	0.036	0.00
281	23.42	0.07	0.040	0.089	0.036	0.00
282	23.50	0.07	0.040	0.088	0.036	0.00
283	23.58	0.07	0.040	0.088	0.036	0.00
284	23.67	0.07	0.040	0.088	0.036	0.00
285	23.75	0.07	0.040	0.088	0.036	0.00
286	23.83	0.07	0.040	0.088	0.036	0.00
287	23.92	0.07	0.040	0.088	0.036	0.00
288	24.00	0.07	0.040	0.088	0.036	0.00
Sum =	100.0				Sum =	27.9

Flood volume = Effective rainfall 2.32(In)
times area 7.5(Ac.)/[(In)/(Ft.)] = 1.4(Ac.Ft)
Total soil loss = 2.68(In)
Total soil loss = 1.661(Ac.Ft)
Total rainfall = 5.00(In)
Flood volume = 62857.8 Cubic Feet
Total soil loss = 72357.8 Cubic Feet

Peak flow rate of this hydrograph = 3.673(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

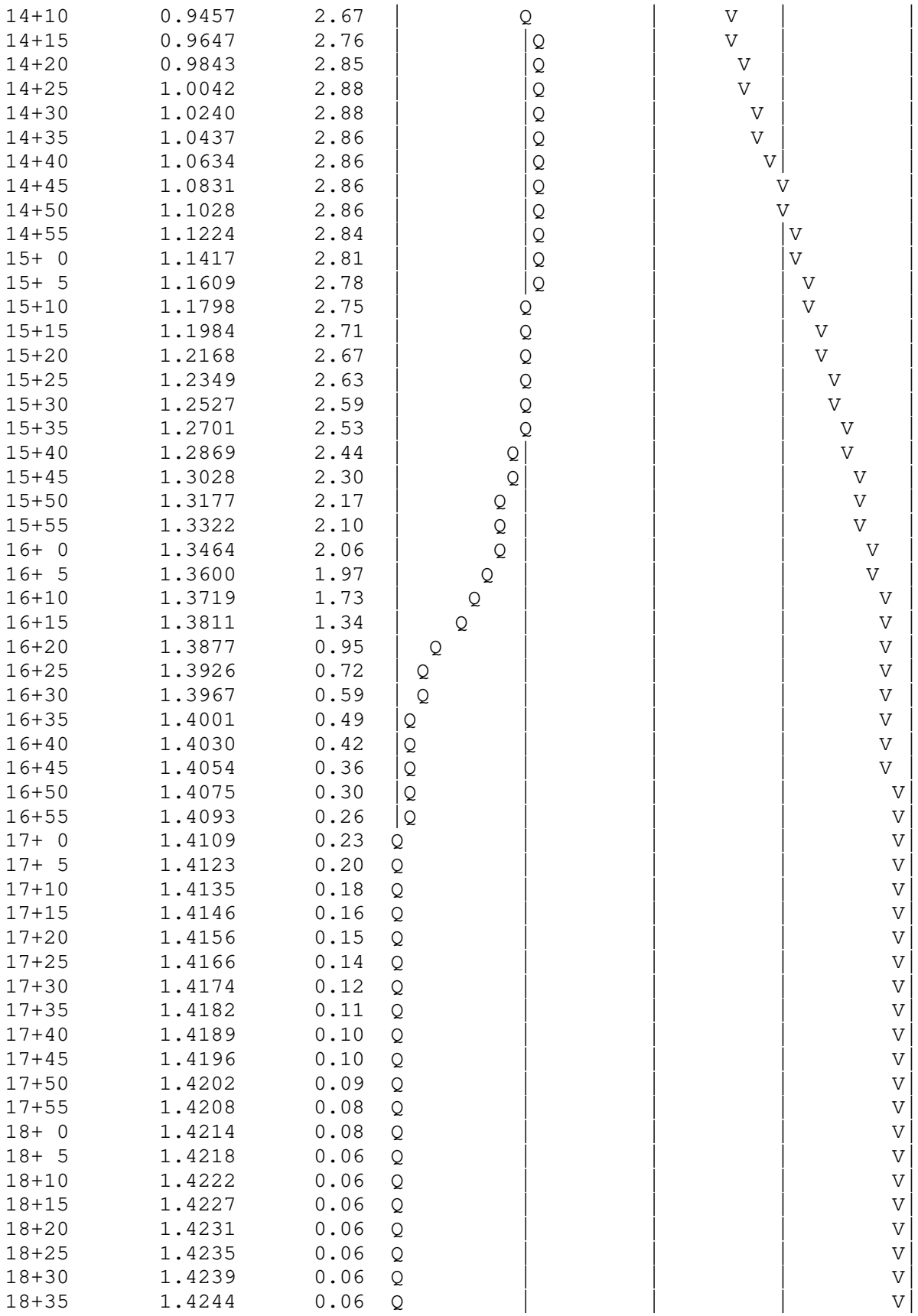
Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0000	0.00	Q	|	|	|	|
0+10	0.0000	0.00	Q	|	|	|	|
0+15	0.0001	0.01	Q	|	|	|	|
0+20	0.0002	0.02	Q	|	|	|	|
0+25	0.0004	0.02	Q	|	|	|	|
0+30	0.0006	0.03	Q	|	|	|	|
0+35	0.0008	0.03	Q	|	|	|	|

0+40	0.0010	0.03	Q				
0+45	0.0013	0.04	Q				
0+50	0.0016	0.04	Q				
0+55	0.0018	0.04	Q				
1+ 0	0.0022	0.05	Q				
1+ 5	0.0025	0.05	Q				
1+10	0.0028	0.05	Q				
1+15	0.0032	0.05	Q				
1+20	0.0035	0.05	Q				
1+25	0.0038	0.05	Q				
1+30	0.0041	0.05	Q				
1+35	0.0044	0.05	Q				
1+40	0.0047	0.05	Q				
1+45	0.0050	0.05	Q				
1+50	0.0054	0.05	Q				
1+55	0.0057	0.05	Q				
2+ 0	0.0060	0.05	Q				
2+ 5	0.0064	0.05	Q				
2+10	0.0068	0.06	Q				
2+15	0.0072	0.06	Q				
2+20	0.0076	0.06	Q				
2+25	0.0080	0.06	Q				
2+30	0.0084	0.06	Q				
2+35	0.0088	0.06	Q				
2+40	0.0092	0.06	Q				
2+45	0.0096	0.06	Q				
2+50	0.0101	0.07	Q				
2+55	0.0106	0.07	Q				
3+ 0	0.0111	0.07	Q				
3+ 5	0.0116	0.07	Q				
3+10	0.0120	0.07	Q				
3+15	0.0125	0.07	Q				
3+20	0.0130	0.07	Q				
3+25	0.0136	0.07	Q				
3+30	0.0141	0.07	Q				
3+35	0.0146	0.07	Q				
3+40	0.0151	0.07	Q				
3+45	0.0156	0.07	Q				
3+50	0.0161	0.07	Q				
3+55	0.0166	0.08	Q				
4+ 0	0.0172	0.08	Q				
4+ 5	0.0178	0.08	Q				
4+10	0.0183	0.09	Q				
4+15	0.0189	0.09	Q				
4+20	0.0195	0.09	Q				
4+25	0.0202	0.09	Q				
4+30	0.0208	0.09	Q				
4+35	0.0215	0.10	Q				
4+40	0.0221	0.10	Q				
4+45	0.0228	0.10	Q				
4+50	0.0235	0.10	Q				
4+55	0.0242	0.10	Q				
5+ 0	0.0250	0.11	Q				
5+ 5	0.0257	0.11	Q				

5+10	0.0265	0.11	Q	|	|	|	|
5+15	0.0272	0.10	Q	|	|	|	|
5+20	0.0279	0.10	Q	|	|	|	|
5+25	0.0286	0.10	Q	|	|	|	|
5+30	0.0293	0.10	Q	|	|	|	|
5+35	0.0300	0.10	Q	|	|	|	|
5+40	0.0307	0.11	Q	|	|	|	|
5+45	0.0314	0.11	Q	|	|	|	|
5+50	0.0322	0.11	Q	|	|	|	|
5+55	0.0330	0.11	Q	|	|	|	|
6+ 0	0.0338	0.12	Q	|	|	|	|
6+ 5	0.0346	0.12	Q	|	|	|	|
6+10	0.0354	0.12	Q	|	|	|	|
6+15	0.0363	0.12	QV	|	|	|	|
6+20	0.0372	0.13	QV	|	|	|	|
6+25	0.0380	0.13	QV	|	|	|	|
6+30	0.0389	0.13	QV	|	|	|	|
6+35	0.0398	0.13	QV	|	|	|	|
6+40	0.0408	0.13	QV	|	|	|	|
6+45	0.0417	0.14	QV	|	|	|	|
6+50	0.0427	0.14	QV	|	|	|	|
6+55	0.0437	0.14	QV	|	|	|	|
7+ 0	0.0447	0.14	QV	|	|	|	|
7+ 5	0.0457	0.15	QV	|	|	|	|
7+10	0.0467	0.15	QV	|	|	|	|
7+15	0.0477	0.15	QV	|	|	|	|
7+20	0.0487	0.14	QV	|	|	|	|
7+25	0.0496	0.13	QV	|	|	|	|
7+30	0.0503	0.11	QV	|	|	|	|
7+35	0.0510	0.09	QV	|	|	|	|
7+40	0.0516	0.10	QV	|	|	|	|
7+45	0.0525	0.13	QV	|	|	|	|
7+50	0.0537	0.16	QV	|	|	|	|
7+55	0.0550	0.20	QV	|	|	|	|
8+ 0	0.0567	0.25	QV	|	|	|	|
8+ 5	0.0588	0.30	|Q	|	|	|	|
8+10	0.0612	0.36	|Q	|	|	|	|
8+15	0.0643	0.44	|Q	|	|	|	|
8+20	0.0678	0.52	|VQ	|	|	|	|
8+25	0.0717	0.56	|VQ	|	|	|	|
8+30	0.0758	0.60	| Q	|	|	|	|
8+35	0.0801	0.63	| Q	|	|	|	|
8+40	0.0847	0.67	| Q	|	|	|	|
8+45	0.0897	0.72	| Q	|	|	|	|
8+50	0.0950	0.77	| VQ	|	|	|	|
8+55	0.1006	0.82	| VQ	|	|	|	|
9+ 0	0.1066	0.87	| VQ	|	|	|	|
9+ 5	0.1130	0.93	| Q	|	|	|	|
9+10	0.1200	1.00	| VQ	|	|	|	|
9+15	0.1275	1.09	| VQ	|	|	|	|
9+20	0.1356	1.18	| VQ	|	|	|	|
9+25	0.1442	1.25	| VQ	|	|	|	|
9+30	0.1533	1.32	| VQ	|	|	|	|
9+35	0.1628	1.38	| VQ	|	|	|	|

9+40	0.1727	1.44	VQ				
9+45	0.1831	1.50	VQ				
9+50	0.1939	1.57	VQ				
9+55	0.2050	1.62	VQ				
10+ 0	0.2166	1.68	Q				
10+ 5	0.2284	1.71	Q				
10+10	0.2395	1.62	Q				
10+15	0.2493	1.43	QV				
10+20	0.2579	1.24	Q V				
10+25	0.2657	1.14	Q V				
10+30	0.2732	1.08	Q V				
10+35	0.2806	1.08	Q V				
10+40	0.2885	1.14	Q V				
10+45	0.2973	1.28	Q V				
10+50	0.3071	1.42	Q V				
10+55	0.3174	1.50	Q V				
11+ 0	0.3280	1.54	Q V				
11+ 5	0.3388	1.57	Q V				
11+10	0.3497	1.58	Q V				
11+15	0.3605	1.56	Q V				
11+20	0.3711	1.55	Q V				
11+25	0.3818	1.55	Q V				
11+30	0.3925	1.55	Q V				
11+35	0.4031	1.55	Q V				
11+40	0.4135	1.51	Q V				
11+45	0.4236	1.46	Q V				
11+50	0.4333	1.41	Q V				
11+55	0.4429	1.40	Q V				
12+ 0	0.4526	1.41	Q V				
12+ 5	0.4627	1.47	Q V				
12+10	0.4738	1.61	Q V				
12+15	0.4864	1.83	Q V				
12+20	0.5006	2.06	Q V				
12+25	0.5158	2.21	Q V				
12+30	0.5318	2.32	Q V				
12+35	0.5484	2.41	Q V				
12+40	0.5656	2.51	Q V				
12+45	0.5837	2.61	Q V				
12+50	0.6024	2.72	Q V				
12+55	0.6217	2.80	Q V				
13+ 0	0.6415	2.88	Q V				
13+ 5	0.6619	2.97	Q V				
13+10	0.6833	3.11	Q V				
13+15	0.7060	3.30	Q V				
13+20	0.7300	3.48	Q V				
13+25	0.7548	3.60	Q V				
13+30	0.7801	3.67	Q V				
13+35	0.8054	3.67	Q V				
13+40	0.8296	3.52	Q V				
13+45	0.8518	3.22	Q V				
13+50	0.8719	2.92	Q V				
13+55	0.8908	2.75	Q V				
14+ 0	0.9092	2.67	Q V				
14+ 5	0.9274	2.64	Q V				



18+40	1.4248	0.06	Q	|	|	|	V|
18+45	1.4251	0.06	Q	|	|	|	V|
18+50	1.4255	0.05	Q	|	|	|	V|
18+55	1.4258	0.05	Q	|	|	|	V|
19+ 0	1.4261	0.04	Q	|	|	|	V|
19+ 5	1.4264	0.04	Q	|	|	|	V|
19+10	1.4267	0.04	Q	|	|	|	V|
19+15	1.4270	0.04	Q	|	|	|	V|
19+20	1.4273	0.04	Q	|	|	|	V|
19+25	1.4276	0.05	Q	|	|	|	V|
19+30	1.4280	0.05	Q	|	|	|	V|
19+35	1.4283	0.05	Q	|	|	|	V|
19+40	1.4287	0.05	Q	|	|	|	V|
19+45	1.4290	0.05	Q	|	|	|	V|
19+50	1.4294	0.05	Q	|	|	|	V|
19+55	1.4297	0.04	Q	|	|	|	V|
20+ 0	1.4300	0.04	Q	|	|	|	V|
20+ 5	1.4302	0.04	Q	|	|	|	V|
20+10	1.4305	0.04	Q	|	|	|	V|
20+15	1.4308	0.04	Q	|	|	|	V|
20+20	1.4311	0.04	Q	|	|	|	V|
20+25	1.4314	0.04	Q	|	|	|	V|
20+30	1.4317	0.04	Q	|	|	|	V|
20+35	1.4320	0.04	Q	|	|	|	V|
20+40	1.4323	0.04	Q	|	|	|	V|
20+45	1.4326	0.04	Q	|	|	|	V|
20+50	1.4329	0.04	Q	|	|	|	V|
20+55	1.4332	0.04	Q	|	|	|	V|
21+ 0	1.4334	0.04	Q	|	|	|	V|
21+ 5	1.4337	0.04	Q	|	|	|	V|
21+10	1.4340	0.04	Q	|	|	|	V|
21+15	1.4342	0.04	Q	|	|	|	V|
21+20	1.4345	0.04	Q	|	|	|	V|
21+25	1.4348	0.04	Q	|	|	|	V|
21+30	1.4350	0.04	Q	|	|	|	V|
21+35	1.4353	0.04	Q	|	|	|	V|
21+40	1.4355	0.04	Q	|	|	|	V|
21+45	1.4358	0.04	Q	|	|	|	V|
21+50	1.4361	0.04	Q	|	|	|	V|
21+55	1.4363	0.04	Q	|	|	|	V|
22+ 0	1.4366	0.04	Q	|	|	|	V|
22+ 5	1.4369	0.04	Q	|	|	|	V|
22+10	1.4371	0.04	Q	|	|	|	V|
22+15	1.4374	0.04	Q	|	|	|	V|
22+20	1.4376	0.04	Q	|	|	|	V|
22+25	1.4379	0.04	Q	|	|	|	V|
22+30	1.4382	0.04	Q	|	|	|	V|
22+35	1.4384	0.03	Q	|	|	|	V|
22+40	1.4386	0.03	Q	|	|	|	V|
22+45	1.4389	0.03	Q	|	|	|	V|
22+50	1.4391	0.03	Q	|	|	|	V|
22+55	1.4393	0.03	Q	|	|	|	V|
23+ 0	1.4395	0.03	Q	|	|	|	V|
23+ 5	1.4397	0.03	Q	|	|	|	V|

23+10	1.4399	0.03	Q	|	|	|	V|
23+15	1.4402	0.03	Q	|	|	|	V|
23+20	1.4404	0.03	Q	|	|	|	V|
23+25	1.4406	0.03	Q	|	|	|	V|
23+30	1.4408	0.03	Q	|	|	|	V|
23+35	1.4410	0.03	Q	|	|	|	V|
23+40	1.4412	0.03	Q	|	|	|	V|
23+45	1.4414	0.03	Q	|	|	|	V|
23+50	1.4416	0.03	Q	|	|	|	V|
23+55	1.4418	0.03	Q	|	|	|	V|
24+ 0	1.4420	0.03	Q	|	|	|	V|
24+ 5	1.4422	0.03	Q	|	|	|	V|
24+10	1.4424	0.03	Q	|	|	|	V|
24+15	1.4426	0.02	Q	|	|	|	V|
24+20	1.4426	0.01	Q	|	|	|	V|
24+25	1.4427	0.01	Q	|	|	|	V|
24+30	1.4428	0.01	Q	|	|	|	V|
24+35	1.4428	0.01	Q	|	|	|	V|
24+40	1.4428	0.01	Q	|	|	|	V|
24+45	1.4429	0.00	Q	|	|	|	V|
24+50	1.4429	0.00	Q	|	|	|	V|
24+55	1.4429	0.00	Q	|	|	|	V|
25+ 0	1.4429	0.00	Q	|	|	|	V|
25+ 5	1.4430	0.00	Q	|	|	|	V|
25+10	1.4430	0.00	Q	|	|	|	V|
25+15	1.4430	0.00	Q	|	|	|	V|
25+20	1.4430	0.00	Q	|	|	|	V|
25+25	1.4430	0.00	Q	|	|	|	V|
25+30	1.4430	0.00	Q	|	|	|	V|
25+35	1.4430	0.00	Q	|	|	|	V|
25+40	1.4430	0.00	Q	|	|	|	V|
25+45	1.4430	0.00	Q	|	|	|	V|
25+50	1.4430	0.00	Q	|	|	|	V|
25+55	1.4430	0.00	Q	|	|	|	V|
26+ 0	1.4430	0.00	Q	|	|	|	V|

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

Study date 11/01/21 File: 3684q100uhe21100.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6145

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

TCC - KNOX VIII
100 YEAR UNIT HYDROGRAPH EXISTING AREA EX-2
3684Q100UHE2
DS

Drainage Area = 4.48(Ac.) = 0.007 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 4.48(Ac.) = 0.007 Sq. Mi.
USER Entry of lag time in hours
Lag time = 0.274 Hr.
Lag time = 16.41 Min.
25% of lag time = 4.10 Min.
40% of lag time = 6.56 Min.
Unit time = 5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
4.48	0.50	2.24

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
4.48	1.27	5.69

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 0.500(In)
Area Averaged 100-Year Rainfall = 1.270(In)

Point rain (area averaged) = 1.270(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 1.270(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
4.480	86.00	0.000

Total Area Entered = 4.48(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
86.0	86.0	0.176	0.000	0.176	1.000	0.176
					Sum (F) =	0.176

Area averaged mean soil loss (F) (In/Hr) = 0.176
Minimum soil loss rate ((In/Hr)) = 0.088
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

Slope of intensity-duration curve for a 1 hour storm =0.5000

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	30.469	2.961	0.134
2	0.167	60.938	10.936	0.494
3	0.250	91.408	19.030	0.859
4	0.333	121.877	20.246	0.914
5	0.417	152.346	12.557	0.567
6	0.500	182.815	7.190	0.325
7	0.583	213.285	4.710	0.213
8	0.667	243.754	3.677	0.166
9	0.750	274.223	2.976	0.134
10	0.833	304.692	2.453	0.111
11	0.917	335.161	1.959	0.088
12	1.000	365.631	1.764	0.080
13	1.083	396.100	1.398	0.063
14	1.167	426.569	1.202	0.054
15	1.250	457.038	0.976	0.044
16	1.333	487.508	0.932	0.042
17	1.417	517.977	0.872	0.039
18	1.500	548.446	0.691	0.031
19	1.583	578.915	0.615	0.028
20	1.667	609.385	0.543	0.025

21	1.750	639.854	0.456	0.021
22	1.833	670.323	0.399	0.018
23	1.917	700.792	0.311	0.014
24	2.000	731.261	0.305	0.014
25	2.083	761.731	0.305	0.014
26	2.167	792.200	0.305	0.014
27	2.250	822.669	0.230	0.010
		Sum = 100.000	Sum=	4.515

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	4.20	0.640	0.176	---	0.46
2	0.17	4.30	0.655	0.176	---	0.48
3	0.25	5.00	0.762	0.176	---	0.59
4	0.33	5.00	0.762	0.176	---	0.59
5	0.42	5.80	0.884	0.176	---	0.71
6	0.50	6.50	0.991	0.176	---	0.81
7	0.58	7.40	1.128	0.176	---	0.95
8	0.67	8.60	1.311	0.176	---	1.13
9	0.75	12.30	1.874	0.176	---	1.70
10	0.83	29.10	4.435	0.176	---	4.26
11	0.92	6.80	1.036	0.176	---	0.86
12	1.00	5.00	0.762	0.176	---	0.59
Sum =		100.0			Sum =	13.1

Flood volume = Effective rainfall 1.09(In)
times area 4.5(Ac.)/[(In)/(Ft.)] = 0.4(Ac.Ft)
Total soil loss = 0.18(In)
Total soil loss = 0.066(Ac.Ft)
Total rainfall = 1.27(In)
Flood volume = 17796.7 Cubic Feet
Total soil loss = 2855.7 Cubic Feet

Peak flow rate of this hydrograph = 7.186(CFS)

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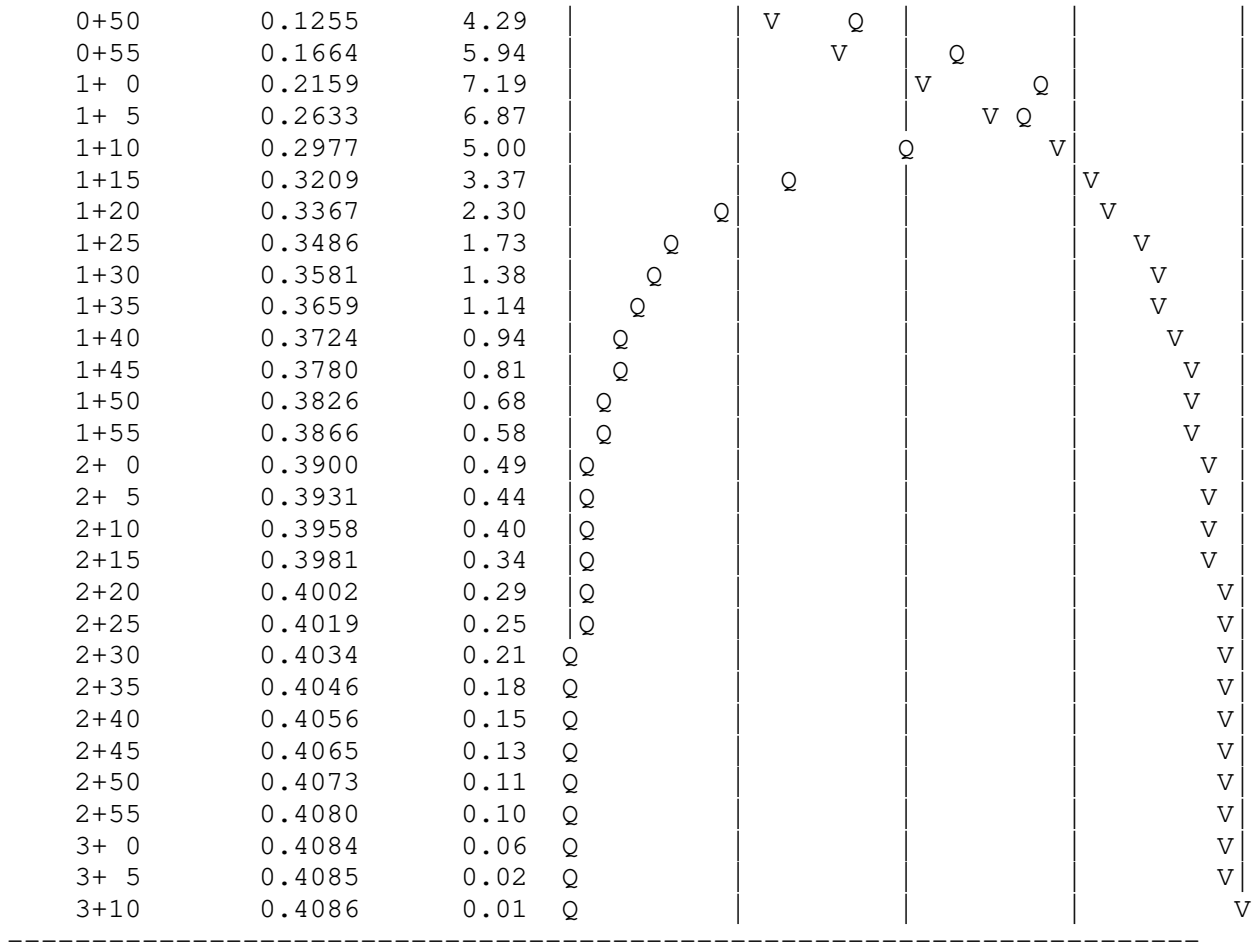
1 - H O U R S T O R M
R u n o f f H y d r o g r a p h

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	0.0025	0.29	VQ	|	|	|	|
0+15	0.0074	0.71	V Q	|	|	|	|
0+20	0.0157	1.21	|V Q	|	|	|	|
0+25	0.0266	1.59	| V Q	|	|	|	|
0+30	0.0399	1.92	| V Q |	|	|	|	|
0+35	0.0554	2.26	| V Q|	|	|	|	|
0+40	0.0739	2.67	| V Q	|	|	|	|
0+45	0.0960	3.21	| V| Q	|	|	|	|


0+50 0.1255 4.29
0+55 0.1664 5.94
1+ 0 0.2159 7.19
1+ 5 0.2633 6.87
1+10 0.2977 5.00
1+15 0.3209 3.37
1+20 0.3367 2.30
1+25 0.3486 1.73
1+30 0.3581 1.38
1+35 0.3659 1.14
1+40 0.3724 0.94
1+45 0.3780 0.81
1+50 0.3826 0.68
1+55 0.3866 0.58
2+ 0 0.3900 0.49
2+ 5 0.3931 0.44
2+10 0.3958 0.40
2+15 0.3981 0.34
2+20 0.4002 0.29
2+25 0.4019 0.25
2+30 0.4034 0.21
2+35 0.4046 0.18
2+40 0.4056 0.15
2+45 0.4065 0.13
2+50 0.4073 0.11
2+55 0.4080 0.10
3+ 0 0.4084 0.06
3+ 5 0.4085 0.02
3+10 0.4086 0.01

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

Study date 11/01/21 File: 3684q100uhe23100.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6145

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

TCC - KNOX VIII
100 YEAR UNIT HYDROGRAPH EXISTING AREA EX-2
3684Q100UHE2
DS

Drainage Area = 4.48(Ac.) = 0.007 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 4.48(Ac.) = 0.007 Sq. Mi.
USER Entry of lag time in hours
Lag time = 0.274 Hr.
Lag time = 16.41 Min.
25% of lag time = 4.10 Min.
40% of lag time = 6.56 Min.
Unit time = 5.00 Min.
Duration of storm = 3 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
4.48	0.80	3.58

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
4.48	1.95	8.74

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 0.800(In)
Area Averaged 100-Year Rainfall = 1.950(In)

Point rain (area averaged) = 1.950(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 1.950(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
4.480	86.00	0.000

Total Area Entered = 4.48(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
86.0	86.0	0.176	0.000	0.176	1.000	0.176
					Sum (F) =	0.176

Area averaged mean soil loss (F) (In/Hr) = 0.176
Minimum soil loss rate ((In/Hr)) = 0.088
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	30.469	2.961	0.134
2	0.167	60.938	10.936	0.494
3	0.250	91.408	19.030	0.859
4	0.333	121.877	20.246	0.914
5	0.417	152.346	12.557	0.567
6	0.500	182.815	7.190	0.325
7	0.583	213.285	4.710	0.213
8	0.667	243.754	3.677	0.166
9	0.750	274.223	2.976	0.134
10	0.833	304.692	2.453	0.111
11	0.917	335.161	1.959	0.088
12	1.000	365.631	1.764	0.080
13	1.083	396.100	1.398	0.063
14	1.167	426.569	1.202	0.054
15	1.250	457.038	0.976	0.044
16	1.333	487.508	0.932	0.042
17	1.417	517.977	0.872	0.039
18	1.500	548.446	0.691	0.031
19	1.583	578.915	0.615	0.028
20	1.667	609.385	0.543	0.025
21	1.750	639.854	0.456	0.021
22	1.833	670.323	0.399	0.018

23	1.917	700.792	0.311	0.014
24	2.000	731.261	0.305	0.014
25	2.083	761.731	0.305	0.014
26	2.167	792.200	0.305	0.014
27	2.250	822.669	0.230	0.010
			Sum = 100.000	Sum= 4.515

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	1.30	0.304	0.176	---	0.13
2	0.17	1.30	0.304	0.176	---	0.13
3	0.25	1.10	0.257	0.176	---	0.08
4	0.33	1.50	0.351	0.176	---	0.18
5	0.42	1.50	0.351	0.176	---	0.18
6	0.50	1.80	0.421	0.176	---	0.25
7	0.58	1.50	0.351	0.176	---	0.18
8	0.67	1.80	0.421	0.176	---	0.25
9	0.75	1.80	0.421	0.176	---	0.25
10	0.83	1.50	0.351	0.176	---	0.18
11	0.92	1.60	0.374	0.176	---	0.20
12	1.00	1.80	0.421	0.176	---	0.25
13	1.08	2.20	0.515	0.176	---	0.34
14	1.17	2.20	0.515	0.176	---	0.34
15	1.25	2.20	0.515	0.176	---	0.34
16	1.33	2.00	0.468	0.176	---	0.29
17	1.42	2.60	0.608	0.176	---	0.43
18	1.50	2.70	0.632	0.176	---	0.46
19	1.58	2.40	0.562	0.176	---	0.39
20	1.67	2.70	0.632	0.176	---	0.46
21	1.75	3.30	0.772	0.176	---	0.60
22	1.83	3.10	0.725	0.176	---	0.55
23	1.92	2.90	0.679	0.176	---	0.50
24	2.00	3.00	0.702	0.176	---	0.53
25	2.08	3.10	0.725	0.176	---	0.55
26	2.17	4.20	0.983	0.176	---	0.81
27	2.25	5.00	1.170	0.176	---	0.99
28	2.33	3.50	0.819	0.176	---	0.64
29	2.42	6.80	1.591	0.176	---	1.42
30	2.50	7.30	1.708	0.176	---	1.53
31	2.58	8.20	1.919	0.176	---	1.74
32	2.67	5.90	1.381	0.176	---	1.20
33	2.75	2.00	0.468	0.176	---	0.29
34	2.83	1.80	0.421	0.176	---	0.25
35	2.92	1.80	0.421	0.176	---	0.25
36	3.00	0.60	0.140	0.176	0.126	0.01
Sum =		100.0				Sum = 17.1

Flood volume = Effective rainfall 1.43(In)
times area 4.5(Ac.)/[(In)/(Ft.)] = 0.5(Ac.Ft)
Total soil loss = 0.52(In)
Total soil loss = 0.195(Ac.Ft)
Total rainfall = 1.95(In)
Flood volume = 23210.8 Cubic Feet

Total soil loss = 8500.3 Cubic Feet

Peak flow rate of this hydrograph = 5.280(CFS)

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3 - 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	0.0001	0.02	Q				
0+10	0.0007	0.08	Q				
0+15	0.0019	0.19	Q				
0+20	0.0040	0.29	VQ				
0+25	0.0065	0.37	VQ				
0+30	0.0097	0.46	VQ				
0+35	0.0136	0.57	VQ				
0+40	0.0182	0.67	VQ				
0+45	0.0233	0.74	VQ				
0+50	0.0288	0.80	VQ				
0+55	0.0345	0.83	VQ				
1+ 0	0.0403	0.84	Q				
1+ 5	0.0462	0.86	Q				
1+10	0.0528	0.96	Q				
1+15	0.0603	1.09	Q				
1+20	0.0686	1.21	QV				
1+25	0.0774	1.28	Q				
1+30	0.0868	1.36	QV				
1+35	0.0969	1.47	Q V				
1+40	0.1079	1.59	Q V				
1+45	0.1195	1.69	Q V				
1+50	0.1321	1.82	Q V				
1+55	0.1457	1.98	Q V				
2+ 0	0.1602	2.10	Q V				
2+ 5	0.1750	2.15	Q V				
2+10	0.1903	2.22	Q V				
2+15	0.2070	2.42	Q V				
2+20	0.2259	2.74	Q V				
2+25	0.2473	3.11	Q V				
2+30	0.2718	3.55	Q V				
2+35	0.3006	4.19	Q V				
2+40	0.3347	4.96	Q V				
2+45	0.3711	5.28	Q V				
2+50	0.4047	4.87	Q V				
2+55	0.4315	3.90	Q V				
3+ 0	0.4516	2.92	Q V				
3+ 5	0.4671	2.24	Q V				
3+10	0.4791	1.74	Q V				
3+15	0.4882	1.33	Q V				
3+20	0.4955	1.05	Q V				
3+25	0.5014	0.86	Q V				

3+30	0.5064	0.72	Q				V
3+35	0.5106	0.61	Q				V
3+40	0.5142	0.52	Q				V
3+45	0.5172	0.45	Q				V
3+50	0.5199	0.39	Q				V
3+55	0.5222	0.34	Q				V
4+ 0	0.5242	0.29	Q				V
4+ 5	0.5258	0.24	Q				V
4+10	0.5273	0.21	Q				V
4+15	0.5285	0.18	Q				V
4+20	0.5296	0.15	Q				V
4+25	0.5304	0.13	Q				V
4+30	0.5311	0.10	Q				V
4+35	0.5318	0.09	Q				V
4+40	0.5322	0.07	Q				V
4+45	0.5326	0.05	Q				V
4+50	0.5327	0.02	Q				V
4+55	0.5328	0.01	Q				V
5+ 0	0.5328	0.01	Q				V
5+ 5	0.5328	0.00	Q				V
5+10	0.5328	0.00	Q				V

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

Study date 11/01/21 File: 3684q100uhe26100.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6145

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

TCC - KNOX VIII
100 YEAR UNIT HYDROGRAPH EXISTING AREA EX-2
3684Q100UHE2
DS

Drainage Area = 4.48(Ac.) = 0.007 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 4.48(Ac.) = 0.007 Sq. Mi.
USER Entry of lag time in hours
Lag time = 0.274 Hr.
Lag time = 16.41 Min.
25% of lag time = 4.10 Min.
40% of lag time = 6.56 Min.
Unit time = 5.00 Min.
Duration of storm = 6 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
4.48	1.10	4.93

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
4.48	2.75	12.32

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.100(In)
Area Averaged 100-Year Rainfall = 2.750(In)

Point rain (area averaged) = 2.750(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 2.750(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
4.480	86.00	0.000

Total Area Entered = 4.48(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
86.0	86.0	0.176	0.000	0.176	1.000	0.176
					Sum (F) =	0.176

Area averaged mean soil loss (F) (In/Hr) = 0.176
Minimum soil loss rate ((In/Hr)) = 0.088
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	30.469	2.961	0.134
2	0.167	60.938	10.936	0.494
3	0.250	91.408	19.030	0.859
4	0.333	121.877	20.246	0.914
5	0.417	152.346	12.557	0.567
6	0.500	182.815	7.190	0.325
7	0.583	213.285	4.710	0.213
8	0.667	243.754	3.677	0.166
9	0.750	274.223	2.976	0.134
10	0.833	304.692	2.453	0.111
11	0.917	335.161	1.959	0.088
12	1.000	365.631	1.764	0.080
13	1.083	396.100	1.398	0.063
14	1.167	426.569	1.202	0.054
15	1.250	457.038	0.976	0.044
16	1.333	487.508	0.932	0.042
17	1.417	517.977	0.872	0.039
18	1.500	548.446	0.691	0.031
19	1.583	578.915	0.615	0.028
20	1.667	609.385	0.543	0.025
21	1.750	639.854	0.456	0.021
22	1.833	670.323	0.399	0.018

23	1.917	700.792	0.311	0.014
24	2.000	731.261	0.305	0.014
25	2.083	761.731	0.305	0.014
26	2.167	792.200	0.305	0.014
27	2.250	822.669	0.230	0.010
			Sum = 100.000 Sum=	4.515

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.50	0.165	0.176	0.148	0.02
2	0.17	0.60	0.198	0.176	---	0.02
3	0.25	0.60	0.198	0.176	---	0.02
4	0.33	0.60	0.198	0.176	---	0.02
5	0.42	0.60	0.198	0.176	---	0.02
6	0.50	0.70	0.231	0.176	---	0.06
7	0.58	0.70	0.231	0.176	---	0.06
8	0.67	0.70	0.231	0.176	---	0.06
9	0.75	0.70	0.231	0.176	---	0.06
10	0.83	0.70	0.231	0.176	---	0.06
11	0.92	0.70	0.231	0.176	---	0.06
12	1.00	0.80	0.264	0.176	---	0.09
13	1.08	0.80	0.264	0.176	---	0.09
14	1.17	0.80	0.264	0.176	---	0.09
15	1.25	0.80	0.264	0.176	---	0.09
16	1.33	0.80	0.264	0.176	---	0.09
17	1.42	0.80	0.264	0.176	---	0.09
18	1.50	0.80	0.264	0.176	---	0.09
19	1.58	0.80	0.264	0.176	---	0.09
20	1.67	0.80	0.264	0.176	---	0.09
21	1.75	0.80	0.264	0.176	---	0.09
22	1.83	0.80	0.264	0.176	---	0.09
23	1.92	0.80	0.264	0.176	---	0.09
24	2.00	0.90	0.297	0.176	---	0.12
25	2.08	0.80	0.264	0.176	---	0.09
26	2.17	0.90	0.297	0.176	---	0.12
27	2.25	0.90	0.297	0.176	---	0.12
28	2.33	0.90	0.297	0.176	---	0.12
29	2.42	0.90	0.297	0.176	---	0.12
30	2.50	0.90	0.297	0.176	---	0.12
31	2.58	0.90	0.297	0.176	---	0.12
32	2.67	0.90	0.297	0.176	---	0.12
33	2.75	1.00	0.330	0.176	---	0.15
34	2.83	1.00	0.330	0.176	---	0.15
35	2.92	1.00	0.330	0.176	---	0.15
36	3.00	1.00	0.330	0.176	---	0.15
37	3.08	1.00	0.330	0.176	---	0.15
38	3.17	1.10	0.363	0.176	---	0.19
39	3.25	1.10	0.363	0.176	---	0.19
40	3.33	1.10	0.363	0.176	---	0.19
41	3.42	1.20	0.396	0.176	---	0.22
42	3.50	1.30	0.429	0.176	---	0.25
43	3.58	1.40	0.462	0.176	---	0.29

44	3.67	1.40	0.462	0.176	---	0.29
45	3.75	1.50	0.495	0.176	---	0.32
46	3.83	1.50	0.495	0.176	---	0.32
47	3.92	1.60	0.528	0.176	---	0.35
48	4.00	1.60	0.528	0.176	---	0.35
49	4.08	1.70	0.561	0.176	---	0.39
50	4.17	1.80	0.594	0.176	---	0.42
51	4.25	1.90	0.627	0.176	---	0.45
52	4.33	2.00	0.660	0.176	---	0.48
53	4.42	2.10	0.693	0.176	---	0.52
54	4.50	2.10	0.693	0.176	---	0.52
55	4.58	2.20	0.726	0.176	---	0.55
56	4.67	2.30	0.759	0.176	---	0.58
57	4.75	2.40	0.792	0.176	---	0.62
58	4.83	2.40	0.792	0.176	---	0.62
59	4.92	2.50	0.825	0.176	---	0.65
60	5.00	2.60	0.858	0.176	---	0.68
61	5.08	3.10	1.023	0.176	---	0.85
62	5.17	3.60	1.188	0.176	---	1.01
63	5.25	3.90	1.287	0.176	---	1.11
64	5.33	4.20	1.386	0.176	---	1.21
65	5.42	4.70	1.551	0.176	---	1.38
66	5.50	5.60	1.848	0.176	---	1.67
67	5.58	1.90	0.627	0.176	---	0.45
68	5.67	0.90	0.297	0.176	---	0.12
69	5.75	0.60	0.198	0.176	---	0.02
70	5.83	0.50	0.165	0.176	0.148	0.02
71	5.92	0.30	0.099	0.176	0.089	0.01
72	6.00	0.20	0.066	0.176	0.059	0.01
Sum =	100.0				Sum =	20.6

Flood volume = Effective rainfall 1.72(In)
times area 4.5(Ac.)/[(In)/(Ft.)] = 0.6(Ac.Ft)
Total soil loss = 1.03(In)
Total soil loss = 0.385(Ac.Ft)
Total rainfall = 2.75(In)
Flood volume = 27935.0 Cubic Feet
Total soil loss = 16785.9 Cubic Feet

Peak flow rate of this hydrograph = 4.873(CFS)

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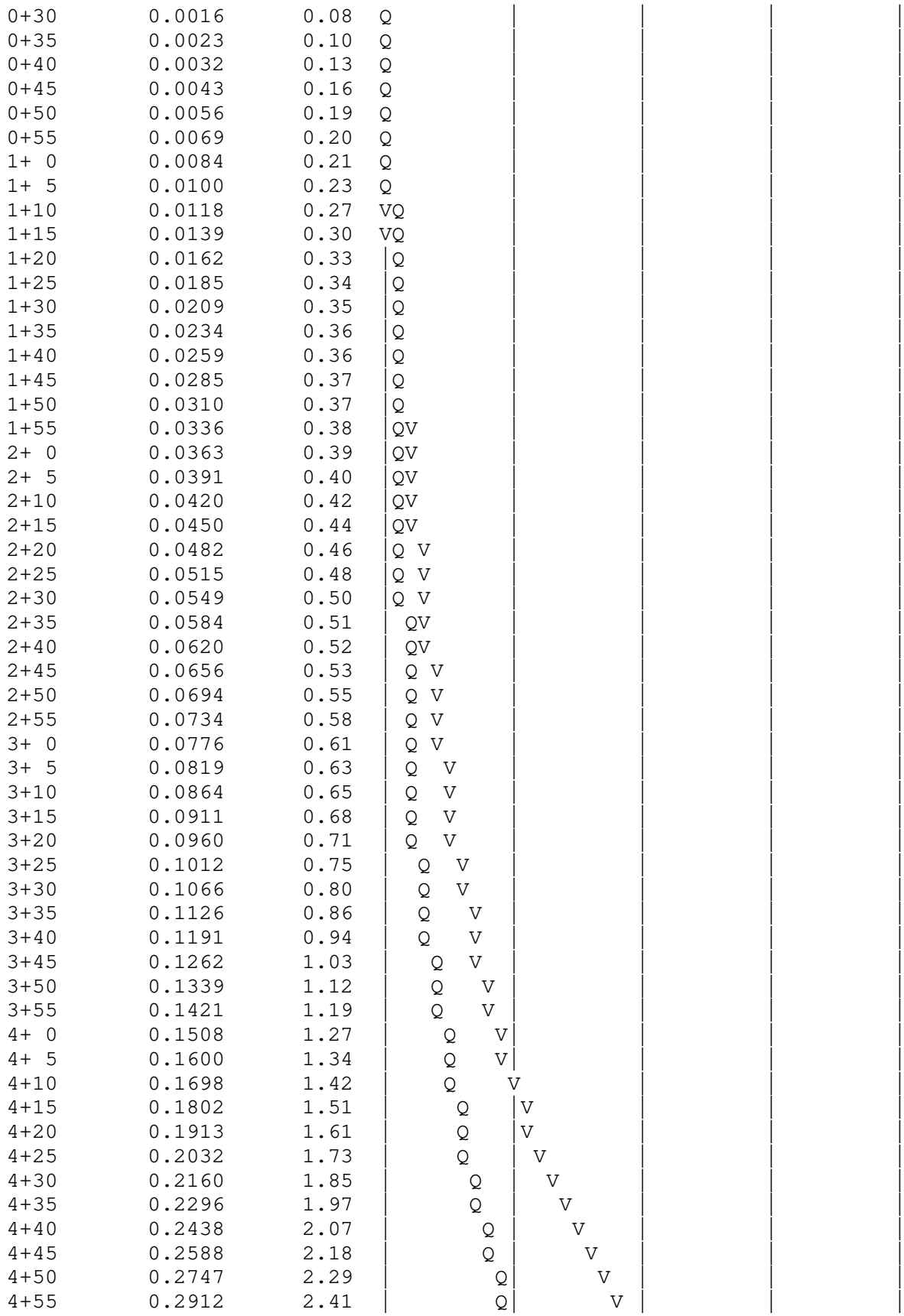
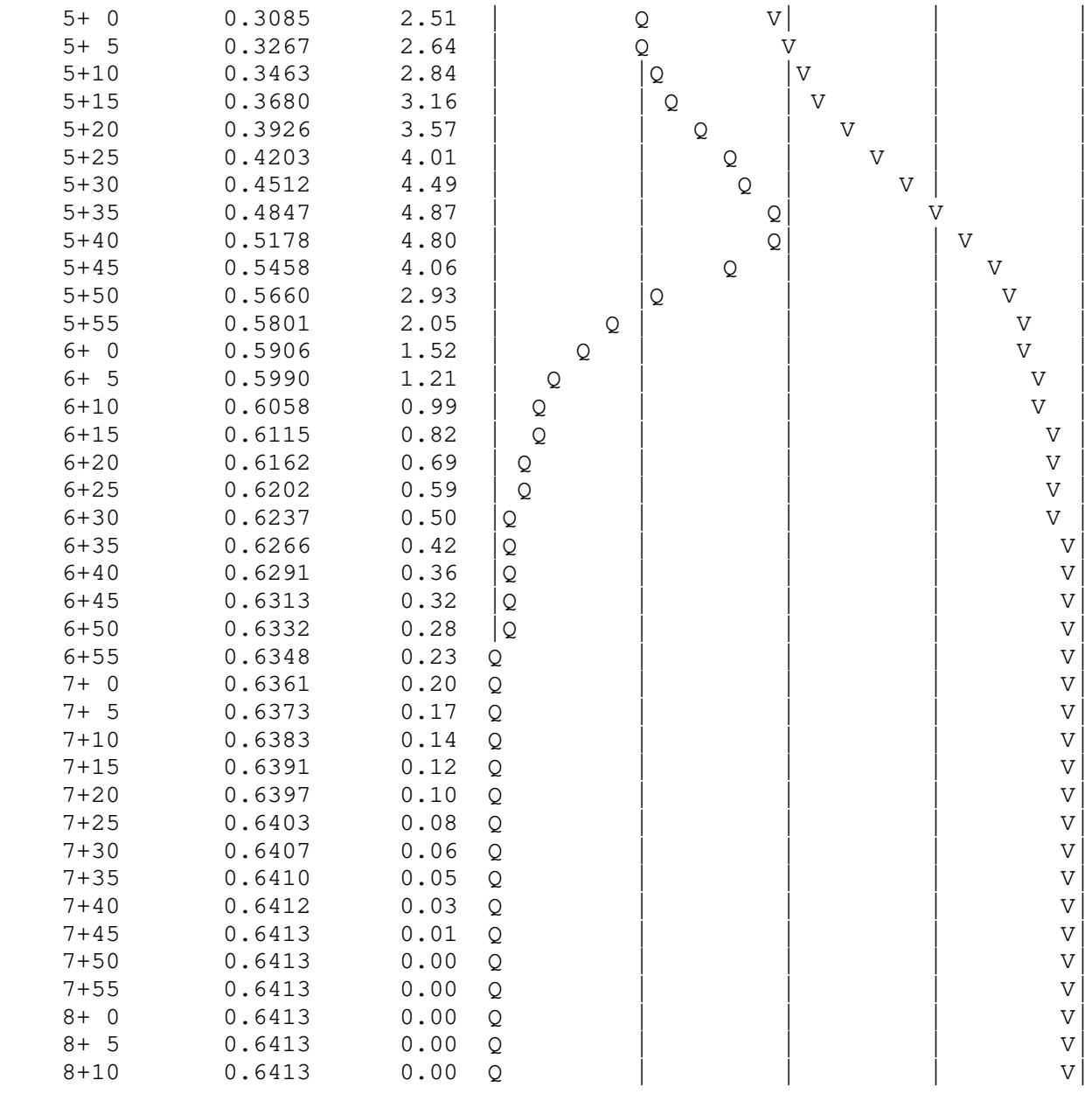
6 - H O U R S T O R M
R u n o f f H y d r o g r a p h

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	0.0000	0.00	Q	|	|	|	|
0+10	0.0001	0.01	Q	|	|	|	|
0+15	0.0003	0.03	Q	|	|	|	|
0+20	0.0006	0.05	Q	|	|	|	|
0+25	0.0011	0.06	Q	|	|	|	|


0+30 0.0016 0.08
0+35 0.0023 0.10
0+40 0.0032 0.13
0+45 0.0043 0.16
0+50 0.0056 0.19
0+55 0.0069 0.20
1+ 0 0.0084 0.21
1+ 5 0.0100 0.23
1+10 0.0118 0.27
1+15 0.0139 0.30
1+20 0.0162 0.33
1+25 0.0185 0.34
1+30 0.0209 0.35
1+35 0.0234 0.36
1+40 0.0259 0.36
1+45 0.0285 0.37
1+50 0.0310 0.37
1+55 0.0336 0.38
2+ 0 0.0363 0.39
2+ 5 0.0391 0.40
2+10 0.0420 0.42
2+15 0.0450 0.44
2+20 0.0482 0.46
2+25 0.0515 0.48
2+30 0.0549 0.50
2+35 0.0584 0.51
2+40 0.0620 0.52
2+45 0.0656 0.53
2+50 0.0694 0.55
2+55 0.0734 0.58
3+ 0 0.0776 0.61
3+ 5 0.0819 0.63
3+10 0.0864 0.65
3+15 0.0911 0.68
3+20 0.0960 0.71
3+25 0.1012 0.75
3+30 0.1066 0.80
3+35 0.1126 0.86
3+40 0.1191 0.94
3+45 0.1262 1.03
3+50 0.1339 1.12
3+55 0.1421 1.19
4+ 0 0.1508 1.27
4+ 5 0.1600 1.34
4+10 0.1698 1.42
4+15 0.1802 1.51
4+20 0.1913 1.61
4+25 0.2032 1.73
4+30 0.2160 1.85
4+35 0.2296 1.97
4+40 0.2438 2.07
4+45 0.2588 2.18
4+50 0.2747 2.29
4+55 0.2912 2.41



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

Study date 11/01/21 File: 3684q100uhe224100.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6145

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

TCC - KNOX VIII
100 YEAR UNIT HYDROGRAPH EXISTING AREA EX-2
3684Q100UHE2
DS

Drainage Area = 4.48(Ac.) = 0.007 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 4.48(Ac.) = 0.007 Sq. Mi.
USER Entry of lag time in hours
Lag time = 0.274 Hr.
Lag time = 16.41 Min.
25% of lag time = 4.10 Min.
40% of lag time = 6.56 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
4.48	1.70	7.62

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
4.48	5.00	22.40

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.700(In)
Area Averaged 100-Year Rainfall = 5.000(In)

Point rain (area averaged) = 5.000(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 5.000(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
4.480	86.00	0.000

Total Area Entered = 4.48(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
86.0	86.0	0.176	0.000	0.176	1.000	0.176
					Sum (F) =	0.176

Area averaged mean soil loss (F) (In/Hr) = 0.176
Minimum soil loss rate ((In/Hr)) = 0.088
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	30.469	2.961	0.134
2	0.167	60.938	10.936	0.494
3	0.250	91.408	19.030	0.859
4	0.333	121.877	20.246	0.914
5	0.417	152.346	12.557	0.567
6	0.500	182.815	7.190	0.325
7	0.583	213.285	4.710	0.213
8	0.667	243.754	3.677	0.166
9	0.750	274.223	2.976	0.134
10	0.833	304.692	2.453	0.111
11	0.917	335.161	1.959	0.088
12	1.000	365.631	1.764	0.080
13	1.083	396.100	1.398	0.063
14	1.167	426.569	1.202	0.054
15	1.250	457.038	0.976	0.044
16	1.333	487.508	0.932	0.042
17	1.417	517.977	0.872	0.039
18	1.500	548.446	0.691	0.031
19	1.583	578.915	0.615	0.028
20	1.667	609.385	0.543	0.025
21	1.750	639.854	0.456	0.021
22	1.833	670.323	0.399	0.018

23	1.917	700.792	0.311	0.014
24	2.000	731.261	0.305	0.014
25	2.083	761.731	0.305	0.014
26	2.167	792.200	0.305	0.014
27	2.250	822.669	0.230	0.010
			Sum = 100.000 Sum=	4.515

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.040	0.311	0.036	0.00
2	0.17	0.07	0.040	0.310	0.036	0.00
3	0.25	0.07	0.040	0.309	0.036	0.00
4	0.33	0.10	0.060	0.308	0.054	0.01
5	0.42	0.10	0.060	0.306	0.054	0.01
6	0.50	0.10	0.060	0.305	0.054	0.01
7	0.58	0.10	0.060	0.304	0.054	0.01
8	0.67	0.10	0.060	0.303	0.054	0.01
9	0.75	0.10	0.060	0.302	0.054	0.01
10	0.83	0.13	0.080	0.301	0.072	0.01
11	0.92	0.13	0.080	0.299	0.072	0.01
12	1.00	0.13	0.080	0.298	0.072	0.01
13	1.08	0.10	0.060	0.297	0.054	0.01
14	1.17	0.10	0.060	0.296	0.054	0.01
15	1.25	0.10	0.060	0.295	0.054	0.01
16	1.33	0.10	0.060	0.293	0.054	0.01
17	1.42	0.10	0.060	0.292	0.054	0.01
18	1.50	0.10	0.060	0.291	0.054	0.01
19	1.58	0.10	0.060	0.290	0.054	0.01
20	1.67	0.10	0.060	0.289	0.054	0.01
21	1.75	0.10	0.060	0.288	0.054	0.01
22	1.83	0.13	0.080	0.287	0.072	0.01
23	1.92	0.13	0.080	0.285	0.072	0.01
24	2.00	0.13	0.080	0.284	0.072	0.01
25	2.08	0.13	0.080	0.283	0.072	0.01
26	2.17	0.13	0.080	0.282	0.072	0.01
27	2.25	0.13	0.080	0.281	0.072	0.01
28	2.33	0.13	0.080	0.280	0.072	0.01
29	2.42	0.13	0.080	0.278	0.072	0.01
30	2.50	0.13	0.080	0.277	0.072	0.01
31	2.58	0.17	0.100	0.276	0.090	0.01
32	2.67	0.17	0.100	0.275	0.090	0.01
33	2.75	0.17	0.100	0.274	0.090	0.01
34	2.83	0.17	0.100	0.273	0.090	0.01
35	2.92	0.17	0.100	0.272	0.090	0.01
36	3.00	0.17	0.100	0.271	0.090	0.01
37	3.08	0.17	0.100	0.269	0.090	0.01
38	3.17	0.17	0.100	0.268	0.090	0.01
39	3.25	0.17	0.100	0.267	0.090	0.01
40	3.33	0.17	0.100	0.266	0.090	0.01
41	3.42	0.17	0.100	0.265	0.090	0.01
42	3.50	0.17	0.100	0.264	0.090	0.01
43	3.58	0.17	0.100	0.263	0.090	0.01

44	3.67	0.17	0.100	0.262	0.090	0.01
45	3.75	0.17	0.100	0.261	0.090	0.01
46	3.83	0.20	0.120	0.259	0.108	0.01
47	3.92	0.20	0.120	0.258	0.108	0.01
48	4.00	0.20	0.120	0.257	0.108	0.01
49	4.08	0.20	0.120	0.256	0.108	0.01
50	4.17	0.20	0.120	0.255	0.108	0.01
51	4.25	0.20	0.120	0.254	0.108	0.01
52	4.33	0.23	0.140	0.253	0.126	0.01
53	4.42	0.23	0.140	0.252	0.126	0.01
54	4.50	0.23	0.140	0.251	0.126	0.01
55	4.58	0.23	0.140	0.250	0.126	0.01
56	4.67	0.23	0.140	0.249	0.126	0.01
57	4.75	0.23	0.140	0.248	0.126	0.01
58	4.83	0.27	0.160	0.246	0.144	0.02
59	4.92	0.27	0.160	0.245	0.144	0.02
60	5.00	0.27	0.160	0.244	0.144	0.02
61	5.08	0.20	0.120	0.243	0.108	0.01
62	5.17	0.20	0.120	0.242	0.108	0.01
63	5.25	0.20	0.120	0.241	0.108	0.01
64	5.33	0.23	0.140	0.240	0.126	0.01
65	5.42	0.23	0.140	0.239	0.126	0.01
66	5.50	0.23	0.140	0.238	0.126	0.01
67	5.58	0.27	0.160	0.237	0.144	0.02
68	5.67	0.27	0.160	0.236	0.144	0.02
69	5.75	0.27	0.160	0.235	0.144	0.02
70	5.83	0.27	0.160	0.234	0.144	0.02
71	5.92	0.27	0.160	0.233	0.144	0.02
72	6.00	0.27	0.160	0.232	0.144	0.02
73	6.08	0.30	0.180	0.231	0.162	0.02
74	6.17	0.30	0.180	0.230	0.162	0.02
75	6.25	0.30	0.180	0.229	0.162	0.02
76	6.33	0.30	0.180	0.228	0.162	0.02
77	6.42	0.30	0.180	0.227	0.162	0.02
78	6.50	0.30	0.180	0.226	0.162	0.02
79	6.58	0.33	0.200	0.225	0.180	0.02
80	6.67	0.33	0.200	0.224	0.180	0.02
81	6.75	0.33	0.200	0.223	0.180	0.02
82	6.83	0.33	0.200	0.222	0.180	0.02
83	6.92	0.33	0.200	0.221	0.180	0.02
84	7.00	0.33	0.200	0.220	0.180	0.02
85	7.08	0.33	0.200	0.219	0.180	0.02
86	7.17	0.33	0.200	0.218	0.180	0.02
87	7.25	0.33	0.200	0.217	0.180	0.02
88	7.33	0.37	0.220	0.216	---	0.00
89	7.42	0.37	0.220	0.215	---	0.01
90	7.50	0.37	0.220	0.214	---	0.01
91	7.58	0.40	0.240	0.213	---	0.03
92	7.67	0.40	0.240	0.212	---	0.03
93	7.75	0.40	0.240	0.211	---	0.03
94	7.83	0.43	0.260	0.210	---	0.05
95	7.92	0.43	0.260	0.209	---	0.05
96	8.00	0.43	0.260	0.208	---	0.05
97	8.08	0.50	0.300	0.207	---	0.09

98	8.17	0.50	0.300	0.206	---	0.09
99	8.25	0.50	0.300	0.205	---	0.10
100	8.33	0.50	0.300	0.204	---	0.10
101	8.42	0.50	0.300	0.203	---	0.10
102	8.50	0.50	0.300	0.202	---	0.10
103	8.58	0.53	0.320	0.201	---	0.12
104	8.67	0.53	0.320	0.200	---	0.12
105	8.75	0.53	0.320	0.199	---	0.12
106	8.83	0.57	0.340	0.198	---	0.14
107	8.92	0.57	0.340	0.197	---	0.14
108	9.00	0.57	0.340	0.196	---	0.14
109	9.08	0.63	0.380	0.195	---	0.18
110	9.17	0.63	0.380	0.195	---	0.19
111	9.25	0.63	0.380	0.194	---	0.19
112	9.33	0.67	0.400	0.193	---	0.21
113	9.42	0.67	0.400	0.192	---	0.21
114	9.50	0.67	0.400	0.191	---	0.21
115	9.58	0.70	0.420	0.190	---	0.23
116	9.67	0.70	0.420	0.189	---	0.23
117	9.75	0.70	0.420	0.188	---	0.23
118	9.83	0.73	0.440	0.187	---	0.25
119	9.92	0.73	0.440	0.186	---	0.25
120	10.00	0.73	0.440	0.185	---	0.25
121	10.08	0.50	0.300	0.185	---	0.12
122	10.17	0.50	0.300	0.184	---	0.12
123	10.25	0.50	0.300	0.183	---	0.12
124	10.33	0.50	0.300	0.182	---	0.12
125	10.42	0.50	0.300	0.181	---	0.12
126	10.50	0.50	0.300	0.180	---	0.12
127	10.58	0.67	0.400	0.179	---	0.22
128	10.67	0.67	0.400	0.178	---	0.22
129	10.75	0.67	0.400	0.177	---	0.22
130	10.83	0.67	0.400	0.177	---	0.22
131	10.92	0.67	0.400	0.176	---	0.22
132	11.00	0.67	0.400	0.175	---	0.23
133	11.08	0.63	0.380	0.174	---	0.21
134	11.17	0.63	0.380	0.173	---	0.21
135	11.25	0.63	0.380	0.172	---	0.21
136	11.33	0.63	0.380	0.171	---	0.21
137	11.42	0.63	0.380	0.171	---	0.21
138	11.50	0.63	0.380	0.170	---	0.21
139	11.58	0.57	0.340	0.169	---	0.17
140	11.67	0.57	0.340	0.168	---	0.17
141	11.75	0.57	0.340	0.167	---	0.17
142	11.83	0.60	0.360	0.166	---	0.19
143	11.92	0.60	0.360	0.166	---	0.19
144	12.00	0.60	0.360	0.165	---	0.20
145	12.08	0.83	0.500	0.164	---	0.34
146	12.17	0.83	0.500	0.163	---	0.34
147	12.25	0.83	0.500	0.162	---	0.34
148	12.33	0.87	0.520	0.161	---	0.36
149	12.42	0.87	0.520	0.161	---	0.36
150	12.50	0.87	0.520	0.160	---	0.36
151	12.58	0.93	0.560	0.159	---	0.40

152	12.67	0.93	0.560	0.158	---	0.40
153	12.75	0.93	0.560	0.157	---	0.40
154	12.83	0.97	0.580	0.157	---	0.42
155	12.92	0.97	0.580	0.156	---	0.42
156	13.00	0.97	0.580	0.155	---	0.42
157	13.08	1.13	0.680	0.154	---	0.53
158	13.17	1.13	0.680	0.154	---	0.53
159	13.25	1.13	0.680	0.153	---	0.53
160	13.33	1.13	0.680	0.152	---	0.53
161	13.42	1.13	0.680	0.151	---	0.53
162	13.50	1.13	0.680	0.150	---	0.53
163	13.58	0.77	0.460	0.150	---	0.31
164	13.67	0.77	0.460	0.149	---	0.31
165	13.75	0.77	0.460	0.148	---	0.31
166	13.83	0.77	0.460	0.147	---	0.31
167	13.92	0.77	0.460	0.147	---	0.31
168	14.00	0.77	0.460	0.146	---	0.31
169	14.08	0.90	0.540	0.145	---	0.39
170	14.17	0.90	0.540	0.144	---	0.40
171	14.25	0.90	0.540	0.144	---	0.40
172	14.33	0.87	0.520	0.143	---	0.38
173	14.42	0.87	0.520	0.142	---	0.38
174	14.50	0.87	0.520	0.141	---	0.38
175	14.58	0.87	0.520	0.141	---	0.38
176	14.67	0.87	0.520	0.140	---	0.38
177	14.75	0.87	0.520	0.139	---	0.38
178	14.83	0.83	0.500	0.139	---	0.36
179	14.92	0.83	0.500	0.138	---	0.36
180	15.00	0.83	0.500	0.137	---	0.36
181	15.08	0.80	0.480	0.136	---	0.34
182	15.17	0.80	0.480	0.136	---	0.34
183	15.25	0.80	0.480	0.135	---	0.34
184	15.33	0.77	0.460	0.134	---	0.33
185	15.42	0.77	0.460	0.134	---	0.33
186	15.50	0.77	0.460	0.133	---	0.33
187	15.58	0.63	0.380	0.132	---	0.25
188	15.67	0.63	0.380	0.132	---	0.25
189	15.75	0.63	0.380	0.131	---	0.25
190	15.83	0.63	0.380	0.130	---	0.25
191	15.92	0.63	0.380	0.130	---	0.25
192	16.00	0.63	0.380	0.129	---	0.25
193	16.08	0.13	0.080	0.128	0.072	0.01
194	16.17	0.13	0.080	0.128	0.072	0.01
195	16.25	0.13	0.080	0.127	0.072	0.01
196	16.33	0.13	0.080	0.126	0.072	0.01
197	16.42	0.13	0.080	0.126	0.072	0.01
198	16.50	0.13	0.080	0.125	0.072	0.01
199	16.58	0.10	0.060	0.124	0.054	0.01
200	16.67	0.10	0.060	0.124	0.054	0.01
201	16.75	0.10	0.060	0.123	0.054	0.01
202	16.83	0.10	0.060	0.123	0.054	0.01
203	16.92	0.10	0.060	0.122	0.054	0.01
204	17.00	0.10	0.060	0.121	0.054	0.01
205	17.08	0.17	0.100	0.121	0.090	0.01

206	17.17	0.17	0.100	0.120	0.090	0.01
207	17.25	0.17	0.100	0.119	0.090	0.01
208	17.33	0.17	0.100	0.119	0.090	0.01
209	17.42	0.17	0.100	0.118	0.090	0.01
210	17.50	0.17	0.100	0.118	0.090	0.01
211	17.58	0.17	0.100	0.117	0.090	0.01
212	17.67	0.17	0.100	0.117	0.090	0.01
213	17.75	0.17	0.100	0.116	0.090	0.01
214	17.83	0.13	0.080	0.115	0.072	0.01
215	17.92	0.13	0.080	0.115	0.072	0.01
216	18.00	0.13	0.080	0.114	0.072	0.01
217	18.08	0.13	0.080	0.114	0.072	0.01
218	18.17	0.13	0.080	0.113	0.072	0.01
219	18.25	0.13	0.080	0.113	0.072	0.01
220	18.33	0.13	0.080	0.112	0.072	0.01
221	18.42	0.13	0.080	0.111	0.072	0.01
222	18.50	0.13	0.080	0.111	0.072	0.01
223	18.58	0.10	0.060	0.110	0.054	0.01
224	18.67	0.10	0.060	0.110	0.054	0.01
225	18.75	0.10	0.060	0.109	0.054	0.01
226	18.83	0.07	0.040	0.109	0.036	0.00
227	18.92	0.07	0.040	0.108	0.036	0.00
228	19.00	0.07	0.040	0.108	0.036	0.00
229	19.08	0.10	0.060	0.107	0.054	0.01
230	19.17	0.10	0.060	0.107	0.054	0.01
231	19.25	0.10	0.060	0.106	0.054	0.01
232	19.33	0.13	0.080	0.106	0.072	0.01
233	19.42	0.13	0.080	0.105	0.072	0.01
234	19.50	0.13	0.080	0.105	0.072	0.01
235	19.58	0.10	0.060	0.104	0.054	0.01
236	19.67	0.10	0.060	0.104	0.054	0.01
237	19.75	0.10	0.060	0.103	0.054	0.01
238	19.83	0.07	0.040	0.103	0.036	0.00
239	19.92	0.07	0.040	0.102	0.036	0.00
240	20.00	0.07	0.040	0.102	0.036	0.00
241	20.08	0.10	0.060	0.102	0.054	0.01
242	20.17	0.10	0.060	0.101	0.054	0.01
243	20.25	0.10	0.060	0.101	0.054	0.01
244	20.33	0.10	0.060	0.100	0.054	0.01
245	20.42	0.10	0.060	0.100	0.054	0.01
246	20.50	0.10	0.060	0.099	0.054	0.01
247	20.58	0.10	0.060	0.099	0.054	0.01
248	20.67	0.10	0.060	0.099	0.054	0.01
249	20.75	0.10	0.060	0.098	0.054	0.01
250	20.83	0.07	0.040	0.098	0.036	0.00
251	20.92	0.07	0.040	0.097	0.036	0.00
252	21.00	0.07	0.040	0.097	0.036	0.00
253	21.08	0.10	0.060	0.097	0.054	0.01
254	21.17	0.10	0.060	0.096	0.054	0.01
255	21.25	0.10	0.060	0.096	0.054	0.01
256	21.33	0.07	0.040	0.095	0.036	0.00
257	21.42	0.07	0.040	0.095	0.036	0.00
258	21.50	0.07	0.040	0.095	0.036	0.00
259	21.58	0.10	0.060	0.094	0.054	0.01

260	21.67	0.10	0.060	0.094	0.054	0.01
261	21.75	0.10	0.060	0.094	0.054	0.01
262	21.83	0.07	0.040	0.093	0.036	0.00
263	21.92	0.07	0.040	0.093	0.036	0.00
264	22.00	0.07	0.040	0.093	0.036	0.00
265	22.08	0.10	0.060	0.092	0.054	0.01
266	22.17	0.10	0.060	0.092	0.054	0.01
267	22.25	0.10	0.060	0.092	0.054	0.01
268	22.33	0.07	0.040	0.092	0.036	0.00
269	22.42	0.07	0.040	0.091	0.036	0.00
270	22.50	0.07	0.040	0.091	0.036	0.00
271	22.58	0.07	0.040	0.091	0.036	0.00
272	22.67	0.07	0.040	0.090	0.036	0.00
273	22.75	0.07	0.040	0.090	0.036	0.00
274	22.83	0.07	0.040	0.090	0.036	0.00
275	22.92	0.07	0.040	0.090	0.036	0.00
276	23.00	0.07	0.040	0.090	0.036	0.00
277	23.08	0.07	0.040	0.089	0.036	0.00
278	23.17	0.07	0.040	0.089	0.036	0.00
279	23.25	0.07	0.040	0.089	0.036	0.00
280	23.33	0.07	0.040	0.089	0.036	0.00
281	23.42	0.07	0.040	0.089	0.036	0.00
282	23.50	0.07	0.040	0.088	0.036	0.00
283	23.58	0.07	0.040	0.088	0.036	0.00
284	23.67	0.07	0.040	0.088	0.036	0.00
285	23.75	0.07	0.040	0.088	0.036	0.00
286	23.83	0.07	0.040	0.088	0.036	0.00
287	23.92	0.07	0.040	0.088	0.036	0.00
288	24.00	0.07	0.040	0.088	0.036	0.00
	Sum =	100.0			Sum =	27.9

Flood volume = Effective rainfall 2.32(In)
times area 4.5(Ac.)/[(In)/(Ft.)] = 0.9(Ac.Ft)
Total soil loss = 2.68(In)
Total soil loss = 0.999(Ac.Ft)
Total rainfall = 5.00(In)
Flood volume = 37799.4 Cubic Feet
Total soil loss = 43511.9 Cubic Feet

Peak flow rate of this hydrograph = 2.198(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

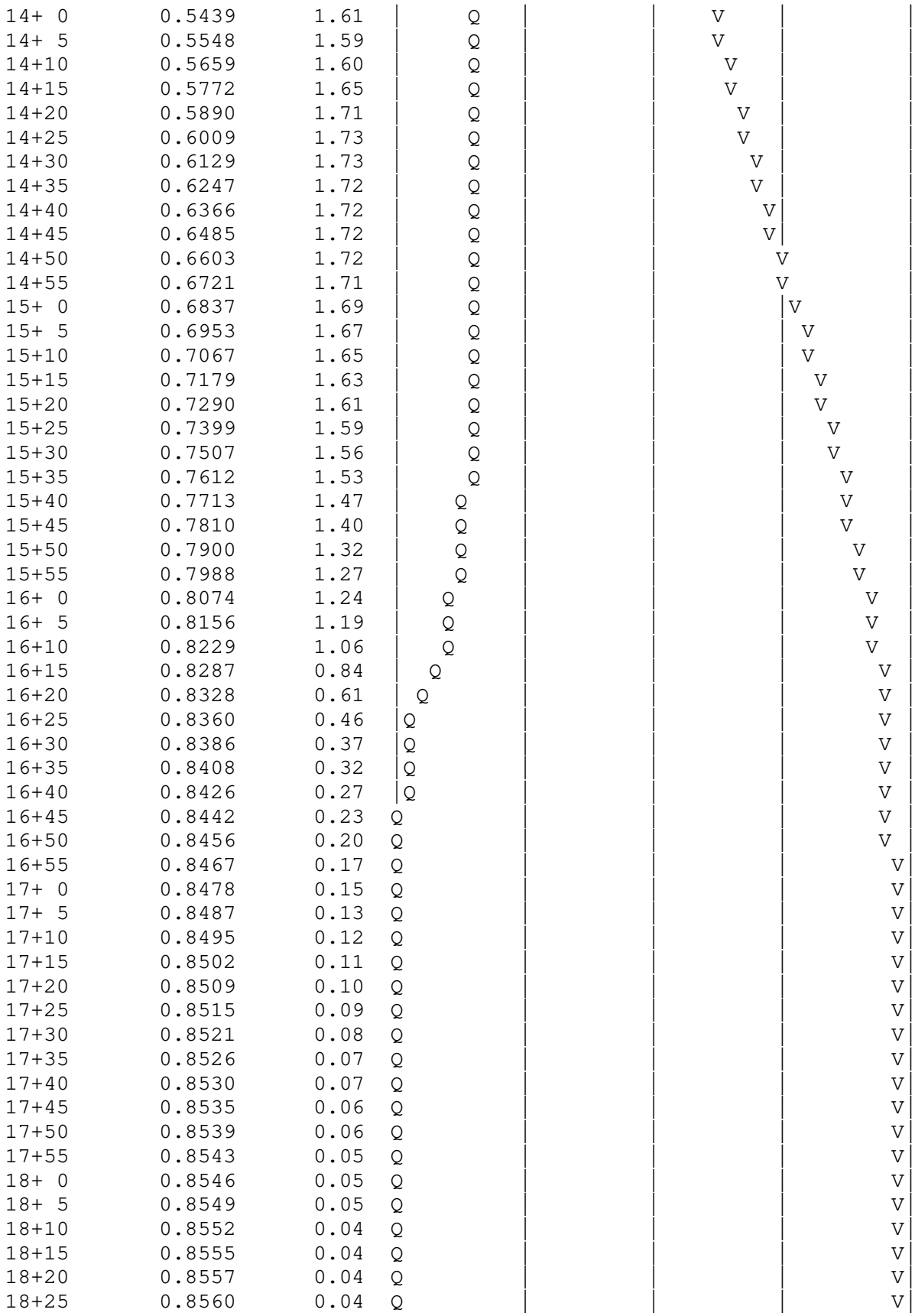
Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0000	0.00	Q	|	|	|	|
0+10	0.0000	0.00	Q	|	|	|	|
0+15	0.0001	0.01	Q	|	|	|	|
0+20	0.0001	0.01	Q	|	|	|	|
0+25	0.0002	0.01	Q	|	|	|	|

0+30	0.0003	0.02	Q				
0+35	0.0005	0.02	Q				
0+40	0.0006	0.02	Q				
0+45	0.0008	0.02	Q				
0+50	0.0009	0.02	Q				
0+55	0.0011	0.02	Q				
1+ 0	0.0013	0.03	Q				
1+ 5	0.0015	0.03	Q				
1+10	0.0017	0.03	Q				
1+15	0.0019	0.03	Q				
1+20	0.0021	0.03	Q				
1+25	0.0022	0.03	Q				
1+30	0.0024	0.03	Q				
1+35	0.0026	0.03	Q				
1+40	0.0028	0.03	Q				
1+45	0.0030	0.03	Q				
1+50	0.0032	0.03	Q				
1+55	0.0034	0.03	Q				
2+ 0	0.0036	0.03	Q				
2+ 5	0.0038	0.03	Q				
2+10	0.0040	0.03	Q				
2+15	0.0043	0.03	Q				
2+20	0.0045	0.03	Q				
2+25	0.0047	0.03	Q				
2+30	0.0050	0.03	Q				
2+35	0.0052	0.04	Q				
2+40	0.0055	0.04	Q				
2+45	0.0057	0.04	Q				
2+50	0.0060	0.04	Q				
2+55	0.0063	0.04	Q				
3+ 0	0.0066	0.04	Q				
3+ 5	0.0069	0.04	Q				
3+10	0.0072	0.04	Q				
3+15	0.0075	0.04	Q				
3+20	0.0078	0.04	Q				
3+25	0.0081	0.04	Q				
3+30	0.0084	0.04	Q				
3+35	0.0087	0.04	Q				
3+40	0.0090	0.04	Q				
3+45	0.0093	0.04	Q				
3+50	0.0096	0.04	Q				
3+55	0.0099	0.05	Q				
4+ 0	0.0103	0.05	Q				
4+ 5	0.0106	0.05	Q				
4+10	0.0110	0.05	Q				
4+15	0.0113	0.05	Q				
4+20	0.0117	0.05	Q				
4+25	0.0120	0.05	Q				
4+30	0.0124	0.06	Q				
4+35	0.0128	0.06	Q				
4+40	0.0132	0.06	Q				
4+45	0.0136	0.06	Q				
4+50	0.0141	0.06	Q				
4+55	0.0145	0.06	Q				

5+ 0	0.0149	0.06	Q				
5+ 5	0.0154	0.07	Q				
5+10	0.0158	0.07	Q				
5+15	0.0163	0.06	Q				
5+20	0.0167	0.06	Q				
5+25	0.0171	0.06	Q				
5+30	0.0175	0.06	Q				
5+35	0.0179	0.06	Q				
5+40	0.0184	0.06	Q				
5+45	0.0188	0.07	Q				
5+50	0.0193	0.07	Q				
5+55	0.0197	0.07	Q				
6+ 0	0.0202	0.07	Q				
6+ 5	0.0207	0.07	Q				
6+10	0.0212	0.07	Q				
6+15	0.0217	0.07	QV				
6+20	0.0222	0.08	QV				
6+25	0.0228	0.08	QV				
6+30	0.0233	0.08	QV				
6+35	0.0238	0.08	QV				
6+40	0.0244	0.08	QV				
6+45	0.0250	0.08	QV				
6+50	0.0255	0.08	QV				
6+55	0.0261	0.09	QV				
7+ 0	0.0267	0.09	QV				
7+ 5	0.0273	0.09	QV				
7+10	0.0279	0.09	QV				
7+15	0.0285	0.09	QV				
7+20	0.0291	0.09	QV				
7+25	0.0297	0.08	QV				
7+30	0.0301	0.07	QV				
7+35	0.0305	0.06	QV				
7+40	0.0309	0.06	QV				
7+45	0.0315	0.08	QV				
7+50	0.0321	0.10	QV				
7+55	0.0329	0.12	QV				
8+ 0	0.0339	0.14	QV				
8+ 5	0.0351	0.17	QV				
8+10	0.0366	0.21	QV				
8+15	0.0383	0.26	|Q				
8+20	0.0404	0.30	|Q				
8+25	0.0427	0.33	|Q				
8+30	0.0452	0.35	|QV				
8+35	0.0477	0.37	|QV				
8+40	0.0505	0.40	|QV				
8+45	0.0534	0.42	|QV				
8+50	0.0565	0.46	|QV				
8+55	0.0599	0.49	|QV				
9+ 0	0.0634	0.52	| Q				
9+ 5	0.0673	0.55	| QV				
9+10	0.0714	0.60	| QV				
9+15	0.0758	0.65	| QV				
9+20	0.0806	0.70	| QV				
9+25	0.0857	0.74	| QV				

9+30	0.0911	0.78	QV				
9+35	0.0968	0.82	QV				
9+40	0.1027	0.86	QV				
9+45	0.1089	0.90	Q V				
9+50	0.1153	0.93	Q V				
9+55	0.1219	0.97	Q V				
10+ 0	0.1289	1.00	QV				
10+ 5	0.1359	1.02	Q V				
10+10	0.1426	0.97	Q V				
10+15	0.1486	0.87	Q V				
10+20	0.1538	0.76	Q V				
10+25	0.1585	0.69	Q V				
10+30	0.1630	0.66	Q V				
10+35	0.1675	0.65	Q V				
10+40	0.1722	0.69	Q V				
10+45	0.1775	0.76	Q V				
10+50	0.1833	0.84	Q V				
10+55	0.1895	0.90	Q V				
11+ 0	0.1958	0.92	Q V				
11+ 5	0.2023	0.94	Q V				
11+10	0.2088	0.94	Q V				
11+15	0.2153	0.94	Q V				
11+20	0.2217	0.93	Q V				
11+25	0.2281	0.93	Q V				
11+30	0.2345	0.93	Q V				
11+35	0.2409	0.93	Q V				
11+40	0.2472	0.91	Q V				
11+45	0.2533	0.88	Q V				
11+50	0.2591	0.85	Q V				
11+55	0.2649	0.84	Q V				
12+ 0	0.2708	0.85	Q V				
12+ 5	0.2769	0.88	Q V				
12+10	0.2835	0.96	Q V				
12+15	0.2909	1.08	Q V				
12+20	0.2993	1.22	Q V				
12+25	0.3084	1.31	Q V				
12+30	0.3179	1.38	Q V				
12+35	0.3277	1.44	Q V				
12+40	0.3380	1.50	Q V				
12+45	0.3488	1.56	Q V				
12+50	0.3599	1.62	Q V				
12+55	0.3715	1.67	Q V				
13+ 0	0.3833	1.72	Q V				
13+ 5	0.3955	1.77	Q V				
13+10	0.4083	1.85	Q V				
13+15	0.4218	1.96	Q V				
13+20	0.4361	2.07	Q V				
13+25	0.4509	2.15	Q V				
13+30	0.4660	2.19	Q V				
13+35	0.4811	2.20	Q V				
13+40	0.4957	2.12	Q V				
13+45	0.5091	1.95	Q V				
13+50	0.5213	1.77	Q V				
13+55	0.5328	1.66	Q V				


14+ 0 0.5439 1.61
14+ 5 0.5548 1.59
14+10 0.5659 1.60
14+15 0.5772 1.65
14+20 0.5890 1.71
14+25 0.6009 1.73
14+30 0.6129 1.73
14+35 0.6247 1.72
14+40 0.6366 1.72
14+45 0.6485 1.72
14+50 0.6603 1.72
14+55 0.6721 1.71
15+ 0 0.6837 1.69
15+ 5 0.6953 1.67
15+10 0.7067 1.65
15+15 0.7179 1.63
15+20 0.7290 1.61
15+25 0.7399 1.59
15+30 0.7507 1.56
15+35 0.7612 1.53
15+40 0.7713 1.47
15+45 0.7810 1.40
15+50 0.7900 1.32
15+55 0.7988 1.27
16+ 0 0.8074 1.24
16+ 5 0.8156 1.19
16+10 0.8229 1.06
16+15 0.8287 0.84
16+20 0.8328 0.61
16+25 0.8360 0.46
16+30 0.8386 0.37
16+35 0.8408 0.32
16+40 0.8426 0.27
16+45 0.8442 0.23
16+50 0.8456 0.20
16+55 0.8467 0.17
17+ 0 0.8478 0.15
17+ 5 0.8487 0.13
17+10 0.8495 0.12
17+15 0.8502 0.11
17+20 0.8509 0.10
17+25 0.8515 0.09
17+30 0.8521 0.08
17+35 0.8526 0.07
17+40 0.8530 0.07
17+45 0.8535 0.06
17+50 0.8539 0.06
17+55 0.8543 0.05
18+ 0 0.8546 0.05
18+ 5 0.8549 0.05
18+10 0.8552 0.04
18+15 0.8555 0.04
18+20 0.8557 0.04
18+25 0.8560 0.04

18+30	0.8562	0.04	Q	|	|	|	V|
18+35	0.8565	0.04	Q	|	|	|	V|
18+40	0.8567	0.04	Q	|	|	|	V|
18+45	0.8570	0.03	Q	|	|	|	V|
18+50	0.8572	0.03	Q	|	|	|	V|
18+55	0.8574	0.03	Q	|	|	|	V|
19+ 0	0.8576	0.03	Q	|	|	|	V|
19+ 5	0.8577	0.02	Q	|	|	|	V|
19+10	0.8579	0.02	Q	|	|	|	V|
19+15	0.8581	0.03	Q	|	|	|	V|
19+20	0.8583	0.03	Q	|	|	|	V|
19+25	0.8584	0.03	Q	|	|	|	V|
19+30	0.8587	0.03	Q	|	|	|	V|
19+35	0.8589	0.03	Q	|	|	|	V|
19+40	0.8591	0.03	Q	|	|	|	V|
19+45	0.8593	0.03	Q	|	|	|	V|
19+50	0.8595	0.03	Q	|	|	|	V|
19+55	0.8597	0.03	Q	|	|	|	V|
20+ 0	0.8599	0.03	Q	|	|	|	V|
20+ 5	0.8600	0.02	Q	|	|	|	V|
20+10	0.8602	0.02	Q	|	|	|	V|
20+15	0.8604	0.02	Q	|	|	|	V|
20+20	0.8605	0.03	Q	|	|	|	V|
20+25	0.8607	0.03	Q	|	|	|	V|
20+30	0.8609	0.03	Q	|	|	|	V|
20+35	0.8611	0.03	Q	|	|	|	V|
20+40	0.8613	0.03	Q	|	|	|	V|
20+45	0.8614	0.03	Q	|	|	|	V|
20+50	0.8616	0.03	Q	|	|	|	V|
20+55	0.8618	0.03	Q	|	|	|	V|
21+ 0	0.8620	0.02	Q	|	|	|	V|
21+ 5	0.8621	0.02	Q	|	|	|	V|
21+10	0.8623	0.02	Q	|	|	|	V|
21+15	0.8624	0.02	Q	|	|	|	V|
21+20	0.8626	0.02	Q	|	|	|	V|
21+25	0.8628	0.02	Q	|	|	|	V|
21+30	0.8629	0.02	Q	|	|	|	V|
21+35	0.8631	0.02	Q	|	|	|	V|
21+40	0.8632	0.02	Q	|	|	|	V|
21+45	0.8634	0.02	Q	|	|	|	V|
21+50	0.8635	0.02	Q	|	|	|	V|
21+55	0.8637	0.02	Q	|	|	|	V|
22+ 0	0.8639	0.02	Q	|	|	|	V|
22+ 5	0.8640	0.02	Q	|	|	|	V|
22+10	0.8642	0.02	Q	|	|	|	V|
22+15	0.8643	0.02	Q	|	|	|	V|
22+20	0.8645	0.02	Q	|	|	|	V|
22+25	0.8646	0.02	Q	|	|	|	V|
22+30	0.8648	0.02	Q	|	|	|	V|
22+35	0.8649	0.02	Q	|	|	|	V|
22+40	0.8651	0.02	Q	|	|	|	V|
22+45	0.8652	0.02	Q	|	|	|	V|
22+50	0.8654	0.02	Q	|	|	|	V|
22+55	0.8655	0.02	Q	|	|	|	V|

23+ 0	0.8656	0.02	Q	|	|	|	V|
23+ 5	0.8657	0.02	Q	|	|	|	V|
23+10	0.8659	0.02	Q	|	|	|	V|
23+15	0.8660	0.02	Q	|	|	|	V|
23+20	0.8661	0.02	Q	|	|	|	V|
23+25	0.8663	0.02	Q	|	|	|	V|
23+30	0.8664	0.02	Q	|	|	|	V|
23+35	0.8665	0.02	Q	|	|	|	V|
23+40	0.8666	0.02	Q	|	|	|	V|
23+45	0.8668	0.02	Q	|	|	|	V|
23+50	0.8669	0.02	Q	|	|	|	V|
23+55	0.8670	0.02	Q	|	|	|	V|
24+ 0	0.8671	0.02	Q	|	|	|	V|
24+ 5	0.8673	0.02	Q	|	|	|	V|
24+10	0.8674	0.02	Q	|	|	|	V|
24+15	0.8675	0.01	Q	|	|	|	V|
24+20	0.8675	0.01	Q	|	|	|	V|
24+25	0.8676	0.01	Q	|	|	|	V|
24+30	0.8676	0.00	Q	|	|	|	V|
24+35	0.8676	0.00	Q	|	|	|	V|
24+40	0.8676	0.00	Q	|	|	|	V|
24+45	0.8677	0.00	Q	|	|	|	V|
24+50	0.8677	0.00	Q	|	|	|	V|
24+55	0.8677	0.00	Q	|	|	|	V|
25+ 0	0.8677	0.00	Q	|	|	|	V|
25+ 5	0.8677	0.00	Q	|	|	|	V|
25+10	0.8677	0.00	Q	|	|	|	V|
25+15	0.8677	0.00	Q	|	|	|	V|
25+20	0.8677	0.00	Q	|	|	|	V|
25+25	0.8677	0.00	Q	|	|	|	V|
25+30	0.8677	0.00	Q	|	|	|	V|
25+35	0.8677	0.00	Q	|	|	|	V|
25+40	0.8677	0.00	Q	|	|	|	V|
25+45	0.8677	0.00	Q	|	|	|	V|
25+50	0.8678	0.00	Q	|	|	|	V|
25+55	0.8678	0.00	Q	|	|	|	V|
26+ 0	0.8678	0.00	Q	|	|	|	V|
26+ 5	0.8678	0.00	Q	|	|	|	V|
26+10	0.8678	0.00	Q	|	|	|	V

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

Study date 11/01/21 File: 3684uhpq1001100.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6145

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

TCC - KNOX VIII
100 YEAR UNIT HYDROGRAPH PROPOSED
3684UHPQ100
DS

Drainage Area = 11.95(Ac.) = 0.019 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 11.95(Ac.) = 0.019 Sq. Mi.
USER Entry of lag time in hours
Lag time = 0.158 Hr.
Lag time = 9.46 Min.
25% of lag time = 2.37 Min.
40% of lag time = 3.78 Min.
Unit time = 5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
11.95	0.50	5.97

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
11.95	1.27	15.18

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 0.500(In)
Area Averaged 100-Year Rainfall = 1.270(In)

Point rain (area averaged) = 1.270(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 1.270(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
11.950	69.00	0.900

Total Area Entered = 11.95(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
69.0	69.0	0.373	0.900	0.071	1.000	0.071
					Sum (F) =	0.071

Area averaged mean soil loss (F) (In/Hr) = 0.071
Minimum soil loss rate ((In/Hr)) = 0.035
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.180

Slope of intensity-duration curve for a 1 hour storm =0.5000

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	52.843	6.678	0.804
2	0.167	105.686	28.520	3.435
3	0.250	158.529	28.458	3.427
4	0.333	211.372	12.012	1.447
5	0.417	264.215	6.554	0.789
6	0.500	317.058	4.554	0.548
7	0.583	369.901	3.274	0.394
8	0.667	422.744	2.431	0.293
9	0.750	475.587	1.781	0.215
10	0.833	528.430	1.538	0.185
11	0.917	581.272	1.171	0.141
12	1.000	634.115	0.925	0.111
13	1.083	686.958	0.701	0.084
14	1.167	739.801	0.538	0.065
15	1.250	792.644	0.528	0.064
16	1.333	845.487	0.338	0.041
		Sum = 100.000	Sum=	12.043

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	4.20	0.640	0.071	---	0.57
2	0.17	4.30	0.655	0.071	---	0.58
3	0.25	5.00	0.762	0.071	---	0.69
4	0.33	5.00	0.762	0.071	---	0.69
5	0.42	5.80	0.884	0.071	---	0.81
6	0.50	6.50	0.990	0.071	---	0.92
7	0.58	7.40	1.128	0.071	---	1.06
8	0.67	8.60	1.310	0.071	---	1.24
9	0.75	12.30	1.874	0.071	---	1.80
10	0.83	29.10	4.434	0.071	---	4.36
11	0.92	6.80	1.036	0.071	---	0.97
12	1.00	5.00	0.762	0.071	---	0.69
Sum =		100.0			Sum =	14.4

Flood volume = Effective rainfall 1.20(In)
times area 11.9(Ac.)/[(In)/(Ft.)] = 1.2(Ac.Ft)
Total soil loss = 0.07(In)
Total soil loss = 0.071(Ac.Ft)
Total rainfall = 1.27(In)
Flood volume = 52012.1 Cubic Feet
Total soil loss = 3072.6 Cubic Feet

Peak flow rate of this hydrograph = 25.950(CFS)

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1 - 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	7.5	15.0	22.5	30.0
0+ 5	0.0032	0.46	Q				
0+10	0.0199	2.43	V Q				
0+15	0.0510	4.52	V Q				
0+20	0.0906	5.76	V Q				
0+25	0.1367	6.69	V Q				
0+30	0.1896	7.68	V Q				
0+35	0.2508	8.89	V Q				
0+40	0.3216	10.28	V Q				
0+45	0.4060	12.25	V Q				
0+50	0.5256	17.37	V Q				
0+55	0.7044	25.95	V Q				
1+ 0	0.8698	24.03	V Q				
1+ 5	0.9753	15.31	Q V				
1+10	1.0414	9.61	Q V				
1+15	1.0824	5.95	Q V				
1+20	1.1112	4.17	Q V				
1+25	1.1324	3.09	Q V				
1+30	1.1484	2.32	Q V				
1+35	1.1611	1.84	Q V				
1+40	1.1708	1.41	Q V				

```
    1+45       1.1783      1.09  |Q        |          |          |         V|
    1+50       1.1839      0.81  |Q        |          |          |         V|
    1+55       1.1881      0.61  Q         |          |          |         V|
    2+ 0       1.1913      0.47  Q         |          |          |         V|
    2+ 5       1.1933      0.28  Q         |          |          |         V|
    2+10       1.1938      0.08  Q         |          |          |         V|
    2+15       1.1940      0.03  Q         |          |          |          V
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U n i t H y d r o g r a p h A n a l y s i s

Study date 11/01/21 File: 3684uhpq1003100.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6145

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

TCC - KNOX VIII
100 YEAR UNIT HYDROGRAPH PROPOSED
3684UHPQ100
DS

Drainage Area = 11.95(Ac.) = 0.019 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 11.95(Ac.) = 0.019 Sq. Mi.
USER Entry of lag time in hours
Lag time = 0.158 Hr.
Lag time = 9.46 Min.
25% of lag time = 2.37 Min.
40% of lag time = 3.78 Min.
Unit time = 5.00 Min.
Duration of storm = 3 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
11.95	0.80	9.56

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
11.95	1.95	23.30

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 0.800(In)
Area Averaged 100-Year Rainfall = 1.950(In)

Point rain (area averaged) = 1.950(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 1.950(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
11.950	69.00	0.900

Total Area Entered = 11.95(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
69.0	69.0	0.373	0.900	0.071	1.000	0.071
					Sum (F) =	0.071

Area averaged mean soil loss (F) (In/Hr) = 0.071
Minimum soil loss rate ((In/Hr)) = 0.035
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.180

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	52.843	6.678	0.804
2	0.167	105.686	28.520	3.435
3	0.250	158.529	28.458	3.427
4	0.333	211.372	12.012	1.447
5	0.417	264.215	6.554	0.789
6	0.500	317.058	4.554	0.548
7	0.583	369.901	3.274	0.394
8	0.667	422.744	2.431	0.293
9	0.750	475.587	1.781	0.215
10	0.833	528.430	1.538	0.185
11	0.917	581.272	1.171	0.141
12	1.000	634.115	0.925	0.111
13	1.083	686.958	0.701	0.084
14	1.167	739.801	0.538	0.065
15	1.250	792.644	0.528	0.064
16	1.333	845.487	0.338	0.041
		Sum = 100.000	Sum=	12.043

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)

1	0.08	1.30	0.304	0.071	---	0.23
2	0.17	1.30	0.304	0.071	---	0.23
3	0.25	1.10	0.257	0.071	---	0.19
4	0.33	1.50	0.351	0.071	---	0.28
5	0.42	1.50	0.351	0.071	---	0.28
6	0.50	1.80	0.421	0.071	---	0.35
7	0.58	1.50	0.351	0.071	---	0.28
8	0.67	1.80	0.421	0.071	---	0.35
9	0.75	1.80	0.421	0.071	---	0.35
10	0.83	1.50	0.351	0.071	---	0.28
11	0.92	1.60	0.374	0.071	---	0.30
12	1.00	1.80	0.421	0.071	---	0.35
13	1.08	2.20	0.515	0.071	---	0.44
14	1.17	2.20	0.515	0.071	---	0.44
15	1.25	2.20	0.515	0.071	---	0.44
16	1.33	2.00	0.468	0.071	---	0.40
17	1.42	2.60	0.608	0.071	---	0.54
18	1.50	2.70	0.632	0.071	---	0.56
19	1.58	2.40	0.562	0.071	---	0.49
20	1.67	2.70	0.632	0.071	---	0.56
21	1.75	3.30	0.772	0.071	---	0.70
22	1.83	3.10	0.725	0.071	---	0.65
23	1.92	2.90	0.679	0.071	---	0.61
24	2.00	3.00	0.702	0.071	---	0.63
25	2.08	3.10	0.725	0.071	---	0.65
26	2.17	4.20	0.983	0.071	---	0.91
27	2.25	5.00	1.170	0.071	---	1.10
28	2.33	3.50	0.819	0.071	---	0.75
29	2.42	6.80	1.591	0.071	---	1.52
30	2.50	7.30	1.708	0.071	---	1.64
31	2.58	8.20	1.919	0.071	---	1.85
32	2.67	5.90	1.381	0.071	---	1.31
33	2.75	2.00	0.468	0.071	---	0.40
34	2.83	1.80	0.421	0.071	---	0.35
35	2.92	1.80	0.421	0.071	---	0.35
36	3.00	0.60	0.140	0.071	---	0.07
Sum =	100.0				Sum =	20.8

Flood volume = Effective rainfall 1.74(In)
times area 11.9(Ac.)/[(In)/(Ft.)] = 1.7(Ac.Ft)
Total soil loss = 0.21(In)
Total soil loss = 0.212(Ac.Ft)
Total rainfall = 1.95(In)
Flood volume = 75365.9 Cubic Feet
Total soil loss = 9217.8 Cubic Feet

Peak flow rate of this hydrograph = 17.520(CFS)

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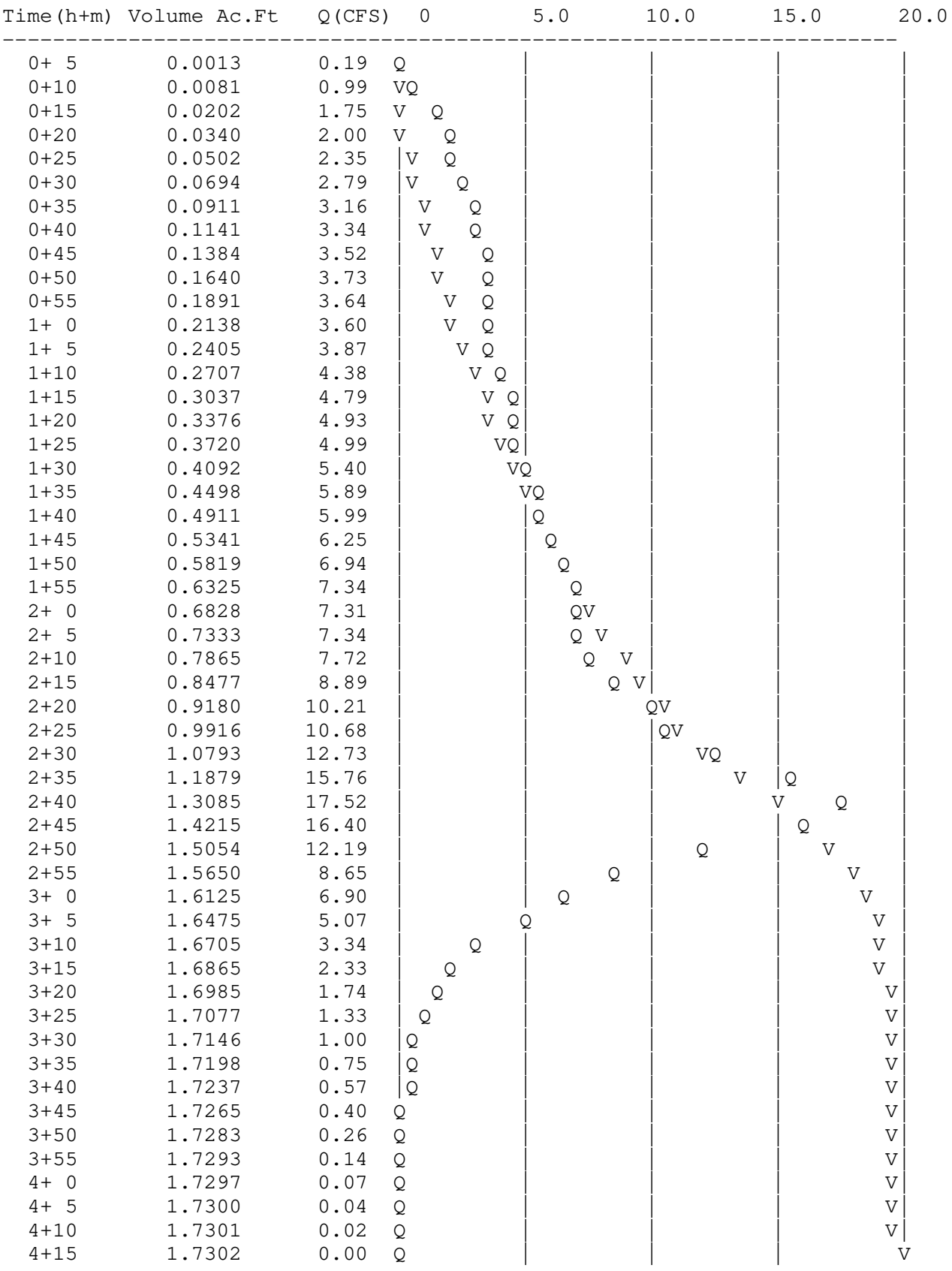
3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

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 0.0013 0.19
0+10 0.0081 0.99
0+15 0.0202 1.75
0+20 0.0340 2.00
0+25 0.0502 2.35
0+30 0.0694 2.79
0+35 0.0911 3.16
0+40 0.1141 3.34
0+45 0.1384 3.52
0+50 0.1640 3.73
0+55 0.1891 3.64
1+ 0 0.2138 3.60
1+ 5 0.2405 3.87
1+10 0.2707 4.38
1+15 0.3037 4.79
1+20 0.3376 4.93
1+25 0.3720 4.99
1+30 0.4092 5.40
1+35 0.4498 5.89
1+40 0.4911 5.99
1+45 0.5341 6.25
1+50 0.5819 6.94
1+55 0.6325 7.34
2+ 0 0.6828 7.31
2+ 5 0.7333 7.34
2+10 0.7865 7.72
2+15 0.8477 8.89
2+20 0.9180 10.21
2+25 0.9916 10.68
2+30 1.0793 12.73
2+35 1.1879 15.76
2+40 1.3085 17.52
2+45 1.4215 16.40
2+50 1.5054 12.19
2+55 1.5650 8.65
3+ 0 1.6125 6.90
3+ 5 1.6475 5.07
3+10 1.6705 3.34
3+15 1.6865 2.33
3+20 1.6985 1.74
3+25 1.7077 1.33
3+30 1.7146 1.00
3+35 1.7198 0.75
3+40 1.7237 0.57
3+45 1.7265 0.40
3+50 1.7283 0.26
3+55 1.7293 0.14
4+ 0 1.7297 0.07
4+ 5 1.7300 0.04
4+10 1.7301 0.02
4+15 1.7302 0.00

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

Study date 11/01/21 File: 3684uhpq1006100.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6145

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

TCC - KNOX VIII
100 YEAR UNIT HYDROGRAPH PROPOSED
3684UHPQ100
DS

Drainage Area = 11.95(Ac.) = 0.019 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 11.95(Ac.) = 0.019 Sq. Mi.
USER Entry of lag time in hours
Lag time = 0.158 Hr.
Lag time = 9.46 Min.
25% of lag time = 2.37 Min.
40% of lag time = 3.78 Min.
Unit time = 5.00 Min.
Duration of storm = 6 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
11.95	1.10	13.15

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
11.95	2.75	32.86

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.100(In)
Area Averaged 100-Year Rainfall = 2.750(In)

Point rain (area averaged) = 2.750(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 2.750(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
11.950	69.00	0.900

Total Area Entered = 11.95(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
69.0	69.0	0.373	0.900	0.071	1.000	0.071
					Sum (F) =	0.071

Area averaged mean soil loss (F) (In/Hr) = 0.071
Minimum soil loss rate ((In/Hr)) = 0.035
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.180

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	52.843	6.678	0.804
2	0.167	105.686	28.520	3.435
3	0.250	158.529	28.458	3.427
4	0.333	211.372	12.012	1.447
5	0.417	264.215	6.554	0.789
6	0.500	317.058	4.554	0.548
7	0.583	369.901	3.274	0.394
8	0.667	422.744	2.431	0.293
9	0.750	475.587	1.781	0.215
10	0.833	528.430	1.538	0.185
11	0.917	581.272	1.171	0.141
12	1.000	634.115	0.925	0.111
13	1.083	686.958	0.701	0.084
14	1.167	739.801	0.538	0.065
15	1.250	792.644	0.528	0.064
16	1.333	845.487	0.338	0.041
		Sum = 100.000	Sum=	12.043

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)

1	0.08	0.50	0.165	0.071	---	0.09
2	0.17	0.60	0.198	0.071	---	0.13
3	0.25	0.60	0.198	0.071	---	0.13
4	0.33	0.60	0.198	0.071	---	0.13
5	0.42	0.60	0.198	0.071	---	0.13
6	0.50	0.70	0.231	0.071	---	0.16
7	0.58	0.70	0.231	0.071	---	0.16
8	0.67	0.70	0.231	0.071	---	0.16
9	0.75	0.70	0.231	0.071	---	0.16
10	0.83	0.70	0.231	0.071	---	0.16
11	0.92	0.70	0.231	0.071	---	0.16
12	1.00	0.80	0.264	0.071	---	0.19
13	1.08	0.80	0.264	0.071	---	0.19
14	1.17	0.80	0.264	0.071	---	0.19
15	1.25	0.80	0.264	0.071	---	0.19
16	1.33	0.80	0.264	0.071	---	0.19
17	1.42	0.80	0.264	0.071	---	0.19
18	1.50	0.80	0.264	0.071	---	0.19
19	1.58	0.80	0.264	0.071	---	0.19
20	1.67	0.80	0.264	0.071	---	0.19
21	1.75	0.80	0.264	0.071	---	0.19
22	1.83	0.80	0.264	0.071	---	0.19
23	1.92	0.80	0.264	0.071	---	0.19
24	2.00	0.90	0.297	0.071	---	0.23
25	2.08	0.80	0.264	0.071	---	0.19
26	2.17	0.90	0.297	0.071	---	0.23
27	2.25	0.90	0.297	0.071	---	0.23
28	2.33	0.90	0.297	0.071	---	0.23
29	2.42	0.90	0.297	0.071	---	0.23
30	2.50	0.90	0.297	0.071	---	0.23
31	2.58	0.90	0.297	0.071	---	0.23
32	2.67	0.90	0.297	0.071	---	0.23
33	2.75	1.00	0.330	0.071	---	0.26
34	2.83	1.00	0.330	0.071	---	0.26
35	2.92	1.00	0.330	0.071	---	0.26
36	3.00	1.00	0.330	0.071	---	0.26
37	3.08	1.00	0.330	0.071	---	0.26
38	3.17	1.10	0.363	0.071	---	0.29
39	3.25	1.10	0.363	0.071	---	0.29
40	3.33	1.10	0.363	0.071	---	0.29
41	3.42	1.20	0.396	0.071	---	0.33
42	3.50	1.30	0.429	0.071	---	0.36
43	3.58	1.40	0.462	0.071	---	0.39
44	3.67	1.40	0.462	0.071	---	0.39
45	3.75	1.50	0.495	0.071	---	0.42
46	3.83	1.50	0.495	0.071	---	0.42
47	3.92	1.60	0.528	0.071	---	0.46
48	4.00	1.60	0.528	0.071	---	0.46
49	4.08	1.70	0.561	0.071	---	0.49
50	4.17	1.80	0.594	0.071	---	0.52
51	4.25	1.90	0.627	0.071	---	0.56
52	4.33	2.00	0.660	0.071	---	0.59
53	4.42	2.10	0.693	0.071	---	0.62
54	4.50	2.10	0.693	0.071	---	0.62

55	4.58	2.20	0.726	0.071	---	0.66
56	4.67	2.30	0.759	0.071	---	0.69
57	4.75	2.40	0.792	0.071	---	0.72
58	4.83	2.40	0.792	0.071	---	0.72
59	4.92	2.50	0.825	0.071	---	0.75
60	5.00	2.60	0.858	0.071	---	0.79
61	5.08	3.10	1.023	0.071	---	0.95
62	5.17	3.60	1.188	0.071	---	1.12
63	5.25	3.90	1.287	0.071	---	1.22
64	5.33	4.20	1.386	0.071	---	1.32
65	5.42	4.70	1.551	0.071	---	1.48
66	5.50	5.60	1.848	0.071	---	1.78
67	5.58	1.90	0.627	0.071	---	0.56
68	5.67	0.90	0.297	0.071	---	0.23
69	5.75	0.60	0.198	0.071	---	0.13
70	5.83	0.50	0.165	0.071	---	0.09
71	5.92	0.30	0.099	0.071	---	0.03
72	6.00	0.20	0.066	0.071	0.012	0.05
Sum =		100.0			Sum =	28.0

Flood volume = Effective rainfall 2.33(In)
times area 11.9(Ac.)/[(In)/(Ft.)] = 2.3(Ac.Ft)
Total soil loss = 0.42(In)
Total soil loss = 0.418(Ac.Ft)
Total rainfall = 2.75(In)
Flood volume = 101063.6 Cubic Feet
Total soil loss = 18222.4 Cubic Feet

Peak flow rate of this hydrograph = 16.346(CFS)

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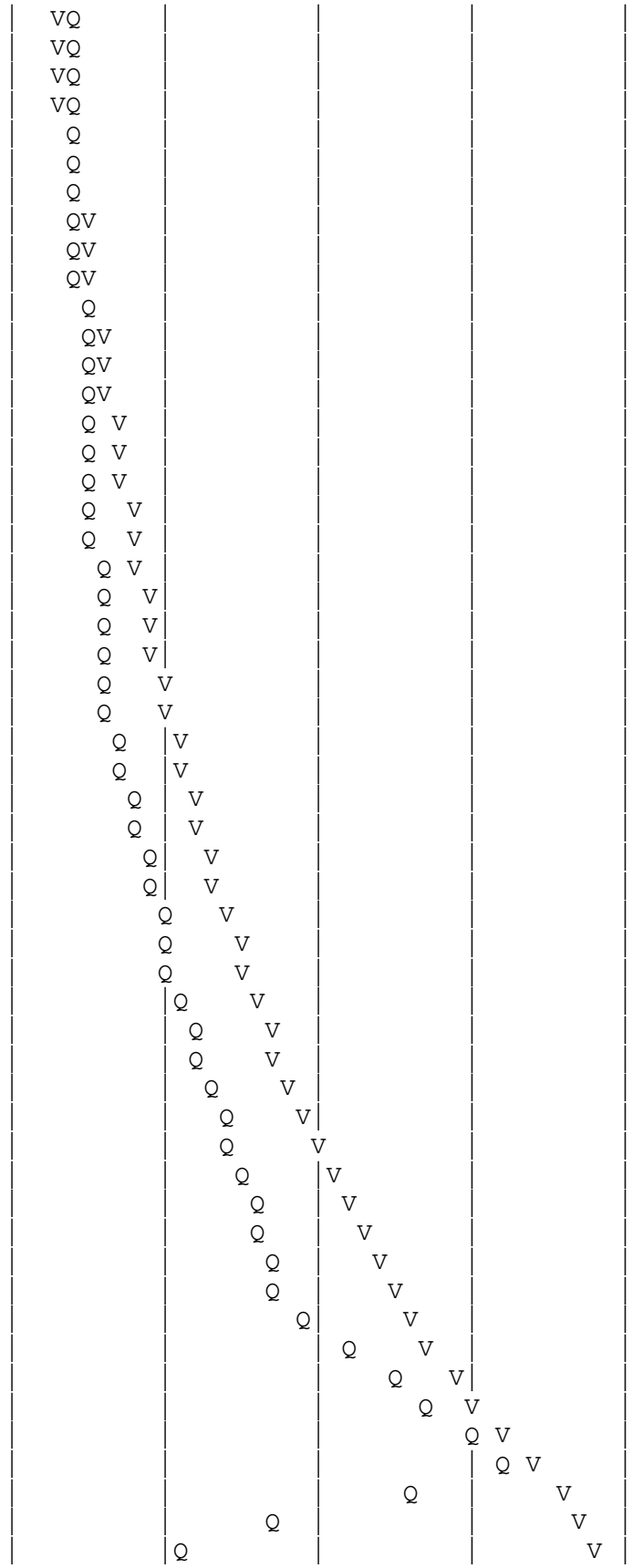
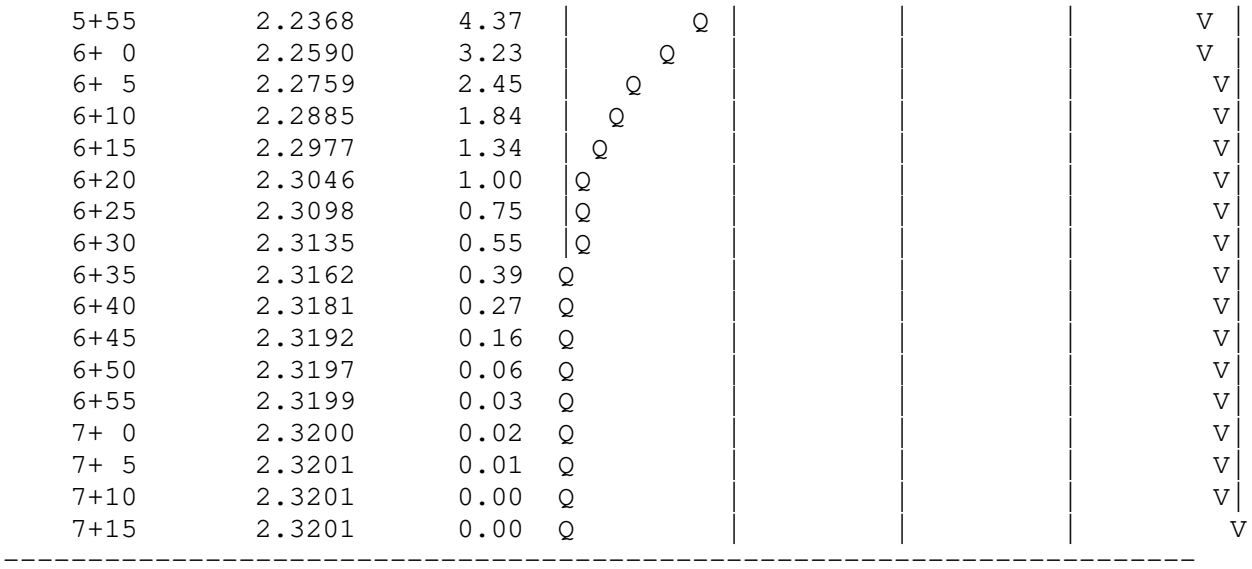
6 - H O U R S T O R M
R u n o f f H y d r o g r a p h

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	0.0005	0.08	Q				
0+10	0.0035	0.43	Q				
0+15	0.0094	0.86	VQ				
0+20	0.0170	1.11	V Q				
0+25	0.0255	1.23	V Q				
0+30	0.0348	1.34	V Q				
0+35	0.0451	1.51	V Q				
0+40	0.0566	1.66	V Q				
0+45	0.0685	1.74	V Q				
0+50	0.0809	1.79	V Q				
0+55	0.0934	1.83	V Q				
1+ 0	0.1064	1.88	V Q				
1+ 5	0.1203	2.02	V Q				
1+10	0.1350	2.14	V Q				
1+15	0.1502	2.21	V Q				
1+20	0.1657	2.24	V Q				

1+25	0.1813	2.27	
1+30	0.1970	2.28	
1+35	0.2128	2.29	
1+40	0.2287	2.30	
1+45	0.2446	2.31	
1+50	0.2605	2.32	
1+55	0.2765	2.32	
2+ 0	0.2927	2.35	
2+ 5	0.3095	2.44	
2+10	0.3265	2.47	
2+15	0.3438	2.52	
2+20	0.3617	2.61	
2+25	0.3800	2.65	
2+30	0.3983	2.67	
2+35	0.4168	2.68	
2+40	0.4353	2.69	
2+45	0.4541	2.73	
2+50	0.4737	2.85	
2+55	0.4942	2.97	
3+ 0	0.5149	3.02	
3+ 5	0.5359	3.05	
3+10	0.5572	3.09	
3+15	0.5794	3.22	
3+20	0.6024	3.34	
3+25	0.6260	3.43	
3+30	0.6508	3.60	
3+35	0.6775	3.88	
3+40	0.7062	4.17	
3+45	0.7365	4.39	
3+50	0.7682	4.61	
3+55	0.8013	4.81	
4+ 0	0.8359	5.02	
4+ 5	0.8718	5.22	
4+10	0.9094	5.45	
4+15	0.9491	5.76	
4+20	0.9911	6.11	
4+25	1.0357	6.47	
4+30	1.0826	6.81	
4+35	1.1313	7.07	
4+40	1.1819	7.34	
4+45	1.2348	7.68	
4+50	1.2900	8.02	
4+55	1.3470	8.28	
5+ 0	1.4058	8.54	
5+ 5	1.4677	8.99	
5+10	1.5359	9.91	
5+15	1.6133	11.24	
5+20	1.6997	12.54	
5+25	1.7946	13.78	
5+30	1.9002	15.33	
5+35	2.0128	16.35	
5+40	2.1052	13.41	
5+45	2.1656	8.77	
5+50	2.2067	5.97	


5+55 2.2368 4.37
6+ 0 2.2590 3.23
6+ 5 2.2759 2.45
6+10 2.2885 1.84
6+15 2.2977 1.34
6+20 2.3046 1.00
6+25 2.3098 0.75
6+30 2.3135 0.55
6+35 2.3162 0.39
6+40 2.3181 0.27
6+45 2.3192 0.16
6+50 2.3197 0.06
6+55 2.3199 0.03
7+ 0 2.3200 0.02
7+ 5 2.3201 0.01
7+10 2.3201 0.00
7+15 2.3201 0.00

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

Study date 11/01/21 File: 3684uhpq10024100.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6145

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

TCC - KNOX VIII
100 YEAR UNIT HYDROGRAPH PROPOSED
3684UHPQ100
DS

Drainage Area = 11.95(Ac.) = 0.019 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 11.95(Ac.) = 0.019 Sq. Mi.
USER Entry of lag time in hours
Lag time = 0.158 Hr.
Lag time = 9.46 Min.
25% of lag time = 2.37 Min.
40% of lag time = 3.78 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
11.95	1.70	20.31

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
11.95	5.00	59.75

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.700(In)
Area Averaged 100-Year Rainfall = 5.000(In)

Point rain (area averaged) = 5.000(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 5.000(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
11.950	69.00	0.900

Total Area Entered = 11.95(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
69.0	69.0	0.373	0.900	0.071	1.000	0.071
					Sum (F) =	0.071

Area averaged mean soil loss (F) (In/Hr) = 0.071
Minimum soil loss rate ((In/Hr)) = 0.035
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.180

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	52.843	6.678	0.804
2	0.167	105.686	28.520	3.435
3	0.250	158.529	28.458	3.427
4	0.333	211.372	12.012	1.447
5	0.417	264.215	6.554	0.789
6	0.500	317.058	4.554	0.548
7	0.583	369.901	3.274	0.394
8	0.667	422.744	2.431	0.293
9	0.750	475.587	1.781	0.215
10	0.833	528.430	1.538	0.185
11	0.917	581.272	1.171	0.141
12	1.000	634.115	0.925	0.111
13	1.083	686.958	0.701	0.084
14	1.167	739.801	0.538	0.065
15	1.250	792.644	0.528	0.064
16	1.333	845.487	0.338	0.041
		Sum = 100.000	Sum=	12.043

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)

1	0.08	0.07	0.040	0.126	0.007	0.03
2	0.17	0.07	0.040	0.125	0.007	0.03
3	0.25	0.07	0.040	0.125	0.007	0.03
4	0.33	0.10	0.060	0.124	0.011	0.05
5	0.42	0.10	0.060	0.124	0.011	0.05
6	0.50	0.10	0.060	0.123	0.011	0.05
7	0.58	0.10	0.060	0.123	0.011	0.05
8	0.67	0.10	0.060	0.122	0.011	0.05
9	0.75	0.10	0.060	0.122	0.011	0.05
10	0.83	0.13	0.080	0.121	0.014	0.07
11	0.92	0.13	0.080	0.121	0.014	0.07
12	1.00	0.13	0.080	0.120	0.014	0.07
13	1.08	0.10	0.060	0.120	0.011	0.05
14	1.17	0.10	0.060	0.119	0.011	0.05
15	1.25	0.10	0.060	0.119	0.011	0.05
16	1.33	0.10	0.060	0.118	0.011	0.05
17	1.42	0.10	0.060	0.118	0.011	0.05
18	1.50	0.10	0.060	0.117	0.011	0.05
19	1.58	0.10	0.060	0.117	0.011	0.05
20	1.67	0.10	0.060	0.117	0.011	0.05
21	1.75	0.10	0.060	0.116	0.011	0.05
22	1.83	0.13	0.080	0.116	0.014	0.07
23	1.92	0.13	0.080	0.115	0.014	0.07
24	2.00	0.13	0.080	0.115	0.014	0.07
25	2.08	0.13	0.080	0.114	0.014	0.07
26	2.17	0.13	0.080	0.114	0.014	0.07
27	2.25	0.13	0.080	0.113	0.014	0.07
28	2.33	0.13	0.080	0.113	0.014	0.07
29	2.42	0.13	0.080	0.112	0.014	0.07
30	2.50	0.13	0.080	0.112	0.014	0.07
31	2.58	0.17	0.100	0.111	0.018	0.08
32	2.67	0.17	0.100	0.111	0.018	0.08
33	2.75	0.17	0.100	0.110	0.018	0.08
34	2.83	0.17	0.100	0.110	0.018	0.08
35	2.92	0.17	0.100	0.110	0.018	0.08
36	3.00	0.17	0.100	0.109	0.018	0.08
37	3.08	0.17	0.100	0.109	0.018	0.08
38	3.17	0.17	0.100	0.108	0.018	0.08
39	3.25	0.17	0.100	0.108	0.018	0.08
40	3.33	0.17	0.100	0.107	0.018	0.08
41	3.42	0.17	0.100	0.107	0.018	0.08
42	3.50	0.17	0.100	0.106	0.018	0.08
43	3.58	0.17	0.100	0.106	0.018	0.08
44	3.67	0.17	0.100	0.106	0.018	0.08
45	3.75	0.17	0.100	0.105	0.018	0.08
46	3.83	0.20	0.120	0.105	---	0.02
47	3.92	0.20	0.120	0.104	---	0.02
48	4.00	0.20	0.120	0.104	---	0.02
49	4.08	0.20	0.120	0.103	---	0.02
50	4.17	0.20	0.120	0.103	---	0.02
51	4.25	0.20	0.120	0.102	---	0.02
52	4.33	0.23	0.140	0.102	---	0.04
53	4.42	0.23	0.140	0.102	---	0.04
54	4.50	0.23	0.140	0.101	---	0.04

55	4.58	0.23	0.140	0.101	---	0.04
56	4.67	0.23	0.140	0.100	---	0.04
57	4.75	0.23	0.140	0.100	---	0.04
58	4.83	0.27	0.160	0.099	---	0.06
59	4.92	0.27	0.160	0.099	---	0.06
60	5.00	0.27	0.160	0.099	---	0.06
61	5.08	0.20	0.120	0.098	---	0.02
62	5.17	0.20	0.120	0.098	---	0.02
63	5.25	0.20	0.120	0.097	---	0.02
64	5.33	0.23	0.140	0.097	---	0.04
65	5.42	0.23	0.140	0.096	---	0.04
66	5.50	0.23	0.140	0.096	---	0.04
67	5.58	0.27	0.160	0.096	---	0.06
68	5.67	0.27	0.160	0.095	---	0.06
69	5.75	0.27	0.160	0.095	---	0.07
70	5.83	0.27	0.160	0.094	---	0.07
71	5.92	0.27	0.160	0.094	---	0.07
72	6.00	0.27	0.160	0.093	---	0.07
73	6.08	0.30	0.180	0.093	---	0.09
74	6.17	0.30	0.180	0.093	---	0.09
75	6.25	0.30	0.180	0.092	---	0.09
76	6.33	0.30	0.180	0.092	---	0.09
77	6.42	0.30	0.180	0.091	---	0.09
78	6.50	0.30	0.180	0.091	---	0.09
79	6.58	0.33	0.200	0.091	---	0.11
80	6.67	0.33	0.200	0.090	---	0.11
81	6.75	0.33	0.200	0.090	---	0.11
82	6.83	0.33	0.200	0.089	---	0.11
83	6.92	0.33	0.200	0.089	---	0.11
84	7.00	0.33	0.200	0.089	---	0.11
85	7.08	0.33	0.200	0.088	---	0.11
86	7.17	0.33	0.200	0.088	---	0.11
87	7.25	0.33	0.200	0.087	---	0.11
88	7.33	0.37	0.220	0.087	---	0.13
89	7.42	0.37	0.220	0.087	---	0.13
90	7.50	0.37	0.220	0.086	---	0.13
91	7.58	0.40	0.240	0.086	---	0.15
92	7.67	0.40	0.240	0.085	---	0.15
93	7.75	0.40	0.240	0.085	---	0.15
94	7.83	0.43	0.260	0.085	---	0.18
95	7.92	0.43	0.260	0.084	---	0.18
96	8.00	0.43	0.260	0.084	---	0.18
97	8.08	0.50	0.300	0.083	---	0.22
98	8.17	0.50	0.300	0.083	---	0.22
99	8.25	0.50	0.300	0.083	---	0.22
100	8.33	0.50	0.300	0.082	---	0.22
101	8.42	0.50	0.300	0.082	---	0.22
102	8.50	0.50	0.300	0.082	---	0.22
103	8.58	0.53	0.320	0.081	---	0.24
104	8.67	0.53	0.320	0.081	---	0.24
105	8.75	0.53	0.320	0.080	---	0.24
106	8.83	0.57	0.340	0.080	---	0.26
107	8.92	0.57	0.340	0.080	---	0.26
108	9.00	0.57	0.340	0.079	---	0.26

109	9.08	0.63	0.380	0.079	---	0.30
110	9.17	0.63	0.380	0.078	---	0.30
111	9.25	0.63	0.380	0.078	---	0.30
112	9.33	0.67	0.400	0.078	---	0.32
113	9.42	0.67	0.400	0.077	---	0.32
114	9.50	0.67	0.400	0.077	---	0.32
115	9.58	0.70	0.420	0.077	---	0.34
116	9.67	0.70	0.420	0.076	---	0.34
117	9.75	0.70	0.420	0.076	---	0.34
118	9.83	0.73	0.440	0.076	---	0.36
119	9.92	0.73	0.440	0.075	---	0.36
120	10.00	0.73	0.440	0.075	---	0.37
121	10.08	0.50	0.300	0.074	---	0.23
122	10.17	0.50	0.300	0.074	---	0.23
123	10.25	0.50	0.300	0.074	---	0.23
124	10.33	0.50	0.300	0.073	---	0.23
125	10.42	0.50	0.300	0.073	---	0.23
126	10.50	0.50	0.300	0.073	---	0.23
127	10.58	0.67	0.400	0.072	---	0.33
128	10.67	0.67	0.400	0.072	---	0.33
129	10.75	0.67	0.400	0.072	---	0.33
130	10.83	0.67	0.400	0.071	---	0.33
131	10.92	0.67	0.400	0.071	---	0.33
132	11.00	0.67	0.400	0.071	---	0.33
133	11.08	0.63	0.380	0.070	---	0.31
134	11.17	0.63	0.380	0.070	---	0.31
135	11.25	0.63	0.380	0.069	---	0.31
136	11.33	0.63	0.380	0.069	---	0.31
137	11.42	0.63	0.380	0.069	---	0.31
138	11.50	0.63	0.380	0.068	---	0.31
139	11.58	0.57	0.340	0.068	---	0.27
140	11.67	0.57	0.340	0.068	---	0.27
141	11.75	0.57	0.340	0.067	---	0.27
142	11.83	0.60	0.360	0.067	---	0.29
143	11.92	0.60	0.360	0.067	---	0.29
144	12.00	0.60	0.360	0.066	---	0.29
145	12.08	0.83	0.500	0.066	---	0.43
146	12.17	0.83	0.500	0.066	---	0.43
147	12.25	0.83	0.500	0.065	---	0.43
148	12.33	0.87	0.520	0.065	---	0.45
149	12.42	0.87	0.520	0.065	---	0.46
150	12.50	0.87	0.520	0.064	---	0.46
151	12.58	0.93	0.560	0.064	---	0.50
152	12.67	0.93	0.560	0.064	---	0.50
153	12.75	0.93	0.560	0.064	---	0.50
154	12.83	0.97	0.580	0.063	---	0.52
155	12.92	0.97	0.580	0.063	---	0.52
156	13.00	0.97	0.580	0.063	---	0.52
157	13.08	1.13	0.680	0.062	---	0.62
158	13.17	1.13	0.680	0.062	---	0.62
159	13.25	1.13	0.680	0.062	---	0.62
160	13.33	1.13	0.680	0.061	---	0.62
161	13.42	1.13	0.680	0.061	---	0.62
162	13.50	1.13	0.680	0.061	---	0.62

163	13.58	0.77	0.460	0.060	---	0.40
164	13.67	0.77	0.460	0.060	---	0.40
165	13.75	0.77	0.460	0.060	---	0.40
166	13.83	0.77	0.460	0.059	---	0.40
167	13.92	0.77	0.460	0.059	---	0.40
168	14.00	0.77	0.460	0.059	---	0.40
169	14.08	0.90	0.540	0.059	---	0.48
170	14.17	0.90	0.540	0.058	---	0.48
171	14.25	0.90	0.540	0.058	---	0.48
172	14.33	0.87	0.520	0.058	---	0.46
173	14.42	0.87	0.520	0.057	---	0.46
174	14.50	0.87	0.520	0.057	---	0.46
175	14.58	0.87	0.520	0.057	---	0.46
176	14.67	0.87	0.520	0.056	---	0.46
177	14.75	0.87	0.520	0.056	---	0.46
178	14.83	0.83	0.500	0.056	---	0.44
179	14.92	0.83	0.500	0.056	---	0.44
180	15.00	0.83	0.500	0.055	---	0.44
181	15.08	0.80	0.480	0.055	---	0.42
182	15.17	0.80	0.480	0.055	---	0.43
183	15.25	0.80	0.480	0.054	---	0.43
184	15.33	0.77	0.460	0.054	---	0.41
185	15.42	0.77	0.460	0.054	---	0.41
186	15.50	0.77	0.460	0.054	---	0.41
187	15.58	0.63	0.380	0.053	---	0.33
188	15.67	0.63	0.380	0.053	---	0.33
189	15.75	0.63	0.380	0.053	---	0.33
190	15.83	0.63	0.380	0.053	---	0.33
191	15.92	0.63	0.380	0.052	---	0.33
192	16.00	0.63	0.380	0.052	---	0.33
193	16.08	0.13	0.080	0.052	---	0.03
194	16.17	0.13	0.080	0.051	---	0.03
195	16.25	0.13	0.080	0.051	---	0.03
196	16.33	0.13	0.080	0.051	---	0.03
197	16.42	0.13	0.080	0.051	---	0.03
198	16.50	0.13	0.080	0.050	---	0.03
199	16.58	0.10	0.060	0.050	---	0.01
200	16.67	0.10	0.060	0.050	---	0.01
201	16.75	0.10	0.060	0.050	---	0.01
202	16.83	0.10	0.060	0.049	---	0.01
203	16.92	0.10	0.060	0.049	---	0.01
204	17.00	0.10	0.060	0.049	---	0.01
205	17.08	0.17	0.100	0.049	---	0.05
206	17.17	0.17	0.100	0.048	---	0.05
207	17.25	0.17	0.100	0.048	---	0.05
208	17.33	0.17	0.100	0.048	---	0.05
209	17.42	0.17	0.100	0.048	---	0.05
210	17.50	0.17	0.100	0.047	---	0.05
211	17.58	0.17	0.100	0.047	---	0.05
212	17.67	0.17	0.100	0.047	---	0.05
213	17.75	0.17	0.100	0.047	---	0.05
214	17.83	0.13	0.080	0.047	---	0.03
215	17.92	0.13	0.080	0.046	---	0.03
216	18.00	0.13	0.080	0.046	---	0.03

217	18.08	0.13	0.080	0.046	---	0.03
218	18.17	0.13	0.080	0.046	---	0.03
219	18.25	0.13	0.080	0.045	---	0.03
220	18.33	0.13	0.080	0.045	---	0.03
221	18.42	0.13	0.080	0.045	---	0.04
222	18.50	0.13	0.080	0.045	---	0.04
223	18.58	0.10	0.060	0.045	---	0.02
224	18.67	0.10	0.060	0.044	---	0.02
225	18.75	0.10	0.060	0.044	---	0.02
226	18.83	0.07	0.040	0.044	0.007	0.03
227	18.92	0.07	0.040	0.044	0.007	0.03
228	19.00	0.07	0.040	0.043	0.007	0.03
229	19.08	0.10	0.060	0.043	---	0.02
230	19.17	0.10	0.060	0.043	---	0.02
231	19.25	0.10	0.060	0.043	---	0.02
232	19.33	0.13	0.080	0.043	---	0.04
233	19.42	0.13	0.080	0.042	---	0.04
234	19.50	0.13	0.080	0.042	---	0.04
235	19.58	0.10	0.060	0.042	---	0.02
236	19.67	0.10	0.060	0.042	---	0.02
237	19.75	0.10	0.060	0.042	---	0.02
238	19.83	0.07	0.040	0.041	0.007	0.03
239	19.92	0.07	0.040	0.041	0.007	0.03
240	20.00	0.07	0.040	0.041	0.007	0.03
241	20.08	0.10	0.060	0.041	---	0.02
242	20.17	0.10	0.060	0.041	---	0.02
243	20.25	0.10	0.060	0.041	---	0.02
244	20.33	0.10	0.060	0.040	---	0.02
245	20.42	0.10	0.060	0.040	---	0.02
246	20.50	0.10	0.060	0.040	---	0.02
247	20.58	0.10	0.060	0.040	---	0.02
248	20.67	0.10	0.060	0.040	---	0.02
249	20.75	0.10	0.060	0.040	---	0.02
250	20.83	0.07	0.040	0.039	---	0.00
251	20.92	0.07	0.040	0.039	---	0.00
252	21.00	0.07	0.040	0.039	---	0.00
253	21.08	0.10	0.060	0.039	---	0.02
254	21.17	0.10	0.060	0.039	---	0.02
255	21.25	0.10	0.060	0.039	---	0.02
256	21.33	0.07	0.040	0.038	---	0.00
257	21.42	0.07	0.040	0.038	---	0.00
258	21.50	0.07	0.040	0.038	---	0.00
259	21.58	0.10	0.060	0.038	---	0.02
260	21.67	0.10	0.060	0.038	---	0.02
261	21.75	0.10	0.060	0.038	---	0.02
262	21.83	0.07	0.040	0.038	---	0.00
263	21.92	0.07	0.040	0.038	---	0.00
264	22.00	0.07	0.040	0.037	---	0.00
265	22.08	0.10	0.060	0.037	---	0.02
266	22.17	0.10	0.060	0.037	---	0.02
267	22.25	0.10	0.060	0.037	---	0.02
268	22.33	0.07	0.040	0.037	---	0.00
269	22.42	0.07	0.040	0.037	---	0.00
270	22.50	0.07	0.040	0.037	---	0.00

271	22.58	0.07	0.040	0.037	---	0.00
272	22.67	0.07	0.040	0.036	---	0.00
273	22.75	0.07	0.040	0.036	---	0.00
274	22.83	0.07	0.040	0.036	---	0.00
275	22.92	0.07	0.040	0.036	---	0.00
276	23.00	0.07	0.040	0.036	---	0.00
277	23.08	0.07	0.040	0.036	---	0.00
278	23.17	0.07	0.040	0.036	---	0.00
279	23.25	0.07	0.040	0.036	---	0.00
280	23.33	0.07	0.040	0.036	---	0.00
281	23.42	0.07	0.040	0.036	---	0.00
282	23.50	0.07	0.040	0.036	---	0.00
283	23.58	0.07	0.040	0.036	---	0.00
284	23.67	0.07	0.040	0.036	---	0.00
285	23.75	0.07	0.040	0.036	---	0.00
286	23.83	0.07	0.040	0.035	---	0.00
287	23.92	0.07	0.040	0.035	---	0.00
288	24.00	0.07	0.040	0.035	---	0.00
	Sum =	100.0			Sum =	44.4

Flood volume = Effective rainfall 3.70(In)
times area 11.9(Ac.)/[(In)/(Ft.)] = 3.7(Ac.Ft)
Total soil loss = 1.30(In)
Total soil loss = 1.298(Ac.Ft)
Total rainfall = 5.00(In)
Flood volume = 160349.8 Cubic Feet
Total soil loss = 56537.6 Cubic Feet

Peak flow rate of this hydrograph = 7.268(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

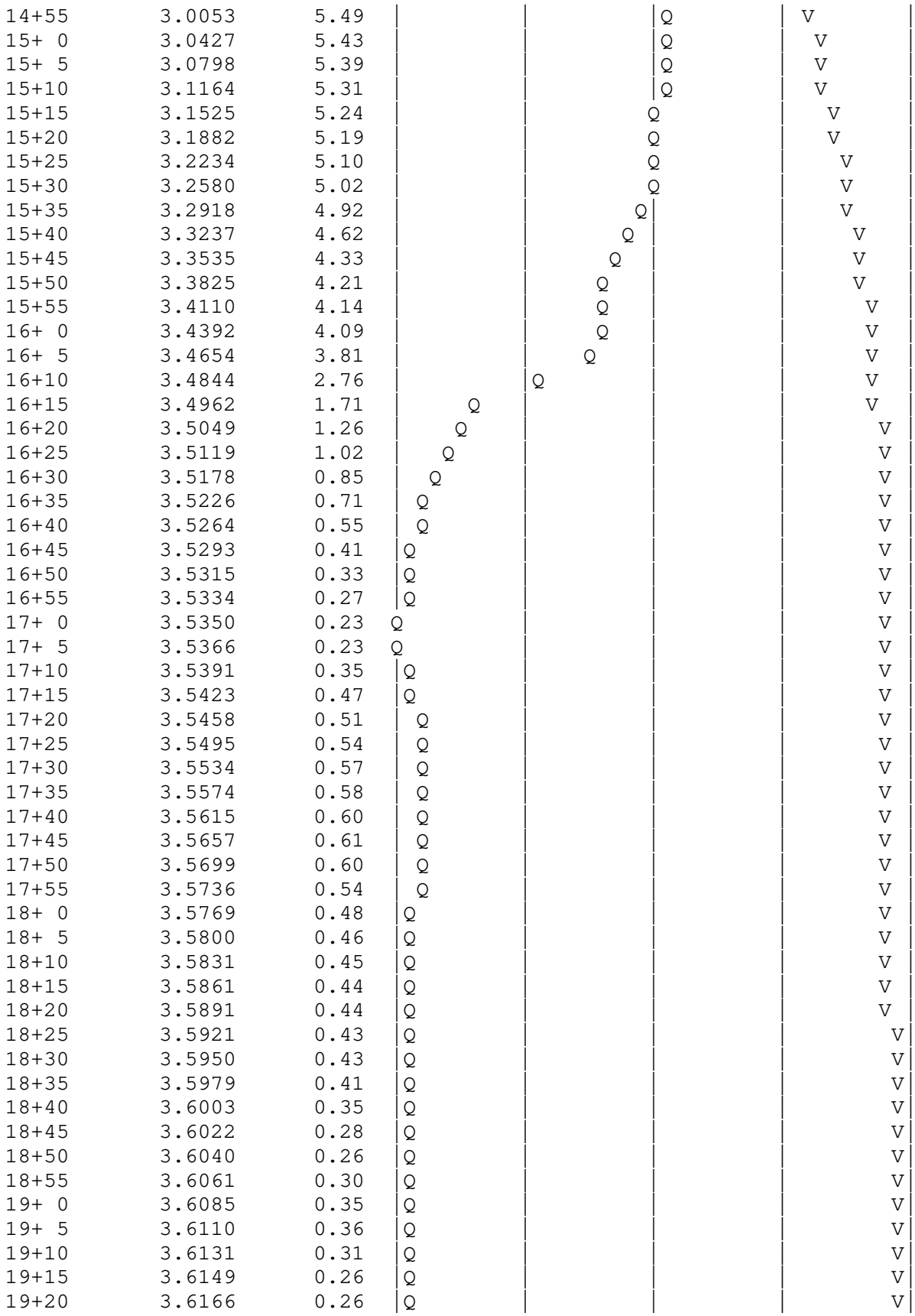
Hydrograph in 5 Minute intervals ((CFS))

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	0.0011	0.14	Q				
0+15	0.0029	0.25	VQ				
0+20	0.0050	0.31	VQ				
0+25	0.0077	0.39	VQ				
0+30	0.0110	0.47	VQ				
0+35	0.0144	0.51	V Q				
0+40	0.0181	0.53	V Q				
0+45	0.0218	0.54	V Q				
0+50	0.0258	0.57	V Q				
0+55	0.0301	0.64	V Q				
1+ 0	0.0349	0.70	V Q				
1+ 5	0.0399	0.72	V Q				
1+10	0.0445	0.68	V Q				
1+15	0.0489	0.63	V Q				
1+20	0.0531	0.62	V Q				

1+25	0.0574	0.61	V Q				
1+30	0.0615	0.61	V Q				
1+35	0.0657	0.60	V Q				
1+40	0.0698	0.60	V Q				
1+45	0.0740	0.60	V Q				
1+50	0.0782	0.61	V Q				
1+55	0.0828	0.67	V Q				
2+ 0	0.0878	0.72	V Q				
2+ 5	0.0929	0.75	VQ				
2+10	0.0981	0.76	V Q				
2+15	0.1034	0.76	V Q				
2+20	0.1087	0.77	V Q				
2+25	0.1140	0.78	V Q				
2+30	0.1194	0.78	V Q				
2+35	0.1249	0.80	V Q				
2+40	0.1307	0.85	V Q				
2+45	0.1370	0.91	V Q				
2+50	0.1435	0.94	V Q				
2+55	0.1500	0.95	V Q				
3+ 0	0.1566	0.96	V Q				
3+ 5	0.1633	0.97	V Q				
3+10	0.1700	0.97	V Q				
3+15	0.1767	0.98	V Q				
3+20	0.1835	0.98	V Q				
3+25	0.1903	0.98	VQ				
3+30	0.1970	0.98	VQ				
3+35	0.2038	0.99	VQ				
3+40	0.2106	0.99	VQ				
3+45	0.2174	0.99	VQ				
3+50	0.2238	0.93	VQ				
3+55	0.2287	0.71	Q				
4+ 0	0.2320	0.48	QV				
4+ 5	0.2347	0.39	QV				
4+10	0.2370	0.34	QV				
4+15	0.2391	0.31	QV				
4+20	0.2412	0.30	QV				
4+25	0.2436	0.35	QV				
4+30	0.2464	0.41	QV				
4+35	0.2494	0.43	QV				
4+40	0.2525	0.45	QV				
4+45	0.2556	0.45	QV				
4+50	0.2589	0.48	QV				
4+55	0.2627	0.55	Q				
5+ 0	0.2670	0.63	Q				
5+ 5	0.2714	0.63	Q				
5+10	0.2749	0.52	Q				
5+15	0.2777	0.40	Q V				
5+20	0.2802	0.37	Q V				
5+25	0.2831	0.42	Q V				
5+30	0.2864	0.48	Q V				
5+35	0.2899	0.52	QV				
5+40	0.2940	0.60	QV				
5+45	0.2987	0.67	QV				
5+50	0.3036	0.71	QV				

5+55	0.3086	0.73	QV				
6+ 0	0.3138	0.75	Q				
6+ 5	0.3192	0.78	Q				
6+10	0.3251	0.86	Q				
6+15	0.3316	0.94	Q				
6+20	0.3383	0.98	Q				
6+25	0.3452	1.00	VQ				
6+30	0.3522	1.02	VQ				
6+35	0.3594	1.05	VQ				
6+40	0.3672	1.13	VQ				
6+45	0.3756	1.21	Q				
6+50	0.3842	1.25	Q				
6+55	0.3930	1.27	VQ				
7+ 0	0.4019	1.29	VQ				
7+ 5	0.4109	1.31	VQ				
7+10	0.4199	1.32	VQ				
7+15	0.4291	1.33	VQ				
7+20	0.4384	1.35	VQ				
7+25	0.4483	1.43	VQ				
7+30	0.4586	1.51	V Q				
7+35	0.4694	1.56	VQ				
7+40	0.4807	1.65	VQ				
7+45	0.4927	1.73	VQ				
7+50	0.5050	1.79	V Q				
7+55	0.5180	1.89	V Q				
8+ 0	0.5316	1.98	V Q				
8+ 5	0.5457	2.05	V Q				
8+10	0.5610	2.22	V Q				
8+15	0.5774	2.38	V Q				
8+20	0.5943	2.46	V Q				
8+25	0.6116	2.50	V Q				
8+30	0.6290	2.54	V Q				
8+35	0.6468	2.58	V Q				
8+40	0.6652	2.67	V Q				
8+45	0.6841	2.75	V Q				
8+50	0.7035	2.81	V Q				
8+55	0.7235	2.91	V Q				
9+ 0	0.7442	3.00	V Q				
9+ 5	0.7654	3.08	V Q				
9+10	0.7877	3.24	V Q				
9+15	0.8111	3.40	V Q				
9+20	0.8352	3.49	V Q				
9+25	0.8600	3.61	V Q				
9+30	0.8856	3.71	V Q				
9+35	0.9116	3.78	V Q				
9+40	0.9384	3.88	V Q				
9+45	0.9658	3.98	V Q				
9+50	0.9937	4.05	V Q				
9+55	1.0222	4.15	V Q				
10+ 0	1.0515	4.24	V Q				
10+ 5	1.0802	4.18	V Q				
10+10	1.1059	3.73	V Q				
10+15	1.1285	3.27	VQ				
10+20	1.1498	3.09	Q				

10+25	1.1704	3.00		QV		
10+30	1.1906	2.93		QV		
10+35	1.2110	2.97		Q V		
10+40	1.2336	3.28		Q		
10+45	1.2584	3.60		VQ		
10+50	1.2840	3.72		VQ		
10+55	1.3101	3.79		VQ		
11+ 0	1.3365	3.83		VQ		
11+ 5	1.3630	3.85		VQ		
11+10	1.3892	3.81		Q		
11+15	1.4151	3.75		Q		
11+20	1.4408	3.74		QV		
11+25	1.4666	3.74		QV		
11+30	1.4924	3.75		Q V		
11+35	1.5181	3.72		Q V		
11+40	1.5428	3.59		Q V		
11+45	1.5666	3.46		Q V		
11+50	1.5901	3.42		Q V		
11+55	1.6140	3.46		Q V		
12+ 0	1.6381	3.51		Q V		
12+ 5	1.6631	3.63		Q V		
12+10	1.6915	4.12		Q V		
12+15	1.7233	4.61		Q		
12+20	1.7565	4.83		Q		
12+25	1.7911	5.01		VQ		
12+30	1.8266	5.16		VQ		
12+35	1.8630	5.28		VQ		
12+40	1.9008	5.48		VQ		
12+45	1.9398	5.66		VQ		
12+50	1.9796	5.78		V Q		
12+55	2.0202	5.91		V Q		
13+ 0	2.0617	6.02		V Q		
13+ 5	2.1042	6.17		V Q		
13+10	2.1493	6.55		V Q		
13+15	2.1971	6.93		V Q		
13+20	2.2460	7.10		V Q		
13+25	2.2956	7.20		V Q		
13+30	2.3456	7.27		V Q		
13+35	2.3948	7.14		V Q		
13+40	2.4391	6.42		QV		
13+45	2.4783	5.70		Q V		
13+50	2.5156	5.41		Q V		
13+55	2.5517	5.25		Q V		
14+ 0	2.5872	5.15		Q V		
14+ 5	2.6226	5.14		Q V		
14+10	2.6595	5.36		Q V		
14+15	2.6980	5.60		Q V		
14+20	2.7370	5.66		Q V		
14+25	2.7758	5.63		Q V		
14+30	2.8142	5.58		Q V		
14+35	2.8526	5.57		Q V		
14+40	2.8910	5.57		Q V		
14+45	2.9293	5.56		Q V		
14+50	2.9675	5.55		Q V		



19+25	3.6188	0.32	Q				V
19+30	3.6214	0.38	Q				V
19+35	3.6241	0.39	Q				V
19+40	3.6264	0.34	Q				V
19+45	3.6283	0.28	Q				V
19+50	3.6302	0.27	Q				V
19+55	3.6323	0.31	Q				V
20+ 0	3.6347	0.35	Q				V
20+ 5	3.6372	0.36	Q				V
20+10	3.6394	0.32	Q				V
20+15	3.6413	0.28	Q				V
20+20	3.6431	0.26	Q				V
20+25	3.6448	0.25	Q				V
20+30	3.6465	0.25	Q				V
20+35	3.6483	0.25	Q				V
20+40	3.6500	0.25	Q				V
20+45	3.6517	0.25	Q				V
20+50	3.6533	0.23	Q				V
20+55	3.6544	0.16	Q				V
21+ 0	3.6551	0.10	Q				V
21+ 5	3.6556	0.08	Q				V
21+10	3.6566	0.14	Q				V
21+15	3.6579	0.20	Q				V
21+20	3.6593	0.20	Q				V
21+25	3.6603	0.15	Q				V
21+30	3.6609	0.09	Q				V
21+35	3.6615	0.08	Q				V
21+40	3.6624	0.14	Q				V
21+45	3.6638	0.20	Q				V
21+50	3.6652	0.21	Q				V
21+55	3.6663	0.15	Q				V
22+ 0	3.6669	0.09	Q				V
22+ 5	3.6675	0.09	Q				V
22+10	3.6685	0.14	Q				V
22+15	3.6699	0.21	Q				V
22+20	3.6714	0.22	Q				V
22+25	3.6725	0.16	Q				V
22+30	3.6732	0.10	Q				V
22+35	3.6737	0.08	Q				V
22+40	3.6742	0.07	Q				V
22+45	3.6746	0.06	Q				V
22+50	3.6750	0.06	Q				V
22+55	3.6754	0.06	Q				V
23+ 0	3.6758	0.05	Q				V
23+ 5	3.6761	0.05	Q				V
23+10	3.6765	0.05	Q				V
23+15	3.6769	0.05	Q				V
23+20	3.6772	0.05	Q				V
23+25	3.6776	0.05	Q				V
23+30	3.6779	0.05	Q				V
23+35	3.6782	0.05	Q				V
23+40	3.6786	0.05	Q				V
23+45	3.6790	0.05	Q				V
23+50	3.6793	0.05	Q				V

23+55	3.6797	0.05	Q	|	|	|	V|
24+ 0	3.6801	0.05	Q	|	|	|	V|
24+ 5	3.6804	0.05	Q	|	|	|	V|
24+10	3.6807	0.04	Q	|	|	|	V|
24+15	3.6808	0.02	Q	|	|	|	V|
24+20	3.6809	0.01	Q	|	|	|	V|
24+25	3.6809	0.01	Q	|	|	|	V|
24+30	3.6810	0.01	Q	|	|	|	V|
24+35	3.6810	0.01	Q	|	|	|	V|
24+40	3.6811	0.00	Q	|	|	|	V|
24+45	3.6811	0.00	Q	|	|	|	V|
24+50	3.6811	0.00	Q	|	|	|	V|
24+55	3.6811	0.00	Q	|	|	|	V|
25+ 0	3.6811	0.00	Q	|	|	|	V|
25+ 5	3.6811	0.00	Q	|	|	|	V|
25+10	3.6811	0.00	Q	|	|	|	V|
25+15	3.6811	0.00	Q	|	|	|	V

Appendix D
100-year Basin Routing

TCC - KNOX VIII
Basin Routing Study Summary

Stage Storage Table

#	Depth	Elevation	Area (sf)	Incremental volume (cf)	Total Volume (cf)	Total Volume (acre-ft)	Outflow Q	Notes
1	0.00	1,548.50	14,472	0	0.0		0.00	**Bottom of the rock**
2	0.25	1,548.75	14,472	1,447	1,447	0.033	0.00	**Invert of 12" outlet pipe**
3	1.00	1,549.50	14,472	4,342	5,789	0.133	0.67	**Top of the rock / Bottom of Eng. Media**
4	2.00	1,550.50	14,472	4,342	10,130	0.233	1.16	
5	3.00	1,551.50	14,472	4,342	14,472	0.332	1.49	
6	4.00	1,552.50	14,472	4,342	18,814	0.432	1.77	**Top of Eng. Media / Bottom of BasIn**
7	4.50	1,553.00	15,396	7,467	26,281	0.603	1.89	***Outlet TG / Basin WQMP Volume**
8	5.50	1,554.00	17,243	16,320	42,600	0.978	10.40	
9	6.50	1,555.00	19,152	18,198	60,798	1.396	14.15	
10	7.50	1,556.00	21,110	20,131	80,929	1.858	17.05	**Top of the basin**

*WQMP Design Capture Volume is **24,938 CF**

**Rock = 40% voids, Eng. Media = 30% voids

System releases water after basin volume reaches to 26,281 CF

	Orifice Qout 6" pipe	Weir Qout 6" Pipe	Orifice Qout riser top 18" opening	Weir Qout riser top 18" opening	Total Qout from 6" Pipe and CMP 18" opening	Q outlet 24" RCP LINE C
1,548.50	0.00	0.00	0.00	0.00	0.00	0.00
1,549.50	0.67	0.00	0.00	0.00	0.67	0.00
1,549.75	0.82	0.00	0.00	0.00	0.82	0.00
1,550.50	1.16	0.00	0.00	0.00	1.16	15.13
1,551.50	1.49	0.00	0.00	0.00	1.49	21.39
1,552.50	1.77	0.00	0.00	0.00	1.77	23.92
1,553.00	1.89	0.00	0.00	0.00	1.89	28.30
1,554.00	2.11	0.00	8.51	15.55	10.40	28.30
1,555.00	2.32	0.00	12.03	43.98	14.15	32.09
1,556.00	2.50	0.00	14.74	80.80	17.05	35.48

Q out from bioretention basin

Basin A Routing Summary Table

100 YEAR STORM	1 Hour	3 Hour	6 Hour	24 Hour	
Existing Q Out (CFS)	**19.56**	**14.2**	**13.11**	**5.87**	From Unit Hydrograph Study for Existing Condition
Max. Q Out (CFS) after	**8.55**	**10.55**	**10.80**	**6.40**	From Routing Study
WSE	**1553.79**	**1554.04**	**1554.11**	**1553.54**	

Note:

1. Peak discharge of 10.80 CFS occurs during the 100 year 6 hour event, which is less than the existing total Q out 13.11 CFS.

2. WSE is 1554.11 for 100 year storm.

FLOOD HYDROGRAPH ROUTING PROGRAM

Study date: 11/01/21

TCC - KNOX VIII
100 YEAR STORM EVENT 1 HOUR BASIN ROUTING
3684Q100BR1
DS

Program License Serial Number 6145

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

From study/file name: 3684uhpq1001100.rte
**********HYDROGRAPH DATA**********
Number of intervals = 27
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 25.950 (CFS)
Total volume = 1.194 (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 1.000 to Point/Station 2.000
**** RETARDING BASIN ROUTING ****
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User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 27
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	Storage	Outflow	(S-O*dt/2)	(S+O*dt/2)

(Ft.)	(Ac.Ft)	(CFS)	(Ac.Ft)	(Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.250	0.030	0.001	0.030	0.030
1.000	0.140	0.670	0.138	0.142
2.000	0.240	1.160	0.236	0.244
3.000	0.340	1.490	0.335	0.345
3.500	0.520	1.640	0.514	0.526
4.500	0.900	10.400	0.864	0.936
5.500	1.330	14.150	1.281	1.379
6.500	1.800	17.050	1.741	1.859

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0 6.5 12.97 19.46 25.95	Depth (Ft.)
0.083	0.46	0.00	0.002	O	0.01
0.167	2.43	0.00	0.012	O I	0.10
0.250	4.52	0.03	0.035	O I	0.29
0.333	5.76	0.24	0.070	O I	0.52
0.417	6.69	0.49	0.110	O I	0.80
0.500	7.68	0.75	0.155	O I	1.15
0.583	8.89	1.00	0.206	O I	1.66
0.667	10.28	1.24	0.265	O I	2.25
0.750	12.25	1.47	0.333	O I	2.93
0.833	17.37	1.56	0.425	O I	3.23
0.917	25.95	2.55	0.560	O I	3.60
1.000	24.03	5.85	0.703	O I	3.98
1.083	15.31	7.88	0.791	O I	4.21
1.167	9.61	8.56	0.820	OI	4.29
1.250	5.95	8.44	0.815	I O	4.28
1.333	4.17	7.95	0.794	I O	4.22
1.417	3.09	7.31	0.766	I O	4.15
1.500	2.32	6.63	0.737	I O	4.07
1.583	1.84	5.96	0.708	I O	3.99
1.667	1.41	5.33	0.680	I O	3.92
1.750	1.09	4.73	0.654	I O	3.85
1.833	0.81	4.17	0.630	I O	3.79
1.917	0.61	3.66	0.608	I O	3.73
2.000	0.47	3.20	0.588	I O	3.68
2.083	0.28	2.79	0.570	I O	3.63
2.167	0.08	2.40	0.553	I O	3.59
2.250	0.03	2.06	0.538	I O	3.55
2.333	0.00	1.76	0.525	I O	3.51
2.417	0.00	1.63	0.513	I O	3.48
2.500	0.00	1.63	0.502	I O	3.45
2.583	0.00	1.62	0.491	IO	3.42
2.667	0.00	1.61	0.480	IO	3.39
2.750	0.00	1.60	0.469	IO	3.36
2.833	0.00	1.59	0.458	IO	3.33
2.917	0.00	1.58	0.447	IO	3.30

3.000	0.00	1.57	0.436	IO				3.27
3.083	0.00	1.56	0.425	IO				3.24
3.167	0.00	1.55	0.415	IO				3.21
3.250	0.00	1.54	0.404	IO				3.18
3.333	0.00	1.53	0.393	IO				3.15
3.417	0.00	1.53	0.383	IO				3.12
3.500	0.00	1.52	0.372	IO				3.09
3.583	0.00	1.51	0.362	IO				3.06
3.667	0.00	1.50	0.352	IO				3.03
3.750	0.00	1.49	0.341	IO				3.00
3.833	0.00	1.46	0.331	IO				2.91
3.917	0.00	1.43	0.321	IO				2.81
4.000	0.00	1.40	0.311	IO				2.71
4.083	0.00	1.36	0.302	IO				2.62
4.167	0.00	1.33	0.293	IO				2.53
4.250	0.00	1.30	0.284	IO				2.44
4.333	0.00	1.27	0.275	IO				2.35
4.417	0.00	1.25	0.266	IO				2.26
4.500	0.00	1.22	0.258	IO				2.18
4.583	0.00	1.19	0.249	IO				2.09
4.667	0.00	1.16	0.241	IO				2.01
4.750	0.00	1.13	0.233	IO				1.93
4.833	0.00	1.09	0.226	IO				1.86
4.917	0.00	1.05	0.218	IO				1.78
5.000	0.00	1.02	0.211	IO				1.71
5.083	0.00	0.98	0.204	IO				1.64
5.167	0.00	0.95	0.198	IO				1.58
5.250	0.00	0.92	0.191	IO				1.51
5.333	0.00	0.89	0.185	IO				1.45
5.417	0.00	0.86	0.179	IO				1.39
5.500	0.00	0.83	0.173	IO				1.33
5.583	0.00	0.80	0.167	O				1.27
5.667	0.00	0.78	0.162	O				1.22
5.750	0.00	0.75	0.157	O				1.17
5.833	0.00	0.73	0.152	O				1.12
5.917	0.00	0.70	0.147	O				1.07
6.000	0.00	0.68	0.142	O				1.02
6.083	0.00	0.65	0.137	O				0.98
6.167	0.00	0.63	0.133	O				0.95
6.250	0.00	0.60	0.129	O				0.92
6.333	0.00	0.58	0.125	O				0.90
6.417	0.00	0.55	0.121	O				0.87
6.500	0.00	0.53	0.117	O				0.84
6.583	0.00	0.51	0.113	O				0.82
6.667	0.00	0.49	0.110	O				0.80
6.750	0.00	0.47	0.107	O				0.77
6.833	0.00	0.45	0.104	O				0.75
6.917	0.00	0.43	0.101	O				0.73
7.000	0.00	0.41	0.098	O				0.71
7.083	0.00	0.40	0.095	O				0.69
7.167	0.00	0.38	0.092	O				0.67
7.250	0.00	0.36	0.090	O				0.66
7.333	0.00	0.35	0.087	O				0.64
7.417	0.00	0.33	0.085	O				0.62

7.500	0.00	0.32	0.083	O				0.61
7.583	0.00	0.31	0.080	O				0.59
7.667	0.00	0.29	0.078	O				0.58
7.750	0.00	0.28	0.076	O				0.57
7.833	0.00	0.27	0.074	O				0.55
7.917	0.00	0.26	0.073	O				0.54
8.000	0.00	0.25	0.071	O				0.53
8.083	0.00	0.24	0.069	O				0.52
8.167	0.00	0.23	0.068	O				0.51
8.250	0.00	0.22	0.066	O				0.50
8.333	0.00	0.21	0.065	O				0.49
8.417	0.00	0.20	0.063	O				0.48
8.500	0.00	0.19	0.062	O				0.47
8.583	0.00	0.19	0.060	O				0.46
8.667	0.00	0.18	0.059	O				0.45
8.750	0.00	0.17	0.058	O				0.44
8.833	0.00	0.16	0.057	O				0.43
8.917	0.00	0.16	0.056	O				0.43
9.000	0.00	0.15	0.055	O				0.42
9.083	0.00	0.14	0.054	O				0.41
9.167	0.00	0.14	0.053	O				0.40
9.250	0.00	0.13	0.052	O				0.40
9.333	0.00	0.13	0.051	O				0.39
9.417	0.00	0.12	0.050	O				0.39
9.500	0.00	0.12	0.049	O				0.38
9.583	0.00	0.11	0.048	O				0.38
9.667	0.00	0.11	0.048	O				0.37
9.750	0.00	0.10	0.047	O				0.36
9.833	0.00	0.10	0.046	O				0.36
9.917	0.00	0.10	0.045	O				0.36
10.000	0.00	0.09	0.045	O				0.35
10.083	0.00	0.09	0.044	O				0.35
10.167	0.00	0.08	0.044	O				0.34
10.250	0.00	0.08	0.043	O				0.34
10.333	0.00	0.08	0.043	O				0.34
10.417	0.00	0.07	0.042	O				0.33
10.500	0.00	0.07	0.042	O				0.33
10.583	0.00	0.07	0.041	O				0.33
10.667	0.00	0.07	0.041	O				0.32
10.750	0.00	0.06	0.040	O				0.32
10.833	0.00	0.06	0.040	O				0.32
10.917	0.00	0.06	0.039	O				0.31
11.000	0.00	0.06	0.039	O				0.31
11.083	0.00	0.05	0.039	O				0.31
11.167	0.00	0.05	0.038	O				0.31
11.250	0.00	0.05	0.038	O				0.30
11.333	0.00	0.05	0.038	O				0.30
11.417	0.00	0.04	0.037	O				0.30
11.500	0.00	0.04	0.037	O				0.30
11.583	0.00	0.04	0.037	O				0.30
11.667	0.00	0.04	0.036	O				0.29
11.750	0.00	0.04	0.036	O				0.29
11.833	0.00	0.04	0.036	O				0.29
11.917	0.00	0.03	0.036	O				0.29

12.000	0.00	0.03	0.035	O				0.29
12.083	0.00	0.03	0.035	O				0.28
12.167	0.00	0.03	0.035	O				0.28
12.250	0.00	0.03	0.035	O				0.28
12.333	0.00	0.03	0.034	O				0.28
12.417	0.00	0.03	0.034	O				0.28
12.500	0.00	0.03	0.034	O				0.28
12.583	0.00	0.02	0.034	O				0.28
12.667	0.00	0.02	0.034	O				0.28
12.750	0.00	0.02	0.034	O				0.27
12.833	0.00	0.02	0.033	O				0.27
12.917	0.00	0.02	0.033	O				0.27
13.000	0.00	0.02	0.033	O				0.27
13.083	0.00	0.02	0.033	O				0.27
13.167	0.00	0.02	0.033	O				0.27
13.250	0.00	0.02	0.033	O				0.27
13.333	0.00	0.02	0.033	O				0.27
13.417	0.00	0.02	0.033	O				0.27
13.500	0.00	0.02	0.032	O				0.27
13.583	0.00	0.02	0.032	O				0.27
13.667	0.00	0.01	0.032	O				0.27
13.750	0.00	0.01	0.032	O				0.26
13.833	0.00	0.01	0.032	O				0.26
13.917	0.00	0.01	0.032	O				0.26
14.000	0.00	0.01	0.032	O				0.26
14.083	0.00	0.01	0.032	O				0.26
14.167	0.00	0.01	0.032	O				0.26
14.250	0.00	0.01	0.032	O				0.26
14.333	0.00	0.01	0.032	O				0.26
14.417	0.00	0.01	0.031	O				0.26
14.500	0.00	0.01	0.031	O				0.26
14.583	0.00	0.01	0.031	O				0.26
14.667	0.00	0.01	0.031	O				0.26
14.750	0.00	0.01	0.031	O				0.26
14.833	0.00	0.01	0.031	O				0.26
14.917	0.00	0.01	0.031	O				0.26
15.000	0.00	0.01	0.031	O				0.26
15.083	0.00	0.01	0.031	O				0.26
15.167	0.00	0.01	0.031	O				0.26
15.250	0.00	0.01	0.031	O				0.26
15.333	0.00	0.01	0.031	O				0.26
15.417	0.00	0.01	0.031	O				0.26
15.500	0.00	0.01	0.031	O				0.26
15.583	0.00	0.01	0.031	O				0.26
15.667	0.00	0.01	0.031	O				0.25
15.750	0.00	0.01	0.031	O				0.25
15.833	0.00	0.00	0.031	O				0.25
15.917	0.00	0.00	0.031	O				0.25
16.000	0.00	0.00	0.031	O				0.25
16.083	0.00	0.00	0.031	O				0.25
16.167	0.00	0.00	0.031	O				0.25
16.250	0.00	0.00	0.030	O				0.25
16.333	0.00	0.00	0.030	O				0.25
16.417	0.00	0.00	0.030	O				0.25

16.500	0.00	0.00	0.030	O	|	|	|	|	0.25
16.583	0.00	0.00	0.030	O	|	|	|	|	0.25
16.667	0.00	0.00	0.030	O	|	|	|	|	0.25
16.750	0.00	0.00	0.030	O	|	|	|	|	0.25
16.833	0.00	0.00	0.030	O	|	|	|	|	0.25
16.917	0.00	0.00	0.030	O	|	|	|	|	0.25
17.000	0.00	0.00	0.030	O	|	|	|	|	0.25
17.083	0.00	0.00	0.030	O	|	|	|	|	0.25
17.167	0.00	0.00	0.030	O	|	|	|	|	0.25
17.250	0.00	0.00	0.030	O	|	|	|	|	0.25
17.333	0.00	0.00	0.030	O	|	|	|	|	0.25
17.417	0.00	0.00	0.030	O	|	|	|	|	0.25
17.500	0.00	0.00	0.030	O	|	|	|	|	0.25
17.583	0.00	0.00	0.030	O	|	|	|	|	0.25
17.667	0.00	0.00	0.030	O	|	|	|	|	0.25
17.750	0.00	0.00	0.030	O	|	|	|	|	0.25
17.833	0.00	0.00	0.030	O	|	|	|	|	0.25
17.917	0.00	0.00	0.030	O	|	|	|	|	0.25
18.000	0.00	0.00	0.030	O	|	|	|	|	0.25
18.083	0.00	0.00	0.030	O	|	|	|	|	0.25
18.167	0.00	0.00	0.030	O	|	|	|	|	0.25
18.250	0.00	0.00	0.030	O	|	|	|	|	0.25
18.333	0.00	0.00	0.030	O	|	|	|	|	0.25
18.417	0.00	0.00	0.030	O	|	|	|	|	0.25
18.500	0.00	0.00	0.030	O	|	|	|	|	0.25
18.583	0.00	0.00	0.030	O	|	|	|	|	0.25
18.667	0.00	0.00	0.030	O	|	|	|	|	0.25
18.750	0.00	0.00	0.030	O	|	|	|	|	0.25
18.833	0.00	0.00	0.030	O	|	|	|	|	0.25
18.917	0.00	0.00	0.030	O	|	|	|	|	0.25
19.000	0.00	0.00	0.030	O	|	|	|	|	0.25

Remaining water in basin = 0.03 (Ac.Ft)

**********HYDROGRAPH DATA**********

Number of intervals = 228
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 8.557 (CFS)
Total volume = 1.164 (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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FLOOD HYDROGRAPH ROUTING PROGRAM

Study date: 11/01/21

TCC - KNOX VIII
100 YEAR STORM EVENT 3 HOUR BASIN ROUTING
3684Q100BR3
DS

Program License Serial Number 6145

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

From study/file name: 3684UHPQ1003100.rte
**********HYDROGRAPH DATA**********
Number of intervals = 51
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 17.520 (CFS)
Total volume = 1.730 (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 1.000 to Point/Station 2.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 51
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	Storage	Outflow	(S-O*dt/2)	(S+O*dt/2)

(Ft.)	(Ac.Ft)	(CFS)	(Ac.Ft)	(Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.250	0.030	0.001	0.030	0.030
1.000	0.140	0.670	0.138	0.142
2.000	0.240	1.160	0.236	0.244
3.000	0.340	1.490	0.335	0.345
3.500	0.520	1.640	0.514	0.526
4.500	0.900	10.400	0.864	0.936
5.500	1.330	14.150	1.281	1.379
6.500	1.800	17.050	1.741	1.859

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0 4.4 8.76 13.14 17.52	Depth (Ft.)
0.083	0.19	0.00	0.001	O | | | | |	0.01
0.167	0.99	0.00	0.005	OI | | | | |	0.04
0.250	1.75	0.00	0.014	O I | | | | |	0.12
0.333	2.00	0.00	0.027	O I | | | | |	0.23
0.417	2.35	0.07	0.042	O I | | | | |	0.33
0.500	2.79	0.18	0.059	O I | | | | |	0.45
0.583	3.16	0.29	0.078	O I | | | | |	0.57
0.667	3.34	0.41	0.097	O I | | | | |	0.71
0.750	3.52	0.54	0.118	O I | | | | |	0.85
0.833	3.73	0.66	0.139	|O I | | | | |	0.99
0.917	3.64	0.76	0.159	|O I | | | | |	1.19
1.000	3.60	0.86	0.178	|O I | | | | |	1.38
1.083	3.87	0.95	0.198	|O I| | | | |	1.58
1.167	4.38	1.06	0.219	|O I| | | | |	1.79
1.250	4.79	1.17	0.243	| O I | | | |	2.03
1.333	4.93	1.25	0.268	| O |I | | | |	2.28
1.417	4.99	1.34	0.294	| O |I | | | |	2.54
1.500	5.40	1.42	0.320	| O |I | | | |	2.80
1.583	5.89	1.50	0.349	| O | I | | | |	3.02
1.667	5.99	1.52	0.379	| O | I | | | |	3.11
1.750	6.25	1.55	0.411	| O | I | | | |	3.20
1.833	6.94	1.58	0.446	| O | I | | | |	3.29
1.917	7.34	1.61	0.484	| O | I | | | |	3.40
2.000	7.31	1.70	0.523	| O | I | | | |	3.51
2.083	7.34	2.53	0.559	| O | I | | | |	3.60
2.167	7.72	3.27	0.591	| O | I | | | |	3.69
2.250	8.89	4.01	0.623	| O| I | | |	3.77
2.333	10.21	4.82	0.658	| O | I | | |	3.86
2.417	10.68	5.65	0.694	| | O | I | | |	3.96
2.500	12.73	6.54	0.733	| | O | I | |	4.06
2.583	15.76	7.67	0.782	| | O | | I |	4.19
2.667	17.52	8.99	0.839	| | O | | I	4.34
2.750	16.40	10.17	0.890	| | | O | I |	4.47
2.833	12.19	10.55	0.917	| | | O I | |	4.54
2.917	8.65	10.54	0.916	| | I| O | |	4.54

3.000	6.90	10.35	0.898	|	| I	| O	|	4.49
3.083	5.07	9.71	0.870	|	|I	|O	|	4.42
3.167	3.34	8.90	0.835	| I	|	O |	|	4.33
3.250	2.33	8.01	0.796	| I	|	O |	|	4.23
3.333	1.74	7.13	0.758	| I	|	O |	|	4.13
3.417	1.33	6.31	0.722	| I	| O	|	|	4.03
3.500	1.00	5.55	0.690	|I	| O	|	|	3.95
3.583	0.75	4.86	0.660	|I	O |	|	|	3.87
3.667	0.57	4.24	0.633	|I	O |	|	|	3.80
3.750	0.40	3.69	0.609	I	O |	|	|	3.73
3.833	0.26	3.20	0.588	I	O |	|	|	3.68
3.917	0.14	2.76	0.568	I	O |	|	|	3.63
4.000	0.07	2.37	0.552	I	O |	|	|	3.58
4.083	0.04	2.03	0.537	I	O |	|	|	3.54
4.167	0.02	1.73	0.524	I	O |	|	|	3.51
4.250	0.00	1.63	0.513	I O	|	|	|	3.48
4.333	0.00	1.62	0.501	I O	|	|	|	3.45
4.417	0.00	1.62	0.490	I O	|	|	|	3.42
4.500	0.00	1.61	0.479	I O	|	|	|	3.39
4.583	0.00	1.60	0.468	I O	|	|	|	3.36
4.667	0.00	1.59	0.457	I O	|	|	|	3.33
4.750	0.00	1.58	0.446	I O	|	|	|	3.29
4.833	0.00	1.57	0.435	I O	|	|	|	3.26
4.917	0.00	1.56	0.425	I O	|	|	|	3.23
5.000	0.00	1.55	0.414	I O	|	|	|	3.21
5.083	0.00	1.54	0.403	I O	|	|	|	3.18
5.167	0.00	1.53	0.393	I O	|	|	|	3.15
5.250	0.00	1.53	0.382	I O	|	|	|	3.12
5.333	0.00	1.52	0.372	I O	|	|	|	3.09
5.417	0.00	1.51	0.361	I O	|	|	|	3.06
5.500	0.00	1.50	0.351	I O	|	|	|	3.03
5.583	0.00	1.49	0.341	I O	|	|	|	3.00
5.667	0.00	1.46	0.330	I O	|	|	|	2.90
5.750	0.00	1.43	0.320	I O	|	|	|	2.80
5.833	0.00	1.39	0.311	I O	|	|	|	2.71
5.917	0.00	1.36	0.301	I O	|	|	|	2.61
6.000	0.00	1.33	0.292	I O	|	|	|	2.52
6.083	0.00	1.30	0.283	I O	|	|	|	2.43
6.167	0.00	1.27	0.274	I O	|	|	|	2.34
6.250	0.00	1.24	0.265	I O	|	|	|	2.25
6.333	0.00	1.22	0.257	I O	|	|	|	2.17
6.417	0.00	1.19	0.249	I O	|	|	|	2.09
6.500	0.00	1.16	0.241	I O	|	|	|	2.01
6.583	0.00	1.12	0.233	I O	|	|	|	1.93
6.667	0.00	1.09	0.225	IO	|	|	|	1.85
6.750	0.00	1.05	0.218	IO	|	|	|	1.78
6.833	0.00	1.02	0.211	IO	|	|	|	1.71
6.917	0.00	0.98	0.204	IO	|	|	|	1.64
7.000	0.00	0.95	0.197	IO	|	|	|	1.57
7.083	0.00	0.92	0.191	IO	|	|	|	1.51
7.167	0.00	0.89	0.184	IO	|	|	|	1.44
7.250	0.00	0.86	0.178	IO	|	|	|	1.38
7.333	0.00	0.83	0.173	IO	|	|	|	1.33
7.417	0.00	0.80	0.167	IO	|	|	|	1.27

7.500	0.00	0.78	0.162	IO				1.22
7.583	0.00	0.75	0.156	IO				1.16
7.667	0.00	0.72	0.151	IO				1.11
7.750	0.00	0.70	0.146	IO				1.06
7.833	0.00	0.68	0.142	IO				1.02
7.917	0.00	0.65	0.137	IO				0.98
8.000	0.00	0.62	0.133	IO				0.95
8.083	0.00	0.60	0.128	IO				0.92
8.167	0.00	0.57	0.124	IO				0.89
8.250	0.00	0.55	0.120	IO				0.87
8.333	0.00	0.53	0.117	O				0.84
8.417	0.00	0.51	0.113	O				0.82
8.500	0.00	0.49	0.110	O				0.79
8.583	0.00	0.47	0.106	O				0.77
8.667	0.00	0.45	0.103	O				0.75
8.750	0.00	0.43	0.100	O				0.73
8.833	0.00	0.41	0.097	O				0.71
8.917	0.00	0.39	0.095	O				0.69
9.000	0.00	0.38	0.092	O				0.67
9.083	0.00	0.36	0.089	O				0.66
9.167	0.00	0.35	0.087	O				0.64
9.250	0.00	0.33	0.085	O				0.62
9.333	0.00	0.32	0.082	O				0.61
9.417	0.00	0.31	0.080	O				0.59
9.500	0.00	0.29	0.078	O				0.58
9.583	0.00	0.28	0.076	O				0.56
9.667	0.00	0.27	0.074	O				0.55
9.750	0.00	0.26	0.072	O				0.54
9.833	0.00	0.25	0.071	O				0.53
9.917	0.00	0.24	0.069	O				0.52
10.000	0.00	0.23	0.067	O				0.51
10.083	0.00	0.22	0.066	O				0.49
10.167	0.00	0.21	0.064	O				0.48
10.250	0.00	0.20	0.063	O				0.47
10.333	0.00	0.19	0.062	O				0.47
10.417	0.00	0.19	0.060	O				0.46
10.500	0.00	0.18	0.059	O				0.45
10.583	0.00	0.17	0.058	O				0.44
10.667	0.00	0.16	0.057	O				0.43
10.750	0.00	0.16	0.056	O				0.42
10.833	0.00	0.15	0.055	O				0.42
10.917	0.00	0.14	0.054	O				0.41
11.000	0.00	0.14	0.053	O				0.40
11.083	0.00	0.13	0.052	O				0.40
11.167	0.00	0.13	0.051	O				0.39
11.250	0.00	0.12	0.050	O				0.39
11.333	0.00	0.12	0.049	O				0.38
11.417	0.00	0.11	0.048	O				0.37
11.500	0.00	0.11	0.048	O				0.37
11.583	0.00	0.10	0.047	O				0.36
11.667	0.00	0.10	0.046	O				0.36
11.750	0.00	0.09	0.045	O				0.36
11.833	0.00	0.09	0.045	O				0.35
11.917	0.00	0.09	0.044	O				0.35

12.000	0.00	0.08	0.044	O				0.34
12.083	0.00	0.08	0.043	O				0.34
12.167	0.00	0.08	0.042	O				0.34
12.250	0.00	0.07	0.042	O				0.33
12.333	0.00	0.07	0.041	O				0.33
12.417	0.00	0.07	0.041	O				0.32
12.500	0.00	0.07	0.041	O				0.32
12.583	0.00	0.06	0.040	O				0.32
12.667	0.00	0.06	0.040	O				0.32
12.750	0.00	0.06	0.039	O				0.31
12.833	0.00	0.06	0.039	O				0.31
12.917	0.00	0.05	0.039	O				0.31
13.000	0.00	0.05	0.038	O				0.31
13.083	0.00	0.05	0.038	O				0.30
13.167	0.00	0.05	0.037	O				0.30
13.250	0.00	0.04	0.037	O				0.30
13.333	0.00	0.04	0.037	O				0.30
13.417	0.00	0.04	0.037	O				0.29
13.500	0.00	0.04	0.036	O				0.29
13.583	0.00	0.04	0.036	O				0.29
13.667	0.00	0.04	0.036	O				0.29
13.750	0.00	0.03	0.036	O				0.29
13.833	0.00	0.03	0.035	O				0.29
13.917	0.00	0.03	0.035	O				0.28
14.000	0.00	0.03	0.035	O				0.28
14.083	0.00	0.03	0.035	O				0.28
14.167	0.00	0.03	0.034	O				0.28
14.250	0.00	0.03	0.034	O				0.28
14.333	0.00	0.03	0.034	O				0.28
14.417	0.00	0.02	0.034	O				0.28
14.500	0.00	0.02	0.034	O				0.28
14.583	0.00	0.02	0.034	O				0.27
14.667	0.00	0.02	0.033	O				0.27
14.750	0.00	0.02	0.033	O				0.27
14.833	0.00	0.02	0.033	O				0.27
14.917	0.00	0.02	0.033	O				0.27
15.000	0.00	0.02	0.033	O				0.27
15.083	0.00	0.02	0.033	O				0.27
15.167	0.00	0.02	0.033	O				0.27
15.250	0.00	0.02	0.033	O				0.27
15.333	0.00	0.02	0.032	O				0.27
15.417	0.00	0.02	0.032	O				0.27
15.500	0.00	0.01	0.032	O				0.27
15.583	0.00	0.01	0.032	O				0.26
15.667	0.00	0.01	0.032	O				0.26
15.750	0.00	0.01	0.032	O				0.26
15.833	0.00	0.01	0.032	O				0.26
15.917	0.00	0.01	0.032	O				0.26
16.000	0.00	0.01	0.032	O				0.26
16.083	0.00	0.01	0.032	O				0.26
16.167	0.00	0.01	0.032	O				0.26
16.250	0.00	0.01	0.031	O				0.26
16.333	0.00	0.01	0.031	O				0.26
16.417	0.00	0.01	0.031	O				0.26

16.500	0.00	0.01	0.031	O				0.26
16.583	0.00	0.01	0.031	O				0.26
16.667	0.00	0.01	0.031	O				0.26
16.750	0.00	0.01	0.031	O				0.26
16.833	0.00	0.01	0.031	O				0.26
16.917	0.00	0.01	0.031	O				0.26
17.000	0.00	0.01	0.031	O				0.26
17.083	0.00	0.01	0.031	O				0.26
17.167	0.00	0.01	0.031	O				0.26
17.250	0.00	0.01	0.031	O				0.26
17.333	0.00	0.01	0.031	O				0.26
17.417	0.00	0.01	0.031	O				0.26
17.500	0.00	0.01	0.031	O				0.25
17.583	0.00	0.01	0.031	O				0.25
17.667	0.00	0.00	0.031	O				0.25
17.750	0.00	0.00	0.031	O				0.25
17.833	0.00	0.00	0.031	O				0.25
17.917	0.00	0.00	0.031	O				0.25
18.000	0.00	0.00	0.031	O				0.25
18.083	0.00	0.00	0.030	O				0.25
18.167	0.00	0.00	0.030	O				0.25
18.250	0.00	0.00	0.030	O				0.25
18.333	0.00	0.00	0.030	O				0.25
18.417	0.00	0.00	0.030	O				0.25
18.500	0.00	0.00	0.030	O				0.25
18.583	0.00	0.00	0.030	O				0.25
18.667	0.00	0.00	0.030	O				0.25
18.750	0.00	0.00	0.030	O				0.25
18.833	0.00	0.00	0.030	O				0.25
18.917	0.00	0.00	0.030	O				0.25
19.000	0.00	0.00	0.030	O				0.25
19.083	0.00	0.00	0.030	O				0.25
19.167	0.00	0.00	0.030	O				0.25
19.250	0.00	0.00	0.030	O				0.25
19.333	0.00	0.00	0.030	O				0.25
19.417	0.00	0.00	0.030	O				0.25
19.500	0.00	0.00	0.030	O				0.25
19.583	0.00	0.00	0.030	O				0.25
19.667	0.00	0.00	0.030	O				0.25
19.750	0.00	0.00	0.030	O				0.25
19.833	0.00	0.00	0.030	O				0.25
19.917	0.00	0.00	0.030	O				0.25
20.000	0.00	0.00	0.030	O				0.25
20.083	0.00	0.00	0.030	O				0.25
20.167	0.00	0.00	0.030	O				0.25
20.250	0.00	0.00	0.030	O				0.25
20.333	0.00	0.00	0.030	O				0.25
20.417	0.00	0.00	0.030	O				0.25
20.500	0.00	0.00	0.030	O				0.25
20.583	0.00	0.00	0.030	O				0.25
20.667	0.00	0.00	0.030	O				0.25
20.750	0.00	0.00	0.030	O				0.25
20.833	0.00	0.00	0.030	O				0.25

Remaining water in basin =   0.03 (Ac.Ft)

**********HYDROGRAPH DATA**********

Number of intervals = 250
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 10.548 (CFS)
Total volume = 1.700 (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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FLOOD HYDROGRAPH ROUTING PROGRAM

Study date: 11/01/21

TCC - KNOX VIII
100 YEAR STORM EVENT 6 HOUR BASIN ROUTING
3684Q100BR6
DS

Program License Serial Number 6145

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

From study/file name: 3684UHPQ1006100.rte
**********HYDROGRAPH DATA**********
Number of intervals = 87
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 16.346 (CFS)
Total volume = 2.320 (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 1.000 to Point/Station 2.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 87
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	Storage	Outflow	(S-O*dt/2)	(S+O*dt/2)

(Ft.)	(Ac.Ft)	(CFS)	(Ac.Ft)	(Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.250	0.030	0.001	0.030	0.030
1.000	0.140	0.670	0.138	0.142
2.000	0.240	1.160	0.236	0.244
3.000	0.340	1.490	0.335	0.345
3.500	0.520	1.640	0.514	0.526
4.500	0.900	10.400	0.864	0.936
5.500	1.330	14.150	1.281	1.379
6.500	1.800	17.050	1.741	1.859

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0 4.1 8.17 12.26 16.35	Depth (Ft.)
0.083	0.08	0.00	0.000	O	0.00
0.167	0.43	0.00	0.002	O	0.02
0.250	0.86	0.00	0.006	OI	0.05
0.333	1.11	0.00	0.013	O I	0.11
0.417	1.23	0.00	0.021	O I	0.18
0.500	1.34	0.00	0.030	O I	0.25
0.583	1.51	0.06	0.040	O I	0.32
0.667	1.66	0.12	0.050	O I	0.39
0.750	1.74	0.19	0.061	O I	0.46
0.833	1.79	0.25	0.071	O I	0.53
0.917	1.83	0.32	0.082	O I	0.60
1.000	1.88	0.38	0.092	O I	0.67
1.083	2.02	0.44	0.103	O I	0.75
1.167	2.14	0.51	0.114	O I	0.82
1.250	2.21	0.58	0.125	O I	0.90
1.333	2.24	0.65	0.136	O I	0.97
1.417	2.27	0.70	0.147	O I	1.07
1.500	2.28	0.76	0.158	O I	1.18
1.583	2.29	0.81	0.168	O I	1.28
1.667	2.30	0.86	0.178	O I	1.38
1.750	2.31	0.90	0.188	O I	1.48
1.833	2.32	0.95	0.197	O I	1.57
1.917	2.32	1.00	0.207	O I	1.67
2.000	2.35	1.04	0.216	O I	1.76
2.083	2.44	1.09	0.225	O I	1.85
2.167	2.47	1.13	0.234	O I	1.94
2.250	2.52	1.17	0.243	O I	2.03
2.333	2.61	1.20	0.253	O I	2.13
2.417	2.65	1.23	0.263	O I	2.23
2.500	2.67	1.27	0.272	O I	2.32
2.583	2.68	1.30	0.282	O I	2.42
2.667	2.69	1.33	0.291	O I	2.51
2.750	2.73	1.36	0.301	O I	2.61
2.833	2.85	1.39	0.310	O I	2.70
2.917	2.97	1.43	0.321	O I	2.81

3.000	3.02	1.46	0.331		2.91
3.083	3.05	1.49	0.342		3.01
3.167	3.09	1.50	0.353		3.04
3.250	3.22	1.51	0.364		3.07
3.333	3.34	1.52	0.376		3.10
3.417	3.43	1.53	0.389		3.14
3.500	3.60	1.54	0.403		3.17
3.583	3.88	1.55	0.418		3.22
3.667	4.17	1.57	0.435		3.26
3.750	4.39	1.58	0.454		3.32
3.833	4.61	1.60	0.474		3.37
3.917	4.81	1.62	0.495		3.43
4.000	5.02	1.64	0.518		3.49
4.083	5.22	2.10	0.540		3.55
4.167	5.45	2.57	0.561		3.61
4.250	5.76	3.02	0.580		3.66
4.333	6.11	3.45	0.598		3.71
4.417	6.47	3.87	0.617		3.75
4.500	6.81	4.27	0.634		3.80
4.583	7.07	4.67	0.651		3.85
4.667	7.34	5.04	0.668		3.89
4.750	7.68	5.40	0.683		3.93
4.833	8.02	5.76	0.699		3.97
4.917	8.28	6.11	0.714		4.01
5.000	8.54	6.45	0.729		4.05
5.083	8.99	6.79	0.743		4.09
5.167	9.91	7.18	0.760		4.13
5.250	11.24	7.68	0.782		4.19
5.333	12.54	8.30	0.809		4.26
5.417	13.78	9.02	0.840		4.34
5.500	15.33	9.83	0.875		4.44
5.583	16.35	10.52	0.914		4.53
5.667	13.41	10.78	0.943		4.60
5.750	8.77	10.80	0.945		4.61
5.833	5.97	10.60	0.923		4.55
5.917	4.37	10.10	0.887		4.47
6.000	3.23	9.17	0.847		4.36
6.083	2.45	8.24	0.806		4.25
6.167	1.84	7.34	0.767		4.15
6.250	1.34	6.50	0.731		4.05
6.333	1.00	5.71	0.697		3.96
6.417	0.75	5.00	0.666		3.88
6.500	0.55	4.36	0.638		3.81
6.583	0.39	3.79	0.613		3.75
6.667	0.27	3.28	0.591		3.69
6.750	0.16	2.83	0.572		3.64
6.833	0.06	2.43	0.554		3.59
6.917	0.03	2.08	0.539		3.55
7.000	0.02	1.78	0.526		3.52
7.083	0.01	1.64	0.514		3.48
7.167	0.00	1.63	0.503		3.45
7.250	0.00	1.62	0.492		3.42
7.333	0.00	1.61	0.481		3.39
7.417	0.00	1.60	0.470		3.36

7.500	0.00	1.59	0.459	I O				3.33
7.583	0.00	1.58	0.448	I O				3.30
7.667	0.00	1.57	0.437	I O				3.27
7.750	0.00	1.56	0.426	I O				3.24
7.833	0.00	1.55	0.416	I O				3.21
7.917	0.00	1.54	0.405	I O				3.18
8.000	0.00	1.54	0.394	I O				3.15
8.083	0.00	1.53	0.384	I O				3.12
8.167	0.00	1.52	0.373	I O				3.09
8.250	0.00	1.51	0.363	I O				3.06
8.333	0.00	1.50	0.352	I O				3.03
8.417	0.00	1.49	0.342	I O				3.01
8.500	0.00	1.46	0.332	I O				2.92
8.583	0.00	1.43	0.322	I O				2.82
8.667	0.00	1.40	0.312	I O				2.72
8.750	0.00	1.37	0.303	I O				2.63
8.833	0.00	1.34	0.293	I O				2.53
8.917	0.00	1.31	0.284	I O				2.44
9.000	0.00	1.28	0.275	I O				2.35
9.083	0.00	1.25	0.267	I O				2.27
9.167	0.00	1.22	0.258	I O				2.18
9.250	0.00	1.19	0.250	I O				2.10
9.333	0.00	1.17	0.242	I O				2.02
9.417	0.00	1.13	0.234	I O				1.94
9.500	0.00	1.09	0.226	I O				1.86
9.583	0.00	1.06	0.219	I O				1.79
9.667	0.00	1.02	0.212	IO				1.72
9.750	0.00	0.99	0.205	IO				1.65
9.833	0.00	0.95	0.198	IO				1.58
9.917	0.00	0.92	0.192	IO				1.52
10.000	0.00	0.89	0.185	IO				1.45
10.083	0.00	0.86	0.179	IO				1.39
10.167	0.00	0.83	0.174	IO				1.34
10.250	0.00	0.81	0.168	IO				1.28
10.333	0.00	0.78	0.162	IO				1.22
10.417	0.00	0.75	0.157	IO				1.17
10.500	0.00	0.73	0.152	IO				1.12
10.583	0.00	0.70	0.147	IO				1.07
10.667	0.00	0.68	0.142	IO				1.02
10.750	0.00	0.66	0.138	IO				0.98
10.833	0.00	0.63	0.133	IO				0.95
10.917	0.00	0.60	0.129	IO				0.93
11.000	0.00	0.58	0.125	IO				0.90
11.083	0.00	0.55	0.121	IO				0.87
11.167	0.00	0.53	0.117	IO				0.85
11.250	0.00	0.51	0.114	O				0.82
11.333	0.00	0.49	0.110	O				0.80
11.417	0.00	0.47	0.107	O				0.77
11.500	0.00	0.45	0.104	O				0.75
11.583	0.00	0.43	0.101	O				0.73
11.667	0.00	0.41	0.098	O				0.71
11.750	0.00	0.40	0.095	O				0.69
11.833	0.00	0.38	0.092	O				0.68
11.917	0.00	0.36	0.090	O				0.66

12.000	0.00	0.35	0.087	O	|	|	|	0.64
12.083	0.00	0.34	0.085	O	|	|	|	0.63
12.167	0.00	0.32	0.083	O	|	|	|	0.61
12.250	0.00	0.31	0.081	O	|	|	|	0.59
12.333	0.00	0.30	0.078	O	|	|	|	0.58
12.417	0.00	0.28	0.077	O	|	|	|	0.57
12.500	0.00	0.27	0.075	O	|	|	|	0.55
12.583	0.00	0.26	0.073	O	|	|	|	0.54
12.667	0.00	0.25	0.071	O	|	|	|	0.53
12.750	0.00	0.24	0.069	O	|	|	|	0.52
12.833	0.00	0.23	0.068	O	|	|	|	0.51
12.917	0.00	0.22	0.066	O	|	|	|	0.50
13.000	0.00	0.21	0.065	O	|	|	|	0.49
13.083	0.00	0.20	0.063	O	|	|	|	0.48
13.167	0.00	0.19	0.062	O	|	|	|	0.47
13.250	0.00	0.19	0.061	O	|	|	|	0.46
13.333	0.00	0.18	0.059	O	|	|	|	0.45
13.417	0.00	0.17	0.058	O	|	|	|	0.44
13.500	0.00	0.16	0.057	O	|	|	|	0.43
13.583	0.00	0.16	0.056	O	|	|	|	0.43
13.667	0.00	0.15	0.055	O	|	|	|	0.42
13.750	0.00	0.15	0.054	O	|	|	|	0.41
13.833	0.00	0.14	0.053	O	|	|	|	0.40
13.917	0.00	0.13	0.052	O	|	|	|	0.40
14.000	0.00	0.13	0.051	O	|	|	|	0.39
14.083	0.00	0.12	0.050	O	|	|	|	0.39
14.167	0.00	0.12	0.049	O	|	|	|	0.38
14.250	0.00	0.11	0.048	O	|	|	|	0.38
14.333	0.00	0.11	0.048	O	|	|	|	0.37
14.417	0.00	0.10	0.047	O	|	|	|	0.37
14.500	0.00	0.10	0.046	O	|	|	|	0.36
14.583	0.00	0.10	0.046	O	|	|	|	0.36
14.667	0.00	0.09	0.045	O	|	|	|	0.35
14.750	0.00	0.09	0.044	O	|	|	|	0.35
14.833	0.00	0.08	0.044	O	|	|	|	0.34
14.917	0.00	0.08	0.043	O	|	|	|	0.34
15.000	0.00	0.08	0.043	O	|	|	|	0.34
15.083	0.00	0.07	0.042	O	|	|	|	0.33
15.167	0.00	0.07	0.042	O	|	|	|	0.33
15.250	0.00	0.07	0.041	O	|	|	|	0.33
15.333	0.00	0.07	0.041	O	|	|	|	0.32
15.417	0.00	0.06	0.040	O	|	|	|	0.32
15.500	0.00	0.06	0.040	O	|	|	|	0.32
15.583	0.00	0.06	0.039	O	|	|	|	0.31
15.667	0.00	0.06	0.039	O	|	|	|	0.31
15.750	0.00	0.05	0.039	O	|	|	|	0.31
15.833	0.00	0.05	0.038	O	|	|	|	0.31
15.917	0.00	0.05	0.038	O	|	|	|	0.30
16.000	0.00	0.05	0.038	O	|	|	|	0.30
16.083	0.00	0.04	0.037	O	|	|	|	0.30
16.167	0.00	0.04	0.037	O	|	|	|	0.30
16.250	0.00	0.04	0.037	O	|	|	|	0.30
16.333	0.00	0.04	0.036	O	|	|	|	0.29
16.417	0.00	0.04	0.036	O	|	|	|	0.29

16.500	0.00	0.04	0.036	O				0.29
16.583	0.00	0.03	0.036	O				0.29
16.667	0.00	0.03	0.035	O				0.29
16.750	0.00	0.03	0.035	O				0.28
16.833	0.00	0.03	0.035	O				0.28
16.917	0.00	0.03	0.035	O				0.28
17.000	0.00	0.03	0.034	O				0.28
17.083	0.00	0.03	0.034	O				0.28
17.167	0.00	0.03	0.034	O				0.28
17.250	0.00	0.02	0.034	O				0.28
17.333	0.00	0.02	0.034	O				0.28
17.417	0.00	0.02	0.034	O				0.27
17.500	0.00	0.02	0.033	O				0.27
17.583	0.00	0.02	0.033	O				0.27
17.667	0.00	0.02	0.033	O				0.27
17.750	0.00	0.02	0.033	O				0.27
17.833	0.00	0.02	0.033	O				0.27
17.917	0.00	0.02	0.033	O				0.27
18.000	0.00	0.02	0.033	O				0.27
18.083	0.00	0.02	0.033	O				0.27
18.167	0.00	0.02	0.032	O				0.27
18.250	0.00	0.02	0.032	O				0.27
18.333	0.00	0.01	0.032	O				0.27
18.417	0.00	0.01	0.032	O				0.26
18.500	0.00	0.01	0.032	O				0.26
18.583	0.00	0.01	0.032	O				0.26
18.667	0.00	0.01	0.032	O				0.26
18.750	0.00	0.01	0.032	O				0.26
18.833	0.00	0.01	0.032	O				0.26
18.917	0.00	0.01	0.032	O				0.26
19.000	0.00	0.01	0.032	O				0.26
19.083	0.00	0.01	0.031	O				0.26
19.167	0.00	0.01	0.031	O				0.26
19.250	0.00	0.01	0.031	O				0.26
19.333	0.00	0.01	0.031	O				0.26
19.417	0.00	0.01	0.031	O				0.26
19.500	0.00	0.01	0.031	O				0.26
19.583	0.00	0.01	0.031	O				0.26
19.667	0.00	0.01	0.031	O				0.26
19.750	0.00	0.01	0.031	O				0.26
19.833	0.00	0.01	0.031	O				0.26
19.917	0.00	0.01	0.031	O				0.26
20.000	0.00	0.01	0.031	O				0.26
20.083	0.00	0.01	0.031	O				0.26
20.167	0.00	0.01	0.031	O				0.26
20.250	0.00	0.01	0.031	O				0.26
20.333	0.00	0.01	0.031	O				0.25
20.417	0.00	0.01	0.031	O				0.25
20.500	0.00	0.00	0.031	O				0.25
20.583	0.00	0.00	0.031	O				0.25
20.667	0.00	0.00	0.031	O				0.25
20.750	0.00	0.00	0.031	O				0.25
20.833	0.00	0.00	0.031	O				0.25
20.917	0.00	0.00	0.030	O				0.25

21.000	0.00	0.00	0.030	O	|	|	|	|	0.25
21.083	0.00	0.00	0.030	O	|	|	|	|	0.25
21.167	0.00	0.00	0.030	O	|	|	|	|	0.25
21.250	0.00	0.00	0.030	O	|	|	|	|	0.25
21.333	0.00	0.00	0.030	O	|	|	|	|	0.25
21.417	0.00	0.00	0.030	O	|	|	|	|	0.25
21.500	0.00	0.00	0.030	O	|	|	|	|	0.25
21.583	0.00	0.00	0.030	O	|	|	|	|	0.25
21.667	0.00	0.00	0.030	O	|	|	|	|	0.25
21.750	0.00	0.00	0.030	O	|	|	|	|	0.25
21.833	0.00	0.00	0.030	O	|	|	|	|	0.25
21.917	0.00	0.00	0.030	O	|	|	|	|	0.25
22.000	0.00	0.00	0.030	O	|	|	|	|	0.25
22.083	0.00	0.00	0.030	O	|	|	|	|	0.25
22.167	0.00	0.00	0.030	O	|	|	|	|	0.25
22.250	0.00	0.00	0.030	O	|	|	|	|	0.25
22.333	0.00	0.00	0.030	O	|	|	|	|	0.25
22.417	0.00	0.00	0.030	O	|	|	|	|	0.25
22.500	0.00	0.00	0.030	O	|	|	|	|	0.25
22.583	0.00	0.00	0.030	O	|	|	|	|	0.25
22.667	0.00	0.00	0.030	O	|	|	|	|	0.25
22.750	0.00	0.00	0.030	O	|	|	|	|	0.25
22.833	0.00	0.00	0.030	O	|	|	|	|	0.25
22.917	0.00	0.00	0.030	O	|	|	|	|	0.25
23.000	0.00	0.00	0.030	O	|	|	|	|	0.25
23.083	0.00	0.00	0.030	O	|	|	|	|	0.25
23.167	0.00	0.00	0.030	O	|	|	|	|	0.25
23.250	0.00	0.00	0.030	O	|	|	|	|	0.25
23.333	0.00	0.00	0.030	O	|	|	|	|	0.25
23.417	0.00	0.00	0.030	O	|	|	|	|	0.25
23.500	0.00	0.00	0.030	O	|	|	|	|	0.25
23.583	0.00	0.00	0.030	O	|	|	|	|	0.25
23.667	0.00	0.00	0.030	O	|	|	|	|	0.25

Remaining water in basin = 0.03 (Ac.Ft)

**********HYDROGRAPH DATA**********

Number of intervals = 284
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 10.797 (CFS)
Total volume = 2.290 (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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FLOOD HYDROGRAPH ROUTING PROGRAM

Study date: 11/01/21

TCC - KNOX VIII
100 YEAR STORM EVENT 24 HOUR BASIN ROUTING
3684Q100BR24
DS

Program License Serial Number 6145

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

From study/file name: 3684UHPQ10024100.rte
**********HYDROGRAPH DATA**********
Number of intervals = 303
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 7.268 (CFS)
Total volume = 3.681 (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 1.000 to Point/Station 2.000
**** RETARDING BASIN ROUTING ****
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User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 303
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	Storage	Outflow	(S-O*dt/2)	(S+O*dt/2)

(Ft.)	(Ac.Ft)	(CFS)	(Ac.Ft)	(Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.250	0.030	0.001	0.030	0.030
1.000	0.140	0.670	0.138	0.142
2.000	0.240	1.160	0.236	0.244
3.000	0.340	1.490	0.335	0.345
3.500	0.520	1.640	0.514	0.526
4.500	0.900	10.400	0.864	0.936
5.500	1.330	14.150	1.281	1.379
6.500	1.800	17.050	1.741	1.859

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	1.8	3.63	5.45	7.27	Depth (Ft.)
0.083	0.03	0.00	0.000	O	|	|	|	|	0.00
0.167	0.14	0.00	0.001	O	|	|	|	|	0.01
0.250	0.25	0.00	0.002	OI	|	|	|	|	0.02
0.333	0.31	0.00	0.004	OI	|	|	|	|	0.03
0.417	0.39	0.00	0.006	OI	|	|	|	|	0.05
0.500	0.47	0.00	0.009	O I	|	|	|	|	0.08
0.583	0.51	0.00	0.013	O I	|	|	|	|	0.11
0.667	0.53	0.00	0.016	O I	|	|	|	|	0.14
0.750	0.54	0.00	0.020	O I	|	|	|	|	0.17
0.833	0.57	0.00	0.024	O I	|	|	|	|	0.20
0.917	0.64	0.00	0.028	O I	|	|	|	|	0.23
1.000	0.70	0.02	0.032	O I	|	|	|	|	0.27
1.083	0.72	0.04	0.037	O I	|	|	|	|	0.30
1.167	0.68	0.07	0.042	O I	|	|	|	|	0.33
1.250	0.63	0.09	0.045	O I	|	|	|	|	0.36
1.333	0.62	0.12	0.049	O I	|	|	|	|	0.38
1.417	0.61	0.14	0.052	O I	|	|	|	|	0.40
1.500	0.61	0.16	0.056	O I	|	|	|	|	0.42
1.583	0.60	0.17	0.059	O I	|	|	|	|	0.45
1.667	0.60	0.19	0.061	O I	|	|	|	|	0.46
1.750	0.60	0.21	0.064	O I	|	|	|	|	0.48
1.833	0.61	0.23	0.067	O I	|	|	|	|	0.50
1.917	0.67	0.24	0.070	|OI	|	|	|	|	0.52
2.000	0.72	0.26	0.073	|O I	|	|	|	|	0.54
2.083	0.75	0.28	0.076	|O I	|	|	|	|	0.56
2.167	0.76	0.30	0.079	|O I	|	|	|	|	0.58
2.250	0.76	0.32	0.082	|O I	|	|	|	|	0.61
2.333	0.77	0.34	0.085	|O I	|	|	|	|	0.63
2.417	0.78	0.35	0.088	|O I	|	|	|	|	0.65
2.500	0.78	0.37	0.091	|O I	|	|	|	|	0.67
2.583	0.80	0.39	0.094	|O I	|	|	|	|	0.69
2.667	0.85	0.41	0.097	|O I	|	|	|	|	0.71
2.750	0.91	0.43	0.100	|O I	|	|	|	|	0.73
2.833	0.94	0.45	0.103	|O I	|	|	|	|	0.75
2.917	0.95	0.47	0.107	| O I	|	|	|	|	0.77

3.000	0.96	0.49	0.110	O I				0.80
3.083	0.97	0.51	0.113	O I				0.82
3.167	0.97	0.53	0.116	O I				0.84
3.250	0.98	0.54	0.119	O I				0.86
3.333	0.98	0.56	0.122	O I				0.88
3.417	0.98	0.58	0.125	O I				0.90
3.500	0.98	0.60	0.128	O I				0.92
3.583	0.99	0.61	0.130	O I				0.94
3.667	0.99	0.63	0.133	O I				0.95
3.750	0.99	0.64	0.135	O I				0.97
3.833	0.93	0.66	0.138	O I				0.98
3.917	0.71	0.66	0.139	OI				0.99
4.000	0.48	0.66	0.138	O				0.99
4.083	0.39	0.65	0.137	IO				0.98
4.167	0.34	0.64	0.135	IO				0.96
4.250	0.31	0.62	0.133	IO				0.95
4.333	0.30	0.61	0.130	IO				0.93
4.417	0.35	0.60	0.128	IO				0.92
4.500	0.41	0.59	0.127	IO				0.91
4.583	0.43	0.58	0.126	IO				0.90
4.667	0.45	0.58	0.125	IO				0.90
4.750	0.45	0.57	0.124	IO				0.89
4.833	0.48	0.57	0.123	O				0.89
4.917	0.55	0.57	0.123	O				0.88
5.000	0.63	0.57	0.123	O				0.88
5.083	0.63	0.57	0.124	O				0.89
5.167	0.52	0.57	0.124	O				0.89
5.250	0.40	0.57	0.123	IO				0.88
5.333	0.37	0.56	0.122	IO				0.87
5.417	0.42	0.55	0.120	IO				0.87
5.500	0.48	0.55	0.120	O				0.86
5.583	0.52	0.54	0.119	O				0.86
5.667	0.60	0.55	0.120	O				0.86
5.750	0.67	0.55	0.120	O				0.86
5.833	0.71	0.56	0.121	OI				0.87
5.917	0.73	0.56	0.122	OI				0.88
6.000	0.75	0.57	0.123	OI				0.89
6.083	0.78	0.58	0.125	OI				0.90
6.167	0.86	0.59	0.126	OI				0.91
6.250	0.94	0.60	0.129	O I				0.92
6.333	0.98	0.61	0.131	O I				0.94
6.417	1.00	0.63	0.133	O I				0.96
6.500	1.02	0.65	0.136	O I				0.97
6.583	1.05	0.66	0.139	O I				0.99
6.667	1.13	0.68	0.142	O I				1.02
6.750	1.21	0.69	0.145	O I				1.05
6.833	1.25	0.71	0.149	O I				1.09
6.917	1.27	0.73	0.152	O I				1.12
7.000	1.29	0.75	0.156	O I				1.16
7.083	1.31	0.77	0.160	O I				1.20
7.167	1.32	0.78	0.163	O I				1.23
7.250	1.33	0.80	0.167	O I				1.27
7.333	1.35	0.82	0.171	O I				1.31
7.417	1.43	0.84	0.175	O I				1.35

7.500	1.51	0.86	0.179	O I				1.39
7.583	1.56	0.88	0.183	O I				1.43
7.667	1.65	0.91	0.188	O I				1.48
7.750	1.73	0.93	0.194	O I				1.54
7.833	1.79	0.96	0.199	O I				1.59
7.917	1.89	0.99	0.205	O I				1.65
8.000	1.98	1.02	0.212	O I				1.72
8.083	2.05	1.05	0.218	O I				1.78
8.167	2.22	1.09	0.226	O I				1.86
8.250	2.38	1.13	0.234	O I				1.94
8.333	2.46	1.17	0.243	O I				2.03
8.417	2.50	1.20	0.251	O I				2.11
8.500	2.54	1.23	0.260	O I				2.20
8.583	2.58	1.26	0.270	O I				2.30
8.667	2.67	1.29	0.279	O I				2.39
8.750	2.75	1.32	0.289	O I				2.49
8.833	2.81	1.35	0.298	O I				2.58
8.917	2.91	1.39	0.309	O I				2.69
9.000	3.00	1.42	0.319	O I				2.79
9.083	3.08	1.46	0.330	O I				2.90
9.167	3.24	1.49	0.342	O I				3.01
9.250	3.40	1.50	0.355	O I				3.04
9.333	3.49	1.51	0.368	O I				3.08
9.417	3.61	1.52	0.382	O I				3.12
9.500	3.71	1.54	0.397	O I				3.16
9.583	3.78	1.55	0.412	O I				3.20
9.667	3.88	1.56	0.427	O I				3.24
9.750	3.98	1.58	0.444	O I				3.29
9.833	4.05	1.59	0.460	O I				3.33
9.917	4.15	1.60	0.478	O I				3.38
10.000	4.24	1.62	0.495	O I				3.43
10.083	4.18	1.63	0.513	O I				3.48
10.167	3.73	1.84	0.529	O I				3.52
10.250	3.27	2.08	0.539	O I				3.55
10.333	3.09	2.24	0.546	O I				3.57
10.417	3.00	2.36	0.551	O I				3.58
10.500	2.93	2.45	0.555	O I				3.59
10.583	2.97	2.52	0.558	O I				3.60
10.667	3.28	2.61	0.562	O I				3.61
10.750	3.60	2.73	0.567	O I				3.62
10.833	3.72	2.87	0.573	O I				3.64
10.917	3.79	3.00	0.579	O I				3.66
11.000	3.83	3.12	0.584	O I				3.67
11.083	3.85	3.23	0.589	O I				3.68
11.167	3.81	3.31	0.593	O I				3.69
11.250	3.75	3.38	0.596	O I				3.70
11.333	3.74	3.44	0.598	OI				3.71
11.417	3.74	3.48	0.600	OI				3.71
11.500	3.75	3.52	0.602	OI				3.71
11.583	3.72	3.55	0.603	OI				3.72
11.667	3.59	3.57	0.604	O				3.72
11.750	3.46	3.56	0.603	O				3.72
11.833	3.42	3.54	0.603	O				3.72
11.917	3.46	3.53	0.602	O				3.72

12.000	3.51	3.52	0.602			O|		3.71
12.083	3.63	3.53	0.602			OI			3.72
12.167	4.12	3.58	0.604			O| I		3.72
12.250	4.61	3.70	0.609			O I			3.73
12.333	4.83	3.85	0.616			O I			3.75
12.417	5.01	4.00	0.623			|O I		3.77
12.500	5.16	4.16	0.629				O I		3.79
12.583	5.28	4.32	0.636				O I|	3.81
12.667	5.48	4.48	0.643				O I		3.82
12.750	5.66	4.64	0.650				O I		3.84
12.833	5.78	4.80	0.657				O |I	3.86
12.917	5.91	4.95	0.664				O	I	3.88
13.000	6.02	5.10	0.670				O	I	3.89
13.083	6.17	5.25	0.676				O| I	3.91
13.167	6.55	5.41	0.684				O| I	3.93
13.250	6.93	5.61	0.692				O I	3.95
13.333	7.10	5.81	0.701					O I	3.98
13.417	7.20	6.01	0.710					O I| 4.00
13.500	7.27	6.19	0.717					O I	4.02
13.583	7.14	6.34	0.724					O I| 4.04
13.667	6.42	6.40	0.727					O	4.04
13.750	5.70	6.35	0.725				|I O	4.04
13.833	5.41	6.24	0.719				I| O	4.02
13.917	5.25	6.10	0.714				I| O	4.01
14.000	5.15	5.97	0.708				I	O	3.99
14.083	5.14	5.85	0.703				I |O	3.98
14.167	5.36	5.76	0.699				I|O	3.97
14.250	5.60	5.72	0.697				IO	3.97
14.333	5.66	5.71	0.696				IO	3.96
14.417	5.63	5.70	0.696				IO	3.96
14.500	5.58	5.68	0.695				IO	3.96
14.583	5.57	5.67	0.695				O	3.96
14.667	5.57	5.65	0.694				O	3.96
14.750	5.56	5.64	0.694				O	3.96
14.833	5.55	5.63	0.693				O	3.96
14.917	5.49	5.61	0.692				O	3.95
15.000	5.43	5.59	0.691				IO	3.95
15.083	5.39	5.56	0.690				IO	3.95
15.167	5.31	5.53	0.689				IO	3.94
15.250	5.24	5.49	0.687				IO	3.94
15.333	5.19	5.45	0.685				I O	3.94
15.417	5.10	5.41	0.683				IO|	3.93
15.500	5.02	5.36	0.681				IO|	3.92
15.583	4.92	5.30	0.679				I O|	3.92
15.667	4.62	5.22	0.675				I O		3.91
15.750	4.33	5.11	0.671				I O		3.90
15.833	4.21	4.99	0.665				I O		3.88
15.917	4.14	4.87	0.660				I O		3.87
16.000	4.09	4.76	0.655				I O		3.86
16.083	3.81	4.64	0.650				I O		3.84
16.167	2.76	4.44	0.641			I	O		3.82
16.250	1.71	4.12	0.627			I| O		3.78
16.333	1.26	3.73	0.611		I		O		3.74
16.417	1.02	3.35	0.594		I		O		3.70

16.500	0.85	2.99	0.579	| I |	O |	|	|	3.65
16.583	0.71	2.67	0.565	| I |	O |	|	|	3.62
16.667	0.55	2.37	0.552	| I |	O |	|	|	3.58
16.750	0.41	2.09	0.540	|I |	O |	|	|	3.55
16.833	0.33	1.84	0.529	|I |	O |	|	|	3.52
16.917	0.27	1.64	0.519	|I |	O |	|	|	3.50
17.000	0.23	1.63	0.509	|I |	O |	|	|	3.47
17.083	0.23	1.62	0.500	|I |	O |	|	|	3.44
17.167	0.35	1.62	0.490	|I |	O |	|	|	3.42
17.250	0.47	1.61	0.482	| I |	O |	|	|	3.39
17.333	0.51	1.60	0.474	| I |	O |	|	|	3.37
17.417	0.54	1.60	0.467	| I |	O |	|	|	3.35
17.500	0.57	1.59	0.460	| I |	O |	|	|	3.33
17.583	0.58	1.58	0.453	| I |	O |	|	|	3.31
17.667	0.60	1.58	0.446	| I |	O |	|	|	3.29
17.750	0.61	1.57	0.439	| I |	O |	|	|	3.28
17.833	0.60	1.57	0.433	| I |	O |	|	|	3.26
17.917	0.54	1.56	0.426	| I |	O |	|	|	3.24
18.000	0.48	1.56	0.419	| I |	O |	|	|	3.22
18.083	0.46	1.55	0.411	| I |	O |	|	|	3.20
18.167	0.45	1.54	0.404	|I |	O |	|	|	3.18
18.250	0.44	1.54	0.396	|I |	O |	|	|	3.16
18.333	0.44	1.53	0.389	|I |	O |	|	|	3.13
18.417	0.43	1.52	0.381	|I |	O |	|	|	3.11
18.500	0.43	1.52	0.373	|I |	O |	|	|	3.09
18.583	0.41	1.51	0.366	|I |	O |	|	|	3.07
18.667	0.35	1.51	0.358	|I |	O |	|	|	3.05
18.750	0.28	1.50	0.350	|I |	O |	|	|	3.03
18.833	0.26	1.49	0.342	|I |	O |	|	|	3.00
18.917	0.30	1.47	0.333	|I |	O |	|	|	2.93
19.000	0.35	1.44	0.326	|I |	O |	|	|	2.86
19.083	0.36	1.42	0.318	|I |	O |	|	|	2.78
19.167	0.31	1.39	0.311	|I |	O |	|	|	2.71
19.250	0.26	1.37	0.303	|I |	O |	|	|	2.63
19.333	0.26	1.34	0.296	|I |	O |	|	|	2.56
19.417	0.32	1.32	0.288	|I |	O |	|	|	2.48
19.500	0.38	1.30	0.282	|I |	O |	|	|	2.42
19.583	0.39	1.28	0.276	|I |	O |	|	|	2.36
19.667	0.34	1.26	0.269	|I |	O |	|	|	2.29
19.750	0.28	1.24	0.263	|I |	O |	|	|	2.23
19.833	0.27	1.21	0.256	|I |	O |	|	|	2.16
19.917	0.31	1.19	0.250	|I |	O |	|	|	2.10
20.000	0.35	1.17	0.244	|I |	O |	|	|	2.04
20.083	0.36	1.15	0.239	|I |	O |	|	|	1.99
20.167	0.32	1.13	0.233	|I |	O |	|	|	1.93
20.250	0.28	1.10	0.227	|I |	O |	|	|	1.87
20.333	0.26	1.07	0.222	|I |	O |	|	|	1.82
20.417	0.25	1.04	0.216	|I |	O |	|	|	1.76
20.500	0.25	1.02	0.211	|I |	O |	|	|	1.71
20.583	0.25	0.99	0.206	|I |	O |	|	|	1.66
20.667	0.25	0.97	0.201	|I |	O |	|	|	1.61
20.750	0.25	0.94	0.196	|I |	O |	|	|	1.56
20.833	0.23	0.92	0.191	|I |	O |	|	|	1.51
20.917	0.16	0.90	0.186	I |	O |	|	|	1.46

21.000	0.10	0.87	0.181	I O					1.41
21.083	0.08	0.84	0.176	I O					1.36
21.167	0.14	0.82	0.171	I O					1.31
21.250	0.20	0.80	0.166	I O					1.26
21.333	0.20	0.78	0.162	I O					1.22
21.417	0.15	0.76	0.158	I O					1.18
21.500	0.09	0.74	0.154	I O					1.14
21.583	0.08	0.72	0.149	I O					1.09
21.667	0.14	0.70	0.145	I O					1.05
21.750	0.20	0.68	0.142	I O					1.02
21.833	0.21	0.66	0.138	I O					0.99
21.917	0.15	0.64	0.135	I O					0.97
22.000	0.09	0.62	0.132	I O					0.94
22.083	0.09	0.60	0.128	I O					0.92
22.167	0.14	0.58	0.125	I O					0.90
22.250	0.21	0.56	0.122	I O					0.88
22.333	0.22	0.55	0.120	I O					0.86
22.417	0.16	0.53	0.117	I O					0.85
22.500	0.10	0.52	0.115	I O					0.83
22.583	0.08	0.50	0.112	I O					0.81
22.667	0.07	0.48	0.109	I O					0.79
22.750	0.06	0.46	0.106	I O					0.77
22.833	0.06	0.45	0.103	IO					0.75
22.917	0.06	0.43	0.101	IO					0.73
23.000	0.05	0.42	0.098	IO					0.72
23.083	0.05	0.40	0.096	IO					0.70
23.167	0.05	0.39	0.093	IO					0.68
23.250	0.05	0.37	0.091	IO					0.67
23.333	0.05	0.36	0.089	IO					0.65
23.417	0.05	0.35	0.087	IO					0.64
23.500	0.05	0.33	0.085	IO					0.62
23.583	0.05	0.32	0.083	IO					0.61
23.667	0.05	0.31	0.081	IO					0.60
23.750	0.05	0.30	0.079	IO					0.59
23.833	0.05	0.29	0.078	IO					0.58
23.917	0.05	0.28	0.076	IO					0.56
24.000	0.05	0.27	0.075	IO					0.55
24.083	0.05	0.26	0.073	IO					0.54
24.167	0.04	0.25	0.072	IO					0.53
24.250	0.02	0.24	0.070	IO					0.52
24.333	0.01	0.24	0.069	IO					0.51
24.417	0.01	0.23	0.067	O					0.50
24.500	0.01	0.22	0.066	O					0.49
24.583	0.01	0.21	0.064	O					0.48
24.667	0.00	0.20	0.063	O					0.47
24.750	0.00	0.19	0.061	O					0.46
24.833	0.00	0.18	0.060	O					0.46
24.917	0.00	0.18	0.059	O					0.45
25.000	0.00	0.17	0.058	O					0.44
25.083	0.00	0.16	0.057	O					0.43
25.167	0.00	0.16	0.055	O					0.42
25.250	0.00	0.15	0.054	O					0.42
25.333	0.00	0.14	0.053	O					0.41
25.417	0.00	0.14	0.052	O					0.40

25.500	0.00	0.13	0.052	O				0.40
25.583	0.00	0.13	0.051	O				0.39
25.667	0.00	0.12	0.050	O				0.38
25.750	0.00	0.12	0.049	O				0.38
25.833	0.00	0.11	0.048	O				0.37
25.917	0.00	0.11	0.047	O				0.37
26.000	0.00	0.10	0.047	O				0.36
26.083	0.00	0.10	0.046	O				0.36
26.167	0.00	0.09	0.045	O				0.35
26.250	0.00	0.09	0.045	O				0.35
26.333	0.00	0.09	0.044	O				0.35
26.417	0.00	0.08	0.044	O				0.34
26.500	0.00	0.08	0.043	O				0.34
26.583	0.00	0.08	0.042	O				0.33
26.667	0.00	0.07	0.042	O				0.33
26.750	0.00	0.07	0.041	O				0.33
26.833	0.00	0.07	0.041	O				0.32
26.917	0.00	0.06	0.040	O				0.32
27.000	0.00	0.06	0.040	O				0.32
27.083	0.00	0.06	0.040	O				0.32
27.167	0.00	0.06	0.039	O				0.31
27.250	0.00	0.05	0.039	O				0.31
27.333	0.00	0.05	0.038	O				0.31
27.417	0.00	0.05	0.038	O				0.31
27.500	0.00	0.05	0.038	O				0.30
27.583	0.00	0.05	0.037	O				0.30
27.667	0.00	0.04	0.037	O				0.30
27.750	0.00	0.04	0.037	O				0.30
27.833	0.00	0.04	0.037	O				0.29
27.917	0.00	0.04	0.036	O				0.29
28.000	0.00	0.04	0.036	O				0.29
28.083	0.00	0.04	0.036	O				0.29
28.167	0.00	0.03	0.036	O				0.29
28.250	0.00	0.03	0.035	O				0.29
28.333	0.00	0.03	0.035	O				0.28
28.417	0.00	0.03	0.035	O				0.28
28.500	0.00	0.03	0.035	O				0.28
28.583	0.00	0.03	0.034	O				0.28
28.667	0.00	0.03	0.034	O				0.28
28.750	0.00	0.03	0.034	O				0.28
28.833	0.00	0.02	0.034	O				0.28
28.917	0.00	0.02	0.034	O				0.28
29.000	0.00	0.02	0.034	O				0.27
29.083	0.00	0.02	0.033	O				0.27
29.167	0.00	0.02	0.033	O				0.27
29.250	0.00	0.02	0.033	O				0.27
29.333	0.00	0.02	0.033	O				0.27
29.417	0.00	0.02	0.033	O				0.27
29.500	0.00	0.02	0.033	O				0.27
29.583	0.00	0.02	0.033	O				0.27
29.667	0.00	0.02	0.033	O				0.27
29.750	0.00	0.02	0.032	O				0.27
29.833	0.00	0.01	0.032	O				0.27
29.917	0.00	0.01	0.032	O				0.26

30.000	0.00	0.01	0.032	O				0.26
30.083	0.00	0.01	0.032	O				0.26
30.167	0.00	0.01	0.032	O				0.26
30.250	0.00	0.01	0.032	O				0.26
30.333	0.00	0.01	0.032	O				0.26
30.417	0.00	0.01	0.032	O				0.26
30.500	0.00	0.01	0.032	O				0.26
30.583	0.00	0.01	0.032	O				0.26
30.667	0.00	0.01	0.031	O				0.26
30.750	0.00	0.01	0.031	O				0.26
30.833	0.00	0.01	0.031	O				0.26
30.917	0.00	0.01	0.031	O				0.26
31.000	0.00	0.01	0.031	O				0.26
31.083	0.00	0.01	0.031	O				0.26
31.167	0.00	0.01	0.031	O				0.26
31.250	0.00	0.01	0.031	O				0.26
31.333	0.00	0.01	0.031	O				0.26
31.417	0.00	0.01	0.031	O				0.26
31.500	0.00	0.01	0.031	O				0.26
31.583	0.00	0.01	0.031	O				0.26
31.667	0.00	0.01	0.031	O				0.26
31.750	0.00	0.01	0.031	O				0.26
31.833	0.00	0.01	0.031	O				0.26
31.917	0.00	0.01	0.031	O				0.25
32.000	0.00	0.01	0.031	O				0.25
32.083	0.00	0.00	0.031	O				0.25
32.167	0.00	0.00	0.031	O				0.25
32.250	0.00	0.00	0.031	O				0.25
32.333	0.00	0.00	0.031	O				0.25
32.417	0.00	0.00	0.031	O				0.25
32.500	0.00	0.00	0.030	O				0.25
32.583	0.00	0.00	0.030	O				0.25
32.667	0.00	0.00	0.030	O				0.25
32.750	0.00	0.00	0.030	O				0.25
32.833	0.00	0.00	0.030	O				0.25
32.917	0.00	0.00	0.030	O				0.25
33.000	0.00	0.00	0.030	O				0.25
33.083	0.00	0.00	0.030	O				0.25
33.167	0.00	0.00	0.030	O				0.25
33.250	0.00	0.00	0.030	O				0.25
33.333	0.00	0.00	0.030	O				0.25
33.417	0.00	0.00	0.030	O				0.25
33.500	0.00	0.00	0.030	O				0.25
33.583	0.00	0.00	0.030	O				0.25
33.667	0.00	0.00	0.030	O				0.25
33.750	0.00	0.00	0.030	O				0.25
33.833	0.00	0.00	0.030	O				0.25
33.917	0.00	0.00	0.030	O				0.25
34.000	0.00	0.00	0.030	O				0.25
34.083	0.00	0.00	0.030	O				0.25
34.167	0.00	0.00	0.030	O				0.25
34.250	0.00	0.00	0.030	O				0.25
34.333	0.00	0.00	0.030	O				0.25
34.417	0.00	0.00	0.030	O				0.25

34.500	0.00	0.00	0.030	O	|	|	|	|	0.25
34.583	0.00	0.00	0.030	O	|	|	|	|	0.25
34.667	0.00	0.00	0.030	O	|	|	|	|	0.25
34.750	0.00	0.00	0.030	O	|	|	|	|	0.25
34.833	0.00	0.00	0.030	O	|	|	|	|	0.25
34.917	0.00	0.00	0.030	O	|	|	|	|	0.25
35.000	0.00	0.00	0.030	O	|	|	|	|	0.25
35.083	0.00	0.00	0.030	O	|	|	|	|	0.25
35.167	0.00	0.00	0.030	O	|	|	|	|	0.25
35.250	0.00	0.00	0.030	O	|	|	|	|	0.25

Remaining water in basin = 0.03 (Ac.Ft)

**********HYDROGRAPH DATA**********

Number of intervals = 423
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 6.405 (CFS)
Total volume = 3.651 (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
Soil Group Map and Isohyetal Map

LEGEND

—— SOILS GROUP BOUNDARY

A SOILS GROUP DESIGNATION

RCFC&WCD

HYDROLOGY MANUAL

N

0 FEET 5000

HYDROLOGIC SOILS GROUP MAP FOR STEELE PEAK

PLATE C-I.29

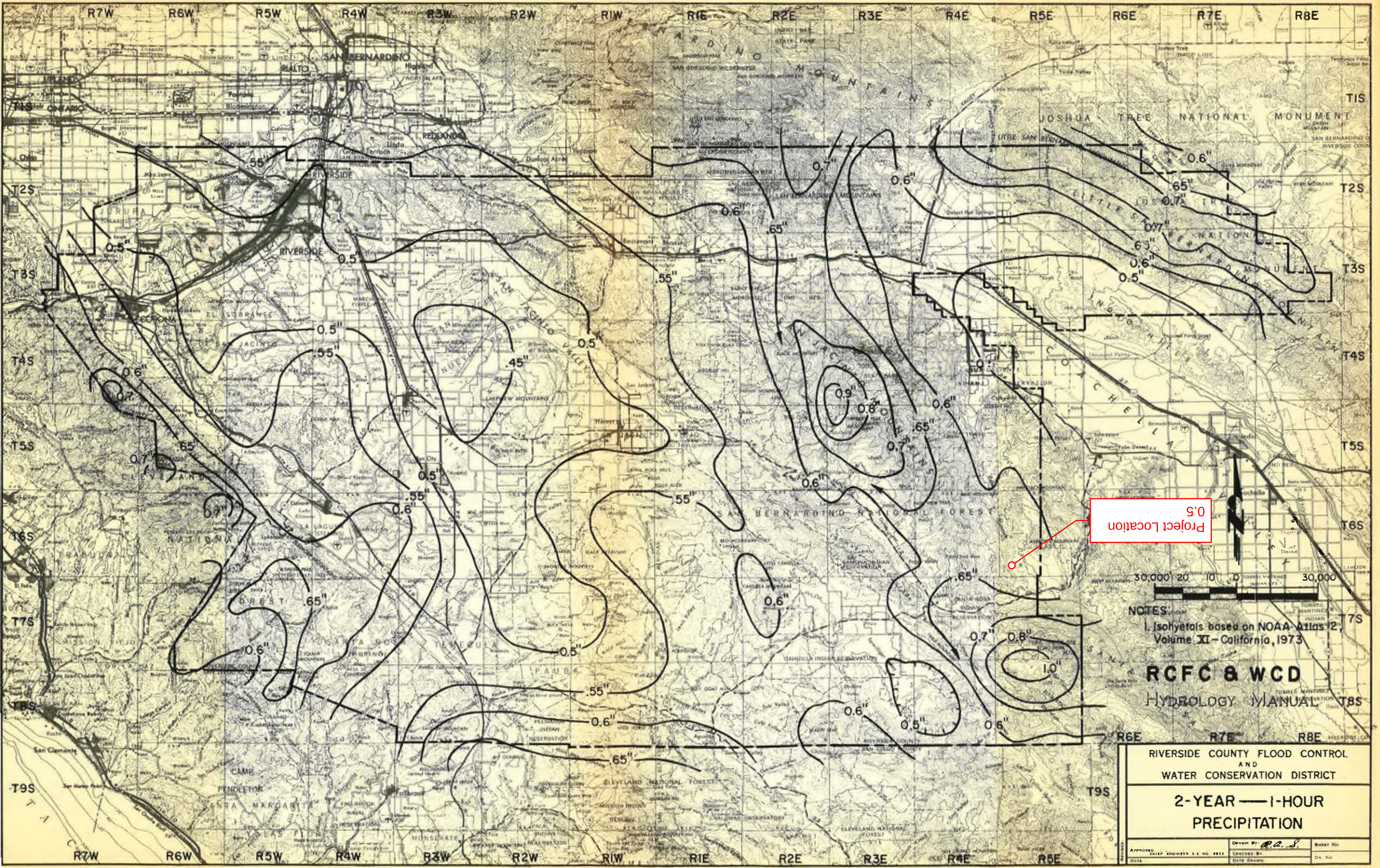
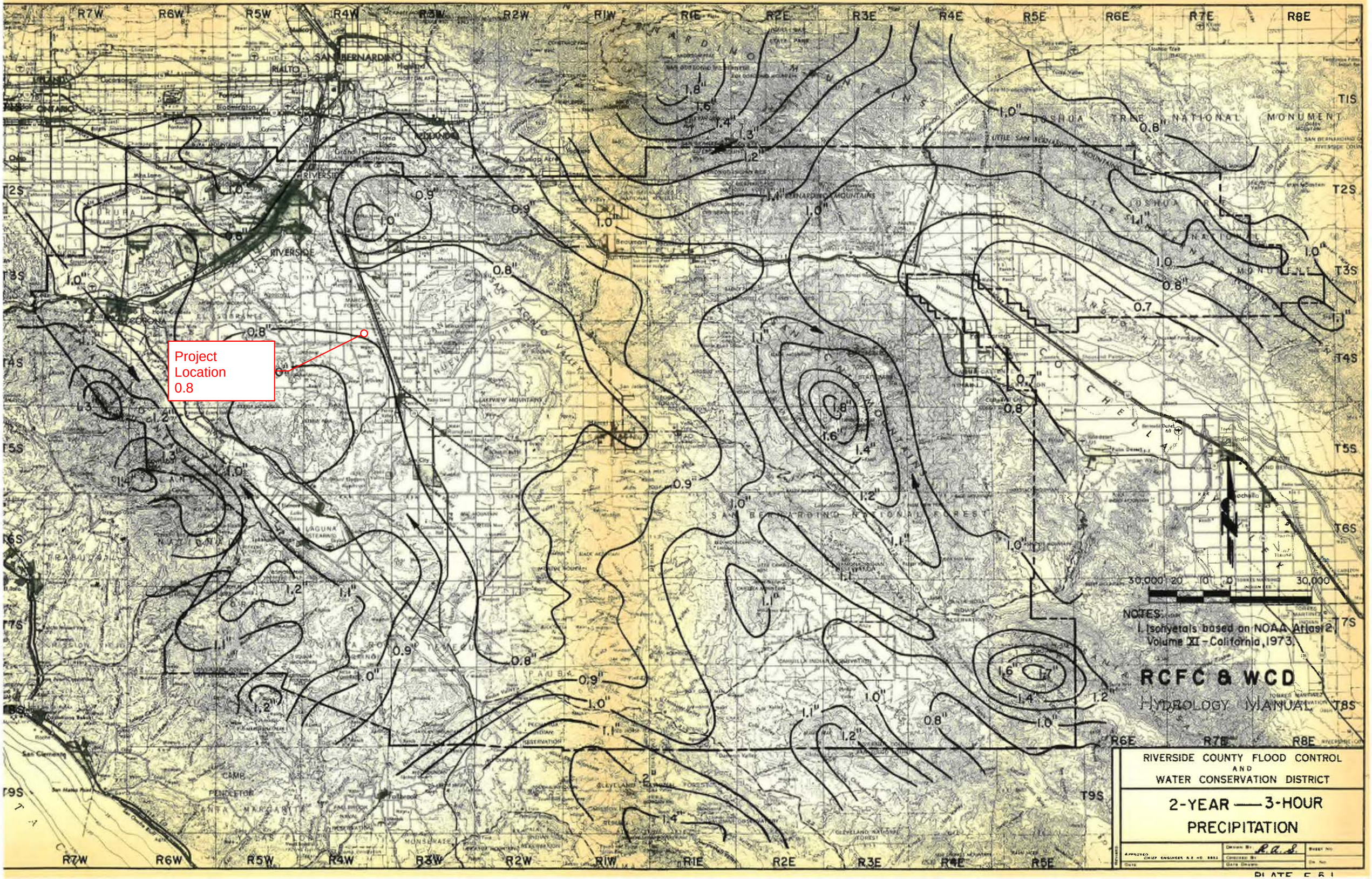

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
2-YEAR — 1-HOUR PRECIPITATION
RCFC & WCD
HYDROLOGY MANUAL
NOTES:
1. Isohyetals based on NOAA Atlas 2, Volume XI - California, 1973
Project Location
0.5
30,000 20 10 0 30,000
R7W R6W R5W R4W R3W R2W R1W R1E R2E R3E R4E R5E R6E R7E R8E
T1S T2S T3S T4S T5S T6S T7S T8S T9S
SAN BERNARDINO MOUNTAINS
JOSHUA TREE NATIONAL MONUMENT
SAN BERNARDINO NATIONAL FOREST
CLEVELAND NATIONAL FOREST
RIVERSIDE
SAN BERNARDINO
REDLANDS
ONTARIO
CORONA
HEMET
San Clemente

PLATE D-4.3


Project Location 0.8
NOTES:
1. Isohyetals based on NOAA Atlas 2, Volume XI - California, 1973.
RCFC & WCD
HYDROLOGY MANUAL
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
2-YEAR — 3-HOUR PRECIPITATION
PLATE E.5.1

Project Location 1.1

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

RCFC & WCD
HYDROLOGY MANUAL

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

2-YEAR — 6-HOUR PRECIPITATION

PLATE E-5.3

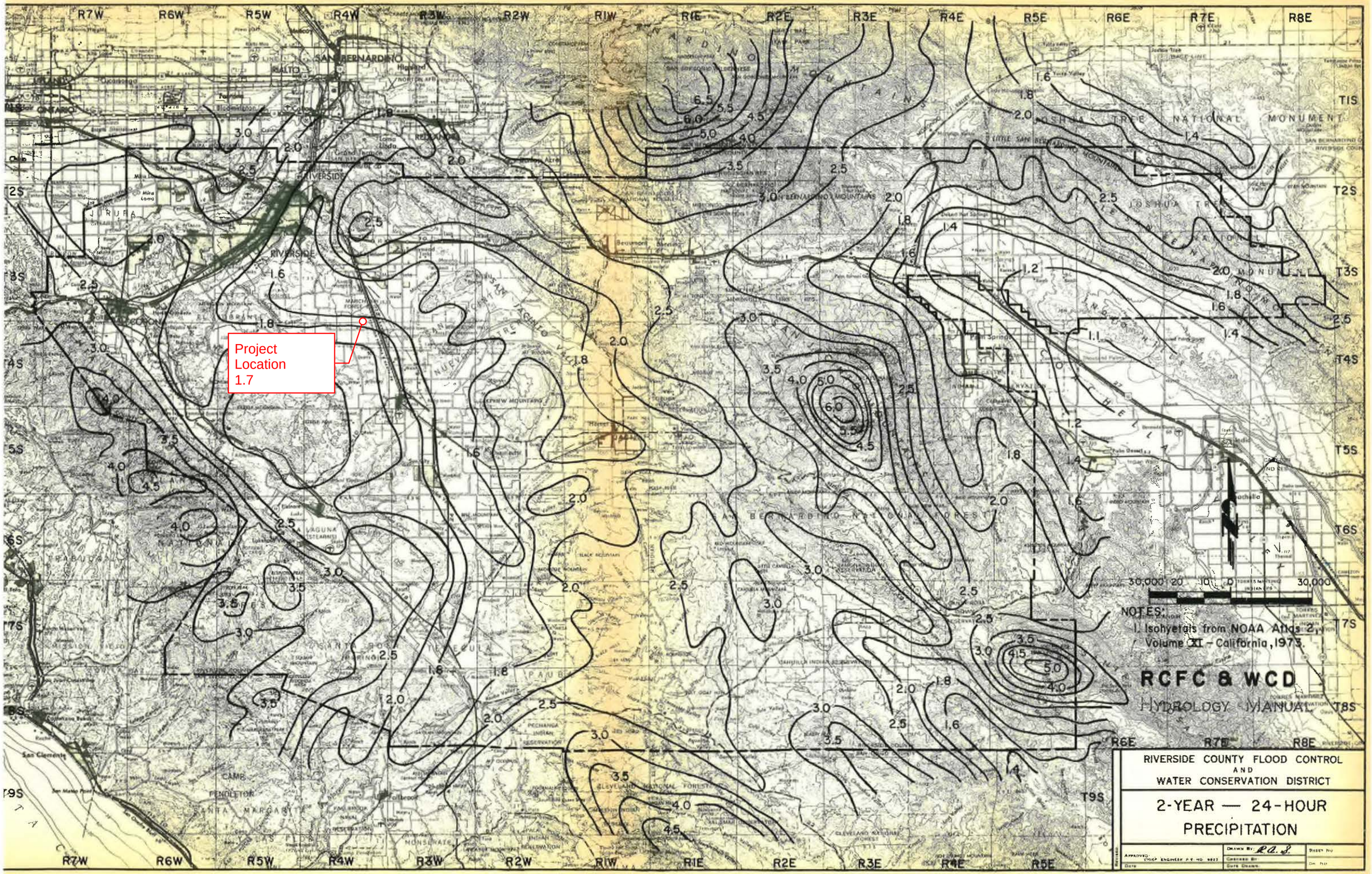

Project Location 1.7
NOTES:
1. Isohyetals from NOAA Atlas 2, Volume XI - California, 1973.
RCFC & WCD
HYDROLOGY MANUAL
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
2-YEAR — 24-HOUR PRECIPITATION

PLATE E-5.5


R7W R6W R5W R4W R3W R2W R1W R1E R2E R3E R4E R5E R6E R7E R8E
T1S T2S T3S T4S T5S T6S T7S T8S T9S
SAN BERNARDINO
RIVERSIDE
SAN BERNARDINO MOUNTAINS
JOSHUA TREE NATIONAL MONUMENT
SAN JACINTO MOUNTAINS
COACHELLA VALLEY
SAN BERNARDINO NATIONAL FOREST
CLEVELAND NATIONAL FOREST
Project Location
1.27
30,000 20 10 0 30,000
NOTES:
1. Isohyetals based on NOAA Atlas 2, Volume XI - California, 1973
RCFC & WCD
HYDROLOGY MANUAL
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
100-YEAR —— 1-HOUR PRECIPITATION
PLATE D-4.4


Project Location 1.95
RCFC & WCD HYDROLOGY MANUAL
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
100-YEAR — 3-HOUR PRECIPITATION
NOTES:
1. Isohyetals based on NOAA Atlas 2, Volume XI - California, 1973
30,000 20 10 0 30,000
PLATE E-5.2

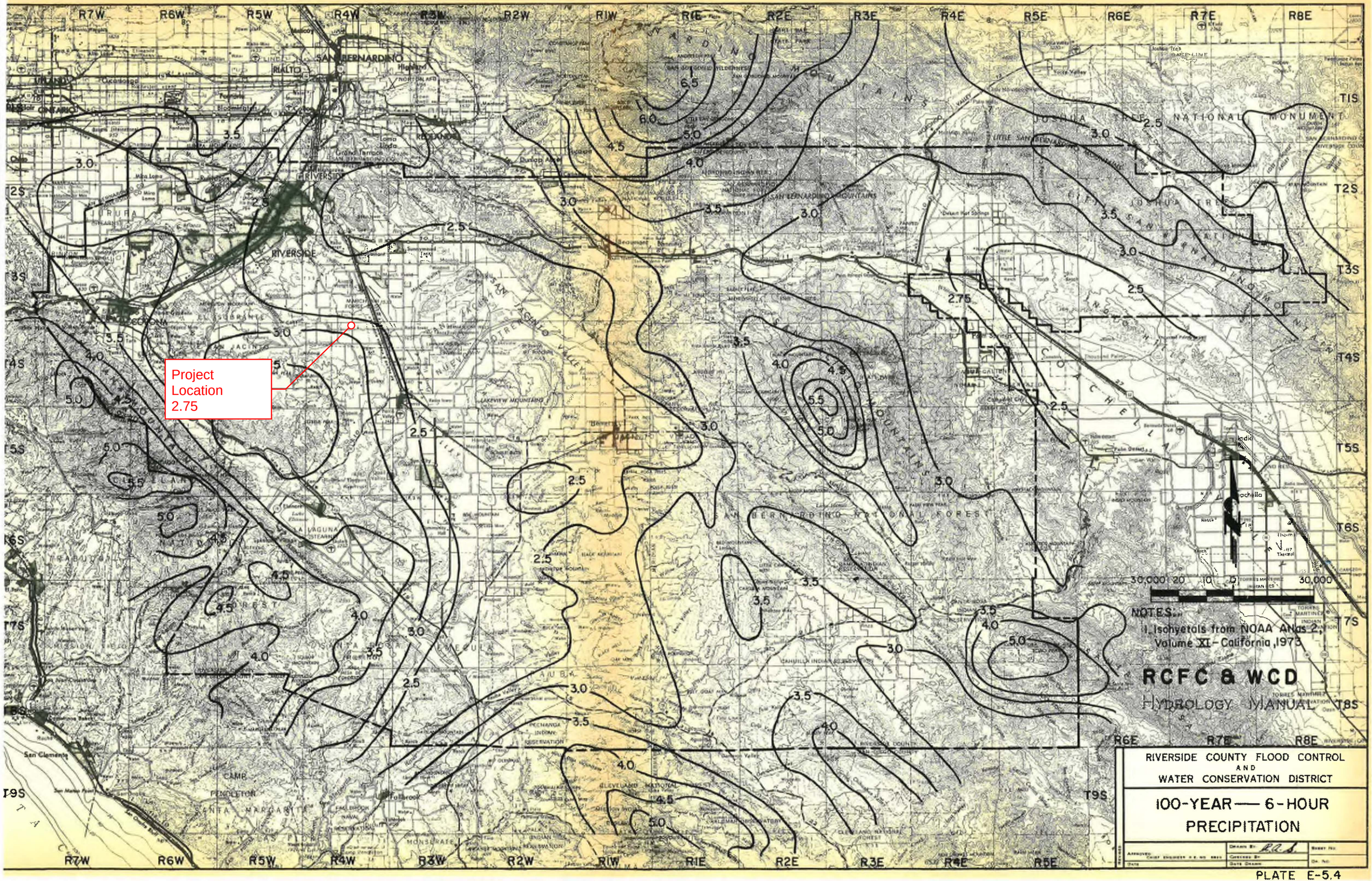

Project Location 2.75
R7W
R6W
R5W
R4W
R3W
R2W
R1W
R1E
R2E
R3E
R4E
R5E
R6E
R7E
R8E
T1S
T2S
T3S
T4S
T5S
T6S
T7S
T8S
T9S
SAN BERNARDINO
RIVERSIDE
RIALTO
ONTARIO
CORONA
JOSHUA TREE NATIONAL MONUMENT
SAN BERNARDINO MOUNTAINS
SAN JACINTO MOUNTAINS
SANTA ROSA MOUNTAINS
CLEVELAND NATIONAL FOREST
SANTA MARGARITA
San Clemente
Indio
Coachella
30,000 20 10 0 30,000
NOTES:
1. Isohyetals from NOAA Atlas 2, Volume XI - California, 1973
RCFC & WCD
HYDROLOGY MANUAL
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
100-YEAR — 6-HOUR PRECIPITATION

PLATE E-5.4

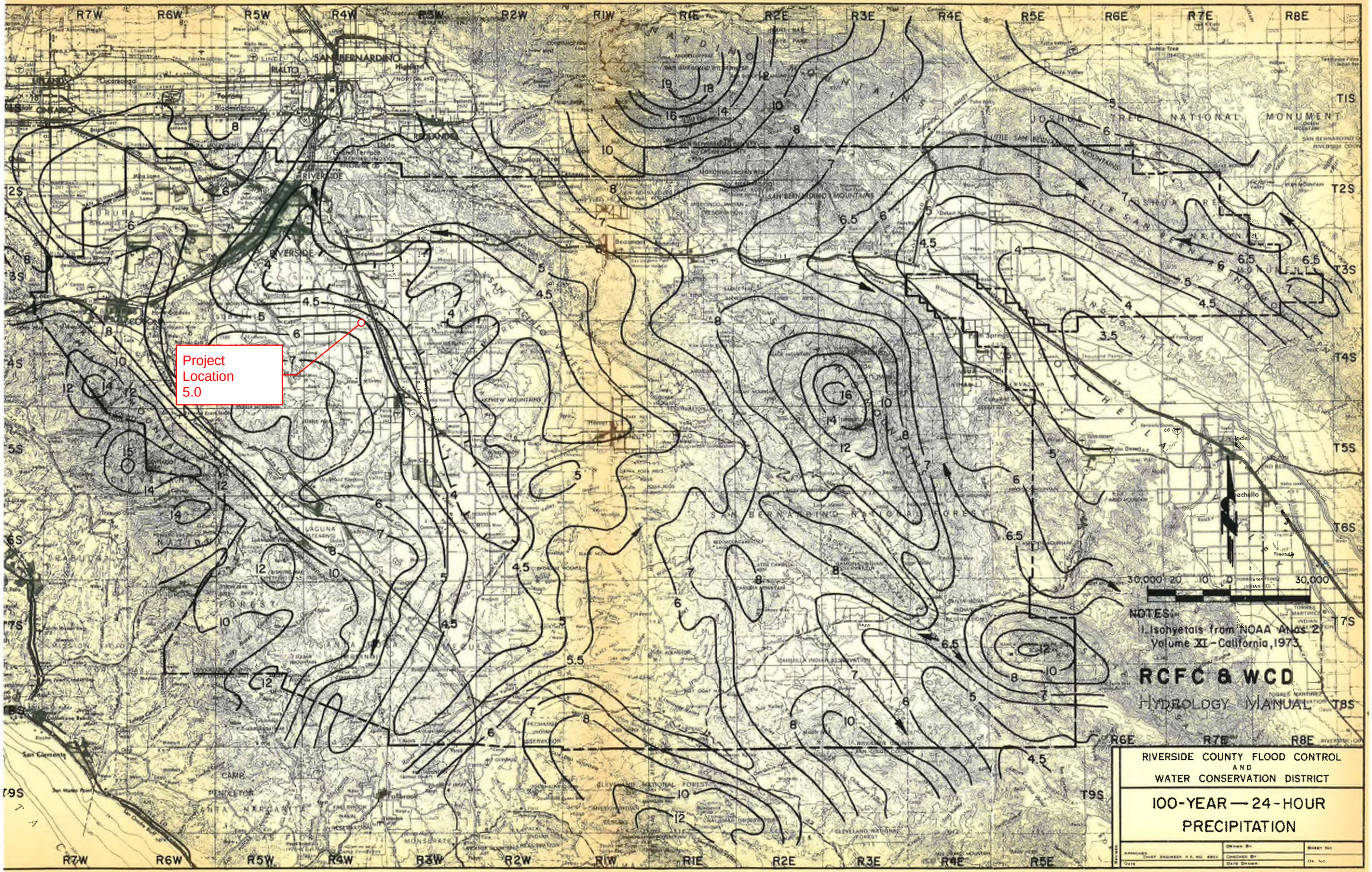

Project Location 5.0
NOTES:
1. Isohyetals from NOAA Atlas 2, Volume XI - California, 1973.
RCFC & WCD
HYDROLOGY MANUAL
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
100-YEAR — 24-HOUR PRECIPITATION

PLATE E-5.6

Appendix F
Reference Materials

PROPOSED NANDINA AVE

EXISTING NANDINA AVE

EXISTING LATERAL B-9A
36" RCP SD PER DWG NO. 4-1061
(Q_{100}=1.7 CFS)

EX 30" SD
LATERAL B-9AA

WATERSHED B-9AA PEAK RATES
PER RIVERSIDE COUNTY FLOOD CONTROL DISTRICT ASBUILT DRAWING DWG NO. 964B, LATERAL B-9AA ANTICIPATES A Q100 PEAK FLOW RATE OF 42.3 CFS INCLUDING THE 1.9 CFS FROM LATERAL B-9AA-2
EX: 35.0 AC, Q_{10}=35.01 CFS, Q_{100}=55.01 CFS
PR: 20.9 AC, Q_{10}=30.22 CFS, Q_{100}=43.89 CFS

WATERSHED B-9AA (POC B)
TOTAL TRIBUTARY AREA: 20.9 ACRE
(EXCLUDES AREA TRIBUTARY TO B-9AA-2)
ULTIMATE CONDITION MITIGATED
PEAK RUNOFF RATE Q_{100}=39.15 CFS

BOTTOM OF BORROW PIT 1 WILL BE LINED WITH RIP RAP TO MIMIC EXISTING CONDITION SURFACE RUNOFF. NUISANCE WATER FROM BORROW PIT 1 & 2 WILL BE COLLECTED BY LATERAL B-9AA IN PROPOSED NANDINA AVE.

RUNOFF FROM AREA AND WEST OF HERE FLOWS NORTHERLY TOWARDS THE PROPOSED NANDINA AVE EXTENSION. FOUR NANDINA AVE CULVERTS CONVEY RUNOFF TO THE NORTH TO MAINTAIN EXISTING RUNOFF PATTERNS. ANALYSIS OF THIS OFF-SITE AREA IS BEYOND THE HYDROLOGIC BOUNDARY OF STUDY FOR THIS PROJECT.

B-9AA
20.9 AC

EXISTING DECKER RD

EXISTING INDUSTRIAL WAREHOUSE FACILITY

WATERSHED B-8 PEAK RATES
RUNOFF FROM WATERSHED B-8 AS INTENDED PER MASTER DRAINAGE PLAN FOR PERRIS VALLEY AREA JUNE 1991 IS TRIBUTARY TO STORM DRAIN LATERAL B-8. HERE PROPOSED THE 48" STORM DRAIN LATERAL B-8 CONSTRUCTED PER RIVERSIDE COUNTY FLOOD CONTROL DISTRICT DRAWING NO. 4-1060 IS EXTENDED INTO THE DEVELOPED SITE TO PICK UP RUNOFF.
EX Q_{10}=88.40 CFS, Q_{100}=137.08 CFS, 99.3 ACRES
PR Q_{10}=119.13 CFS, Q_{100}=177.04 CFS, 113.4 ACRES

WATERSHED B-8 (POC A)
TOTAL TRIBUTARY AREA: 113.4 ACRE
ULTIMATE CONDITION PEAK RUNOFF RATE Q_{100}=177.04 CFS

EX BLANDING WAY

FUTURE DAY ST

EXISTING DAY ST

PROPOSED HARLEY KNOX BLVD

EXISTING HARLEY KNOX BLVD

EX 48" SD
LATERAL B-8

PER RIVERSIDE COUNTY FLOOD CONTROL DISTRICT ASBUILT DRAWING NO. 4-1060 DWG NO. 964B, LATERAL B-8 WAS APPROVED FOR Q_{100} =182.00 CFS

ALL FLOW FROM WATERSHED B-8A WILL BE ADDED TO NODE 815 FOR THIS HYDROLOGICAL ANALYSIS. WATERSHED B-8A (SUBAREA R) WILL BE ASSUMED AS COMMERCIAL LAND USE FOR FUTURE INDUSTRIAL WAREHOUSE FACILITY.

EX 48" SD
LATERAL B-8A

B-8
113.4 AC

PROPOSED DECKER RD

FUTURE INDUSTRIAL WAREHOUSE FACILITY
(FOR THE PURPOSE OF THIS STUDY, ALL FLOWS FROM SUBAREA R WAS CONSIDERED COMMERCIAL FOR FUTURE DEVELOPMENT AND TRIBUTARY TO NODE 850)

EXISTING INDUSTRIAL WAREHOUSE FACILITY

FUTURE OLEANDER AVE

SEE ROUGH GRADING CONDITION HYDROLOGY MAP

BORROW PIT 1

BORROW PIT 2

BORROW PIT

LEGEND

- WATERSHED BOUNDARY
- LAT # / X.X AC — TRIBUTARY LATERAL NO. AND TOTAL ACREAGE
- SUB-AREA BOUNDARY
- EXISTING STORM DRAIN SYSTEM
- PROPOSED STORM DRAIN SYSTEM
- XX / X.XX — SUB-AREA NO. SUB-AREA-ACREAGE
- XX — NODE NO.
- INITIAL AREA FLOW-LINE
- L=270' — LENGTH OF FLOW-LINE OR PIPE
- S=0.8% — SLOPE OF STREET OR PIPE
- WQ — WATER QUALITY TREATMENT STORAGE
- F — FLOOD DETENTION STORAGE

120 60 0 120 240 360
SCALE: 1"=120'

PREPARED BY:
Michael Baker INTERNATIONAL
5 Hutton Centre Drive, Suite 500
Santa Ana, CA 92707
Phone: (949) 472-3505
MBAKERINTL.COM

REGISTERED PROFESSIONAL ENGINEER JACQUELINE J. KIM NO. 87503 CIVIL STATE OF CALIFORNIA

OLEANDER BUSINESS PARK
ULTIMATE CONDITION
HYDROLOGY MAP
RIVERSIDE COUNTY, CA
APRIL 2021

SCALE: 1" = 120'
PROJECT NO. 152480
DATE: 4/20/2021

H:\PDATA\152480\CADD\DLV\HYDRO\ROUGH GRADING\MAPS\152480-FINAL CONDITION-PROP-HYD-MAP.DWG JACQUELINE.KIM 4/27/21 11:15 pm